

▶ WMF51

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, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.



Eco Friendly Packaging

This product has been packaged with fully recyclable materials, including compostable bags. Please help us to help the environment.

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Introduction

The WMF51 is a 4K multi-format presentation switch featuring AirPlay, Miracast®, Chromecast® and WiFi inputs to a single HDMI output.

The WMF51 provides enhanced features including multi-view presentation, video scaling, a web-GUI for control and configuration, localised 2.4/5G WiFi hotspot and dual LAN connectivity.

The WMF51 also features OSD control, USB touch-back to connected host device, whiteboard and screen overlay annotation, with manual or automated source selection. The WMF51 can be controlled via front panel, RS-232 or TCP/IP.

The WMF51 is also compatible with Blustream WMF-USBC-D and WMF-HDMI-D plug and play wireless dongles, providing an ideal BYOD solution for your boardroom, classroom, or huddle-space application.

FEATURES:

- 4K multi-format multi-view presentation switch
- Features AirPlay, Miracast®, Chromecast® and Blustream wireless dongle support which can be switched to a single HDMI output
- Multiview presentation with up to 4 concurrent video signals with configurable screen layout
- In-built video scaler with output timing up to 4K 60Hz 4:4:4
- Localised 2.4G/5G WiFi hotspot to host AirPlay, Miracast® and Chromecast® local point-to-point mode (up to 1080p)
- Dual LAN connection for integration to existing network infrastructures
- Supports USB 3.0 touch-back feature via WMF-USBC-D / WMF-HDMI-D dongles and Miracast®
- Audio breakout to analogue L/R audio
- Web interface module for control and configuration of unit
- OSD control with preview function
- Whiteboard and screen overlay annotation feature
- Control via front panel, RS-232 and TCP/IP with manual, or auto source selection
- Features Class 0 IEEE 802.3af PoE for powering of product from a PoE switch

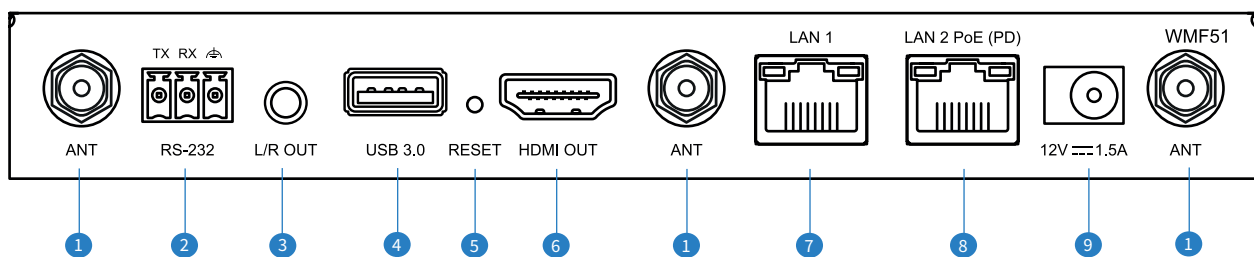
Please note: Miracast touch-back compatibility subject to Windows features. USB 3.0 connection is for connectivity to an interactive display for touch-back capabilities only, and does not feature the full USB 3.0 bandwidth capabilities for use with VC / UC equipment

WMF51 Front Panel Description



- 1 USB-A dongle pairing port - used to pair the WMF-HDMI-D dongle with the WMF51 hub (USB connection only required for pairing). The WMF51 video output will display information regarding the automatic pairing and firmware update process.
Please note: wireless dongles sold separately
- 2 USB-C dongle pairing port - used to pair the WMF-USBC-D dongle with the WMF51 hub
- 3 Standby button - press to toggle the unit in and out of standby - please note: LED remains lit blue when device is receiving power, regardless of whether the unit is in standby
- 4 Power LED indicator - indicates if the unit is powered

WMF51 Rear Panel Description



- 1 WiFi Antenna Connections (x3) - connect to supplied WiFi antenna
- 2 RS-232 port - for control of the hub from a 3rd party control processor or PC (Phoenix connector included)
- 3 Analogue Audio Left/Right Output - 3.5mm female jack to de-embed stereo audio from the WMF51. 2ch stereo audio only.
- 4 USB Touchback - USB port for connection to an interactive display for touchback capabilities to host device. **Please note:** the USB port is only for connection to an interactive display for touchback capabilities and does not feature the required wireless bandwidth to distribute UC / VC products
- 5 Reset - see below for further information on how to reset the WMF51
- 6 HDMI Output - connect to HDMI display equipment
- 7 LAN 1 TCP/IP Port (DHCP only) - 100Mbps RJ45 connector to connect to secondary network (i.e. Corporate Guest network)
- 8 LAN 2 TCP/IP Port -1Gbps RJ45 connector to connect to LAN for TCP/IP control of device and to access Web GUI, includes PoE function to power device
- 9 Power port - use supplied Blustream 12V/1.5A DC adaptor to power the device if not using PoE

Resetting the WMF51

To reset the WMF51 back to factory default, insert a small instrument to press down the recessed button on the back of the unit labelled RESET. If connected to a display, two options will be presented: 'Factory Reset', or 'Cancel', press the reset button in again to factory reset the device. The reset process takes approximately 30 seconds during which time the power LED on the front will show either red or blue, but there will be no output to the connected display. If using an interactive panel connected via HDMI and USB, you can select 'Factory Reset', or 'Cancel' on screen as required.

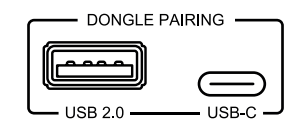
Wireless Dongle Connectivity

The WMF51 hub supports screen sharing via WMF-USBC-D and WMF-HDMI-D wireless dongles (purchased separately). These dongles allow laptops and PC's with HDMI or USB-C connectivity to wirelessly screen share with the WMF51 hub. The dongles are intended for use where devices either are not capable of wireless sharing, or where wireless network connectivity of their device is not possible. Up to 16 Blustream WMF dongles can be paired with a WMF51 hub at any time.

To pair the WMF dongles, simply plug the USB-C (WMF-USBC-D) or the USB-A (WMF-HDMI-D) into the appropriate port on the front of the WMF51 labelled 'Dongle Pairing' for automatic pairing. The progress of the pairing is displayed on the screen connected to the HDMI output of the WMF51. The firmware of the dongles will be updated via the WMF51 automatically during the pairing process.

Once the pairing is successful, the on screen display will update, and the light on the dongle will turn green.

Please note: do not remove the dongle from the WMF51 hub during the pairing process. If the firmware of your WMF51 has been updated, you will need to re-pair the wireless dongles which will download the associated firmware onto the dongles.



Wireless Dongle Control

Once paired, the Blustream WMF-HDMI-D or WMF-USBC-D dongles can be connected to the USB-C or HDMI/USB connections of a laptop or compatible mobile device.

On connection of the dongle to the source device, the LED will flash red whilst the unit boots and is discovered by the WMF51 hub. Once the dongle is ready to share, the LED will stop flashing and will have a solid red light.

Share button:

The Share button allows the user to share the output from their display to the WMF51 hub via the connected dongle. Once the LED on the dongle is solid red, press the large button marked 'Share' to wirelessly send the content from your device to the WMF51. Once the dongle is sharing media, the LED will turn green until such point as the wireless connection is stopped (by pressing 'Share' again), or disconnecting the dongle.

Press and hold Share button - by pressing and holding the share button the user can make his source device full screen if the output is in Multiview mode.

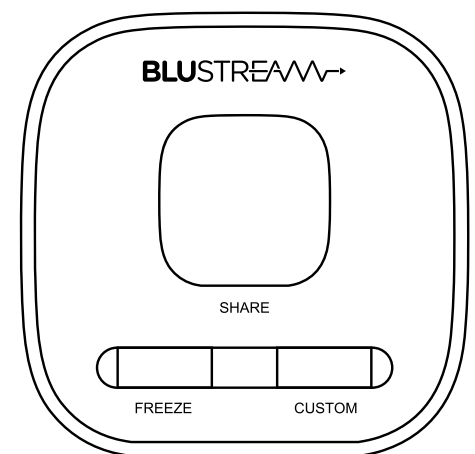
Please note: many laptops may only allow for one additional display to be connected. Where applicable, connecting a Blustream dongle to a laptop that already has a HDMI connection to a display may stop the dongle from being discovered by the WMF51 hub.

Freeze button:

The Freeze button allows the user to pause the video content being distributed from the device to the WMF51 hub. Pressing this button holds onto the last frame of video giving the user the opportunity to change to a different presentation / file in the background. Pressing the Freeze button again, resumes video content playback in real time.

Custom button:

The Custom button can be programmed to provide specific functionality of the WMF51 to be triggered from the dongle. Customisation of this button is programmed via the WMF51 web-GUI.



BYOD (Bring Your Own Device) Connectivity

The WMF51 on screen display shows a connection guide when no input devices are being viewed. This illustrates how to connect a laptop, tablet or smartphone (BYOD device), or WMF dongle to the hub. Connectivity of a device will be subject to the network configuration of the WMF51 hub. There are various technologies utilised to ensure your smart device is capable of broadcasting video to the WMF51 without the requirement for any Apps. These are:

Technology	Device	Max Simultaneous Connections
Airplay	Apple devices	2
Miracast®, SmartView, or ScreenCast	Windows 10/11, Android devices	2
Chromecast	Google devices	2

Please note: It is only possible to have a total of 4 simultaneous connections from the above technologies connected to the WMF51 at the same time. Each of these wireless sharing technologies may feature some nuances that may need to be taken into account when choosing to distribute video wirelessly.

The wireless technologies built into this unit have been designed for the sharing of content from source devices in corporate environments which include Power Point presentations, basic video content, imagery etc. The WMF51 has not been designed to stream on-demand content from a webpage / browser / App. Viewing of high resolution and high frame rate HDMI video across a wireless connection is never going to be as smooth or as 'flawless' as watching content via a direct wired connection.

Airplay: uses DRM (Digital Rights Management) from an Apple OS / iOS source device such as a Mac or iPad. DRM is the use of technology to control and manage access to copyrighted material. The use of DRM may limit the capabilities of an Apple device to output certain pieces of media to the WMF51. This cannot be circumnavigated.

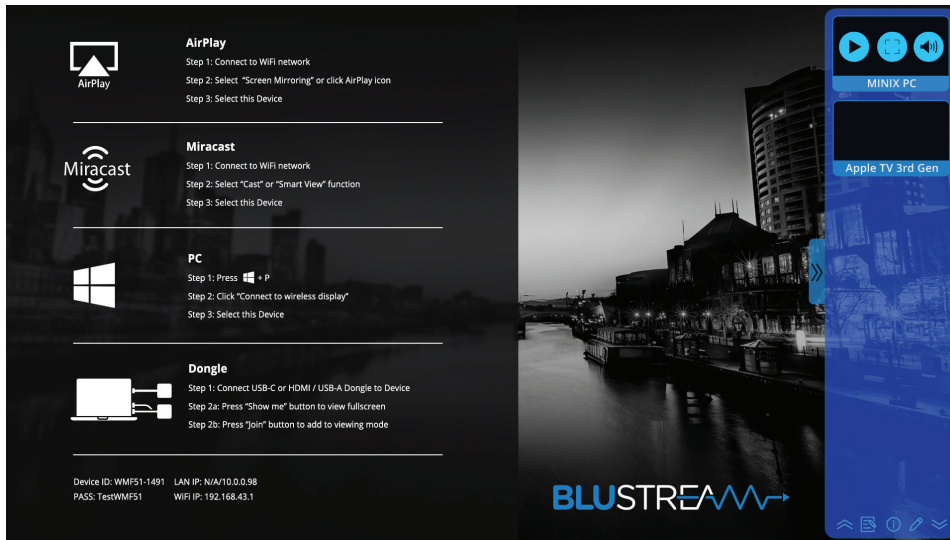
Touchback Control of a Connected Device

Basic touchback control can be enabled when using an interactive display for a presenter to be able to both control the WMF51 and the connected laptop. Connect a USB cable between the USB port on the WMF51 and the display. Some points to note with touchback control:

- A virtual mouse is created when using touchback for controlling the connected source. The black mouse pointer is generated between the WMF51 and interactive panel, the white mouse pointer is the standard mouse from the connected computer.
- To 'right click' the mouse on an interactive panel, press and hold the screen – this is standard for most touch panels, but may differ between brands.
- For touchback to work on Apple Mac devices, you may have to enable the devices accessibility feature for touchback to work. This can be found within Settings / Privacy & Security / Accessibility section under Mac OS.
- When using an Apple Mac, the Mac must be set to Mirror as the touchback will only control the main desktop. When setting display settings to 'extend', the mouse will still only control the main desktop.

Interactive Display Control

The WMF51 has on-screen control options for a presenter to utilise when connected to an interactive panel. The blue tab on the right had side of the display opens / closes the control options available:



Wirelessly connected devices paired with the WMF51 can be seen as thumbnail views (please note: screen-grab thumbnails are not available for some wireless connections (i.e. Airplay)). The user can select any connected device to be displayed on the panel from this menu. Multiview, full screen and audio options can be managed from the icons overlaid on each thumbnail.



The following functions can be used by selecting the menu items at the bottom of the tab:

- 1 Scroll up - scrolls up through the available wireless device thumbnails shown inside the pop-out menu
- 2 White board function - allows for the user of an interactive display to have a blank screen for drawing / notes
- 3 Information - enables or disables the onscreen display information pop up
- 4 Annotation function - allows the user of an interactive display to annotate over the top of the shared content
- 5 Scroll down - scrolls down through the available wireless device thumbnails shown inside the pop-out menu

Each connected source will be shown in the side menu and includes the following control options:



- The left hand button shows the connectivity status of the wireless device. A 'Stop / square' symbol indicates that the device is currently connected to the WMF51, and is sharing. Pressing the 'Stop' button disconnects the wireless device from the WMF51. Pressing the play button will start sharing from the device.
- The centre button denotes whether the input is part of a multiview configuration or being shown in a full screen format
- The right hand button gives the user the ability to Mute the source audio, and change the selected source audio from the main control page.

The pop-out tab can be re-positioned by dragging the tab up or down as required. Where an interactive panel is not being used, the tab can be removed / disabled via API command. Please see API commands towards the rear of this manual.



The side menu feature can be disabled within the web GUI of the WMF51 should a touchscreen or 3rd party control not be used with the device

Network Connectivity Options

The WMF51 has multiple different ways in which it can be deployed into a system with regards to its connectivity to multiple networks, whether it is used as standalone device, or a combination of all.

Dual Network Configuration with Access Point:

Dual Corporate and Guest LAN connectivity where the WMF51 hosts its own WiFi access point not associated with the Corporate or Guest LAN's.

DUAL Network Configuration Access Point Mode

Hardwired LAN1 and LAN2 connected to Third Party Networks

Mode: **Access Point Mode**

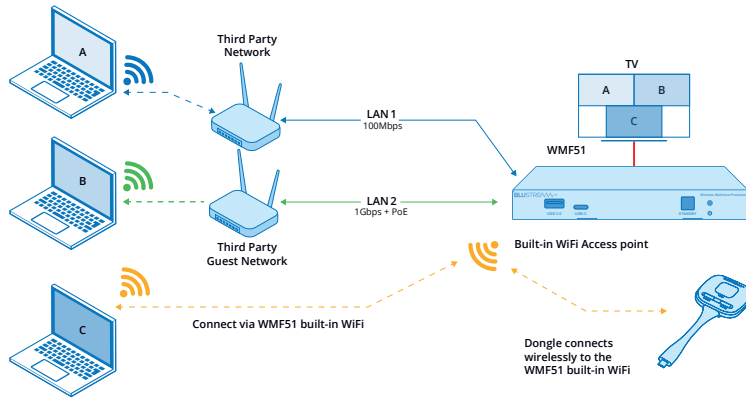
In access point mode all sources can be connected directly to the built-in WiFi. Third party casting methods can also be shared via LAN connection.

Built-in WiFi settings are configurable via web GUI.

Internet access via LAN can be enabled/disabled.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: 169.254.2.51/169.254.59.124
- Wifi IP: 192.168.43.1



After configuring the Network, Re-pair the Dongles. Dongles will be connected directly to the WMF51.

- Wired connection to Third Party Network
- - - Wireless connection to Third Party Network
- Wired connection to Third Party Guest Network
- - - Wireless connection to Third Party Guest Network
- - - Wireless connection to built-in WMF51
- Hardwired connection to Host device HDMI
- 📶 Wireless Infrastructure Mode
- 📶 LAN Infrastructure Mode
- 📶 Access Point Mode

LAN Access Point Mode:

LAN connection to the Corporate network. WMF51 hosts its own WiFi network not associated with Corporate LAN for dongle communication.

LAN Access Point Mode

Hardwired LAN1 or LAN2 connected to a single Third Party Network

Mode: **Access Point Mode**

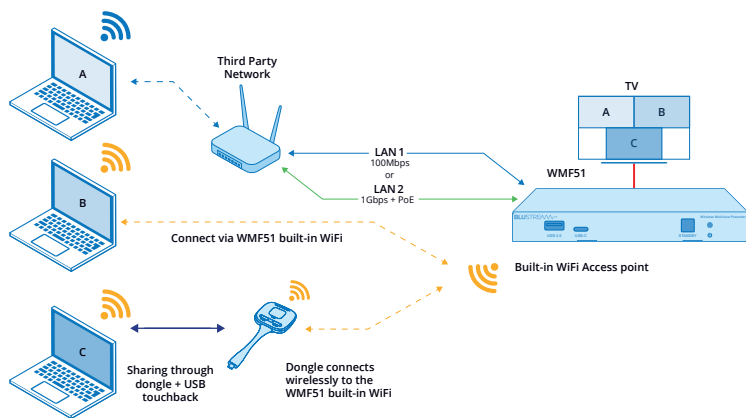
In access point mode all sources can be connected directly to the built-in WiFi. Third party casting methods can also be shared via LAN connection.

Built-in WiFi settings are configurable via web GUI.

Internet access via LAN can be enabled/disabled.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: 169.254.2.51/N/A
- Wifi IP: 192.168.43.1



After configuring the Network, Re-pair the Dongles. Dongles will be connected directly to the WMF51.

- Wired connection to Third Party Network
- - - Wireless connection to Third Party Network
- Wired connection to Third Party Guest Network
- - - Wireless connection to Third Party Guest Network
- - - Wireless connection to WMF51
- Hardwired connection to Host device HDMI
- 📶 Wireless Infrastructure Mode
- 📶 LAN Infrastructure Mode
- 📶 Access Point Mode

LAN Infrastructure Mode (in-built Wireless network disabled)

LAN and dongle connection to the Corporate LAN only. WMF51 does not host its own WiFi network.

LAN Infrastructure Mode

WMF51 is hardwired to existing LAN. Built-in WiFi of the WMF51 is disabled

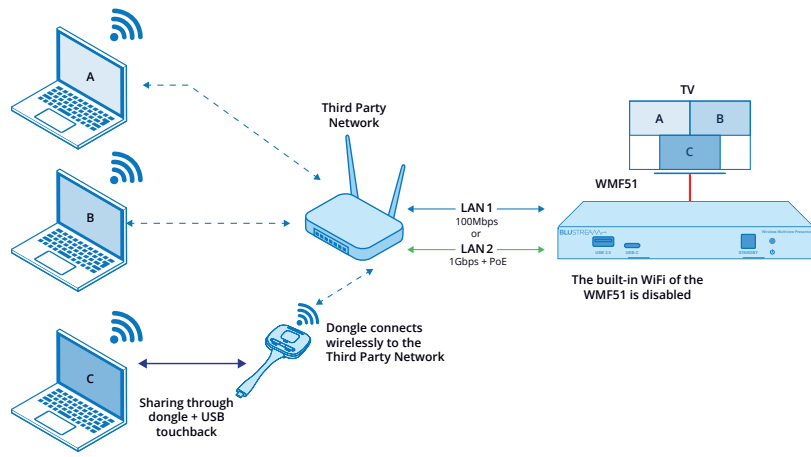
Mode **LAN Infrastructure Mode**

In LAN infrastructure mode, the dongles connect to the WMF51 via third party WIFI network. The WMF51 is connected via hardwired LAN to the third party network.

Third party network details are entered into WMF51 via web GUI and transferred to the dongles during pairing process.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: N/A/169.254.59.124
- Wifi IP: 192.168.43.1



After configuring the Network, Re-pair the Dongles. Dongles will be connected directly to the LAN 1 network.

- Wired connection to Third Party Network
- - - Wireless connection to Third Party Network
- Wired connection to Third Party Network
- - - Wireless connection to Third Party Network
- - - - Wireless connection to WMF51
- Hardwired connection to Host device HDMI
- 📶 Wireless Infrastructure Mode
- 📶 LAN Infrastructure Mode
- 📶 Access Point Mode

Wireless Infrastructure Mode

Communication with the WMF51 is via the corporate Wireless network only.

Wireless Infrastructure Mode

WMF51 is wirelessly connected to third party WiFi. Built-in WiFi of the WMF51 is disabled

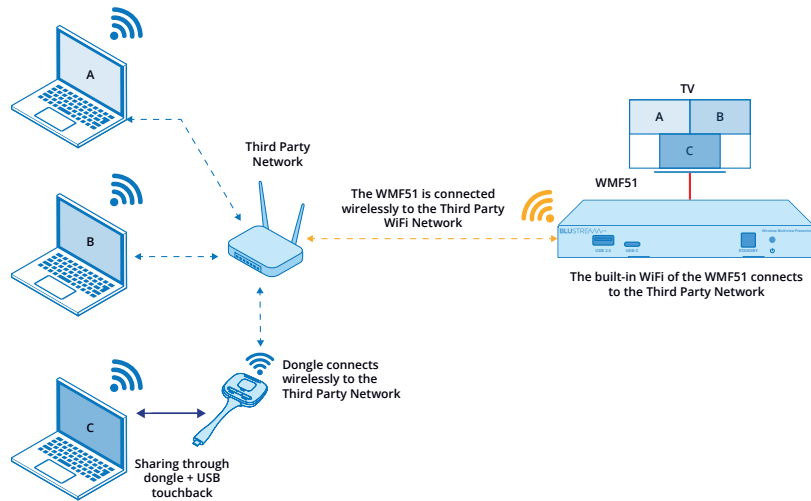
Mode **Wireless Infrastructure Mode**

In wireless infrastructure mode, the dongles connect to the WMF51 via third party WIFI network. The WMF51 is connected wirelessly to the third party network.

Third party network details are entered into WMF51 via web GUI and transferred to the dongles during pairing process.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: N/A/169.254.59.124
- Wifi IP: 169.254.162.14



After configuring the Network, Re-pair the Dongles. Dongles will be connected directly to the Guest network.

- Wired connection to Third Party Network
- - - Wireless connection to Third Party Network
- Wired connection to Third Party Guest Network
- - - - Wireless connection to Third Party Guest Network
- - - - Wireless connection to WMF51
- Hardwired connection to Host device HDMI
- 📶 Wireless Infrastructure Mode
- 📶 LAN Infrastructure Mode
- 📶 Access Point Mode

Wireless Infrastructure Mode:

LAN1/2 connection to the Corporate LAN. Dongles communicate through the Corporate LAN to the WMF51. WiFi on the WMF51 linked to a third party Guest network.

Wireless Infrastructure Mode

WMF51 is hardwired to the Third Party Network and wirelessly connected to Third Party Guest Network

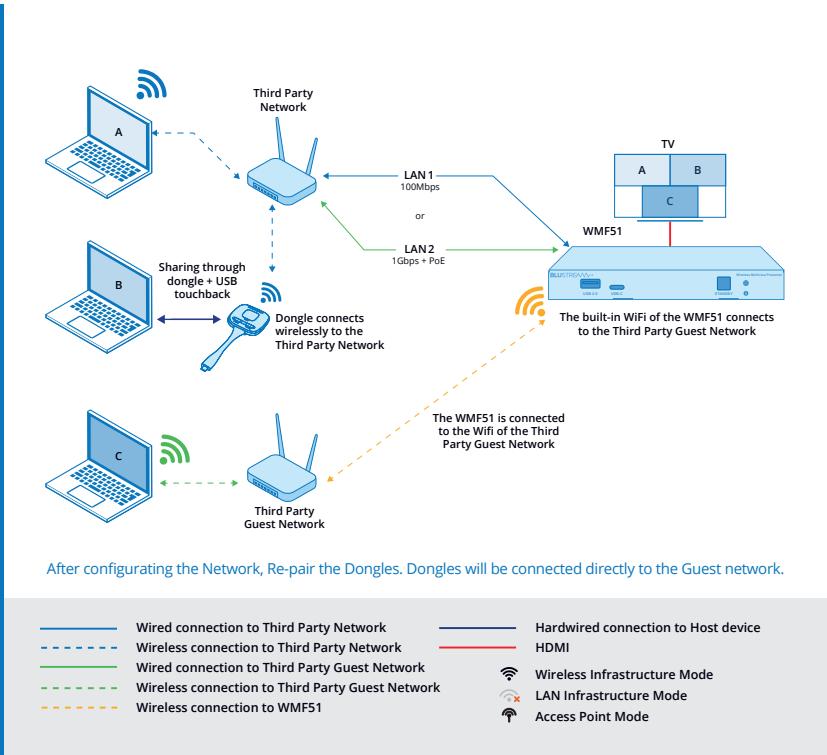
Mode **Wireless Infrastructure Mode**

In wireless infrastructure mode, the dongles connect to the WMF51 via third party WiFi network. The WMF51 is connected wirelessly to the third party network.

Third party network details are entered into WMF51 via web GUI and transferred to the dongles during pairing process.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: N/A/169.254.59.124
- Wifi IP: 169.254.162.14



Access Point Mode:

LAN1/2 connection to the Corporate LAN. Dongles and guest users communicate through the WMF51 WiFi.

DUAL Network Configuration Access Point Mode

Hardwired LAN1 and LAN2 connected to Third Party Networks

Mode **Access Point Mode**

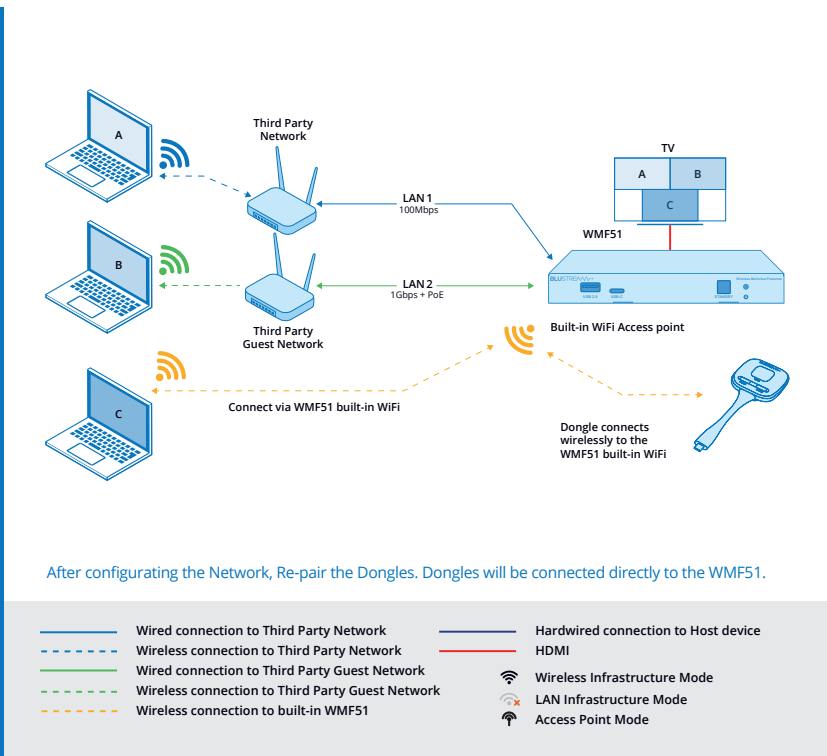
In access point mode all sources can be connected directly to the built-in WiFi. Third party casting methods can also be shared via LAN connection.

Built-in WiFi settings are configurable via web GUI.

Internet access via LAN can be enabled/disabled.

Sample Application:

- Device ID: WMF51-8042
- Pass: 00001185
- LAN IP: 169.254.2.51/169.254.59.124
- Wifi IP: 192.168.43.1



Network Configuration

The WMF51 features an in-built web-GUI which is required for control and configuration of the device. This configuration includes features such as source / input management, output scaler resolution, network / WiFi configuration, and user control.

You can connect to the WMF51 either via hardwired LAN connection, or via the local WiFi hotspot.

Connecting via the LAN 1 port:

By default this device is set to DHCP, where a DHCP server (eg: network router) is installed the IP address will be issued by the network / router. The IP address of the LAN 1 connection is displayed on the splash screen of the connected display, labelled 'LAN IP: xxx.xxx.xxx.xxx / yyy.yyy.yyy.yyy' (where xxx = IP address of LAN port 1, and yyy = IP address of LAN port 2). Where no hard wired connections are available, the screen will show N/A for either of the 2x possible connections.

Connecting via the LAN 2 (PoE) port:

By default this device is set to DHCP, however if a DHCP server (eg: network router) is not installed or you connect directly from a PC to the WMF51, the IP address will revert to the below details:

Default **IP Address** is: **192.168.0.200**

If the WMF51 is connected to a pre-existing network then it will be provided an IP Address via DHCP. There are several ways in which you can find the IP address of the device as follows:

- The On Screen Display shows the IP address of the product in the lower left corner of the screen (item A in the image below)
- Use a 3rd party IP scanning tool on your PC to find the IP address of the WMF51

Connecting via Local WiFi Hotspot:

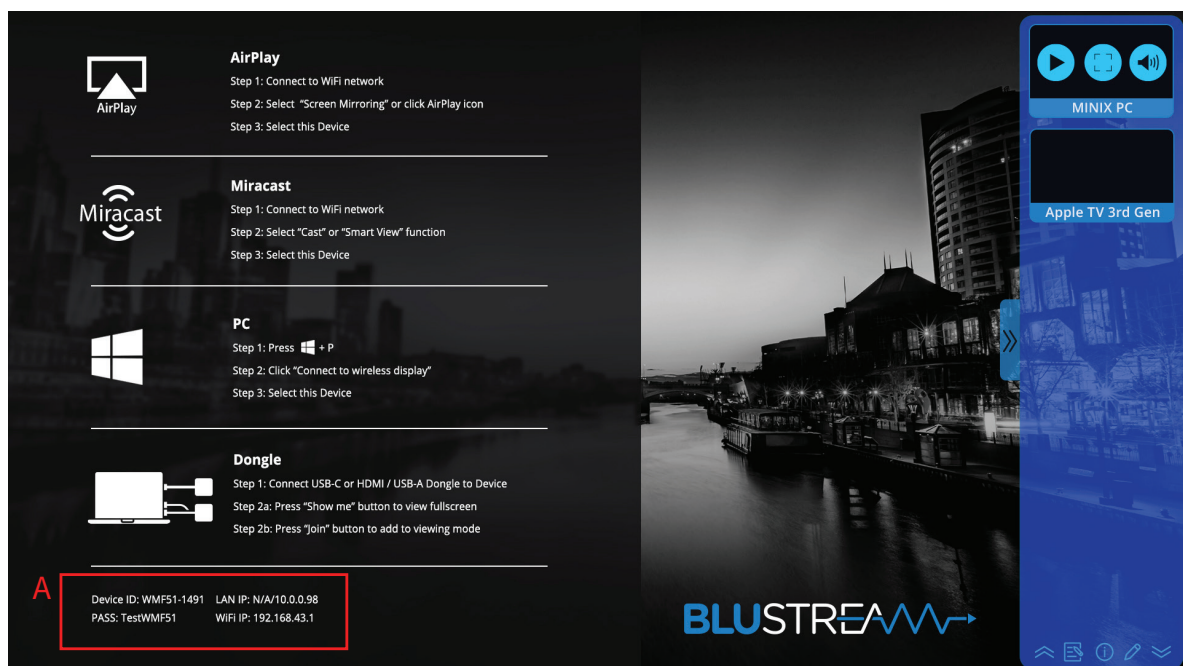
This device can broadcast its own local WiFi hotspot which users can connect to in order to stream content to the device, or control and configure the unit. The default local WiFi hotspot settings are as follows:

Default **Device ID / SSID** is: **WMF51-xxxx** (where xxxx is bound to MAC address of the unit)

Default **SSID Password** is set to dynamic by default and displayed on screen

Default **BYOD PIN** is an 8 digit code displayed on screen that by default automatically changes every 5 minutes

It is also possible to disable the local WiFi hotspot and hardwire the WMF51 into a pre-existing data network. You would then use the pre-existing WiFi access points to connect to the network and communicate with the WMF51.



Web-GUI

The following pages will take you through the operation of the WMF51 web-GUI. You must be connected to either the TCP/IP RJ45 socket to your local network, directly from your computer to the LAN2 of the WMF51, or wirelessly to the unit in order to access the products web-GUI.

By default the unit is set to DHCP, however if a DHCP server (eg: network router) is not installed the units IP address will revert to below details:

Default IP Address is: [192.168.0.200](#) Default Username is: [blustream](#) Default Admin Password is: [@Bls1234](#)

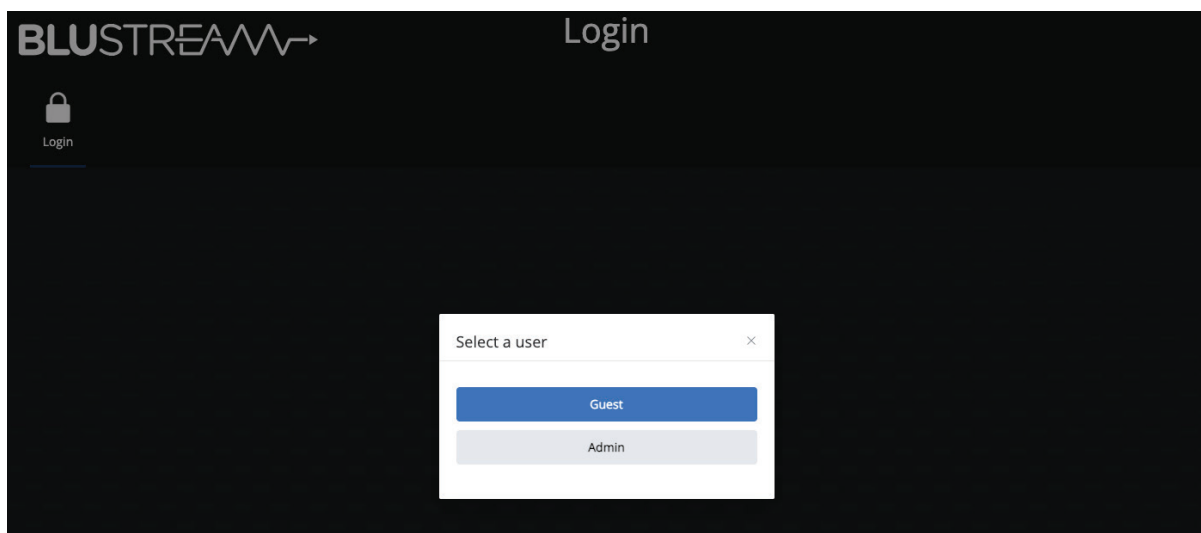
Admin Account - this account allows full access to all functions and configuration of the unit

Guest Account - default Guest password is: [guest](#)

The Guest account allows for basic input switching only.

Login Page

The Login Page allows the Guest, or Admin to login and access additional functionality.

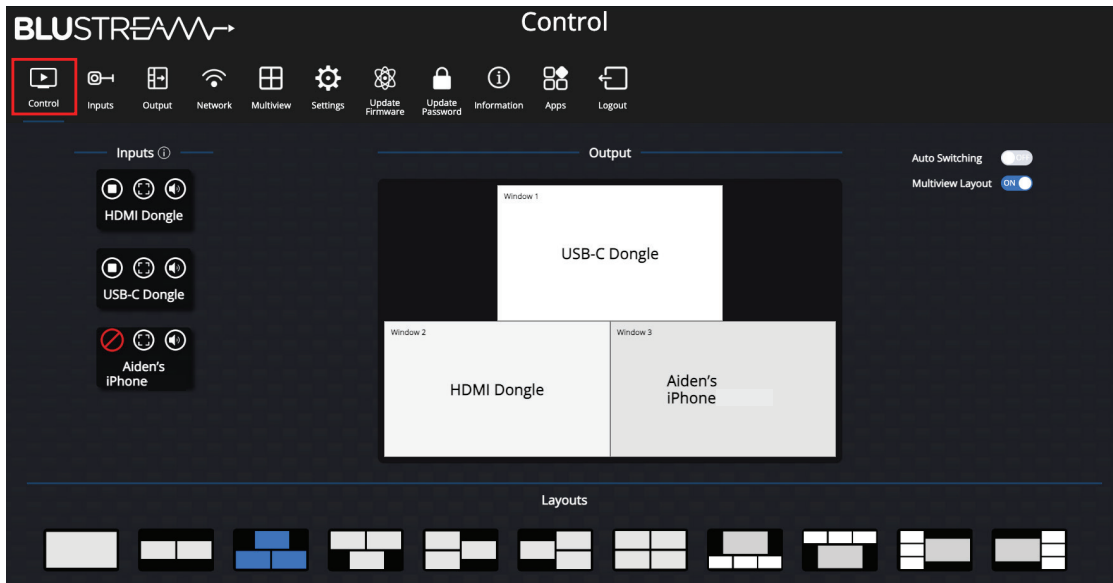


Please note: the first time the Administrator logs into the web-GUI of the WMF51, the default password (Bls1234) must be changed to a unique password. Please retain this password for future use. Forgetting the password will mean having to factory reset the unit, losing all configuration settings.

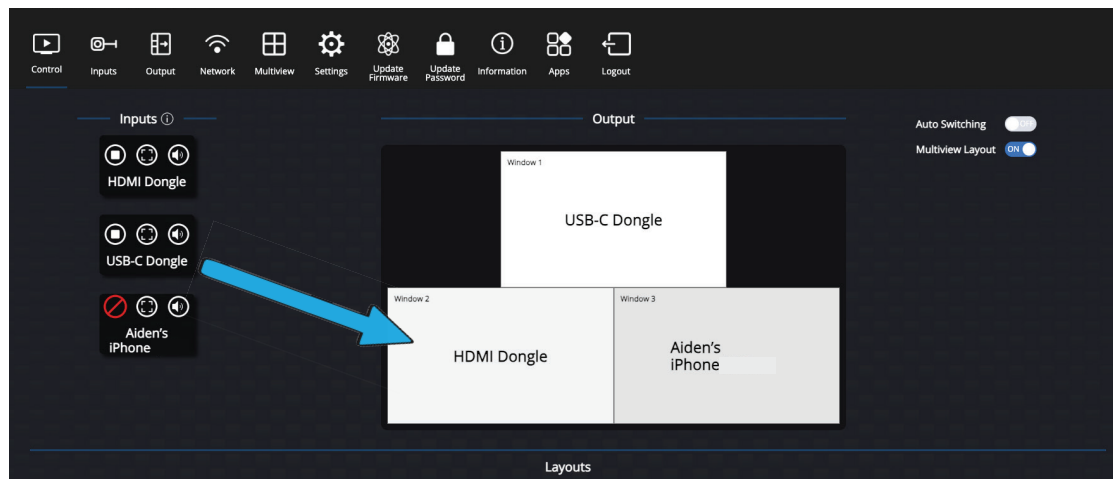
Passwords can be changed as required within the web-GUI of the unit once logged in. The Guest user password will remain as (Bls1234) until such time as the password is updated from within the web-GUI.

Control Page

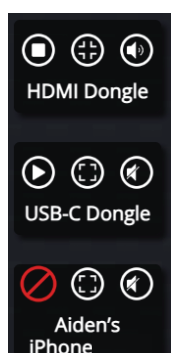
This tab allows for any of the paired / sharing devices to be switched (full screen), or laid out in a multi-view configuration as required. By default, the output structure of single screen or multi-view layouts is automatic. This can be amended in the Multiview tab with which layouts are available to enable or disable in the Control tab, where also a priority layout can be set. The selected multiview layout is highlighted in blue at the bottom of the page.



To switch the input device position to a different window of the multiview layout is as simple as dragging and dropping the left hand Input window onto the portion of the output graphic. Where (in the below example), the USB-C Dongle is dropped onto the HDMI Dongle window, the USB-C Dongle will be moved to the position where the HDMI Dongle was originally displayed, effectively switching their positions around:



Available wireless connections are listed on the left hand side of the GUI. There are 3 action buttons for each connected device that can be used within this page.



- The left hand button shows the connectivity status of the wireless device. A 'Stop / square' symbol (as shown in the top example adjacent), indicates that the device is currently connected and sharing to the WMF51. Pressing the 'Stop' button stops the sharing of media from the wireless device from the WMF51, but the unit remains connected. Pressing the play button will start sharing again from the device. Where a wireless connected tablet, phone or computer is connected and sharing, the ability to disconnect the wireless connection from the WMF51 is given with a red circle disceted with a line.
- The centre button denotes whether the input is part of a multiview configuration (middle and bottom example adjacent), or being shown in a full screen format (top example adjacent).
- The right hand button gives the user the ability to Mute the source audio, and change the selected source audio from the main control page. On the example opposite, the HDMI Dongle's audio is being distributed.

Inputs Page

The Inputs page allows for managing dongles or connected devices currently paired with the WMF51. This page also allows for dongles to un-paired and renamed as required.

Connected Devices

Device type	ID	Name	MAC Address	Firmware	Status	Serial number	Last Action	Operate
HDMI Dongle	1	HDMI Dongle	c8:fe:0f:0d:2:c:6e	V.1.1.0	Online	A03A24150182	Pause	⏻
TYPE_C Dongle	2	USB-C Dongle	c8:fe:0f:0b:e5:78	V.1.1.0	Online	A02A24150201	Pause	⏻

Paired Dongles

Item ID	Device type	MAC address	Serial number	Operate
1	TYPE_C Dongle	c8:fe:0f:0b:e5:78	A02A24150201	🗑️
2	HDMI Dongle	c8:fe:0f:0d:2:c:6e	A03A24150182	🗑️

The top of the Inputs page lists all devices that are currently connected to the WMF51, as well as their connection type (dongles, Miracast, etc...). Renaming of dongles, and the ability to Operate the device (cast / stop) can also be managed from the top section of this page.

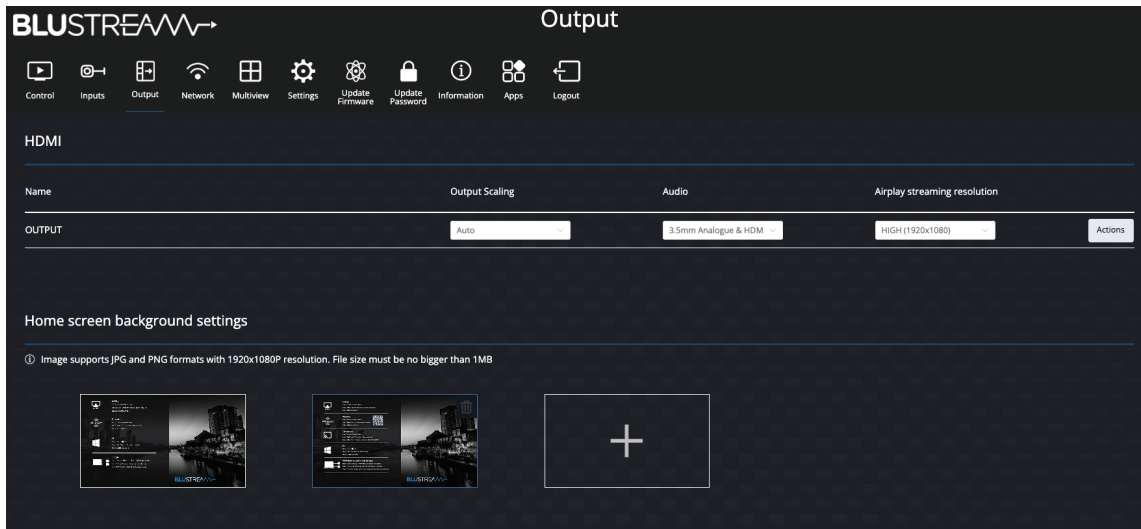
At the bottom of the Inputs page lists all dongles that are currently paired to the WMF51 unit. You can unpair them from the WMF51 by clicking the trash icon.

There are also additional buttons for the following functionality:

- **Export Project:** this function allows the WMF51 configuration to be downloaded and saved to your PC. This is how the configuration can be backed up.
- **Import Project:** this function allows the user to download a previously exported configuration onto the WMF51 and restore its settings with the saved configuration data.

Output Page

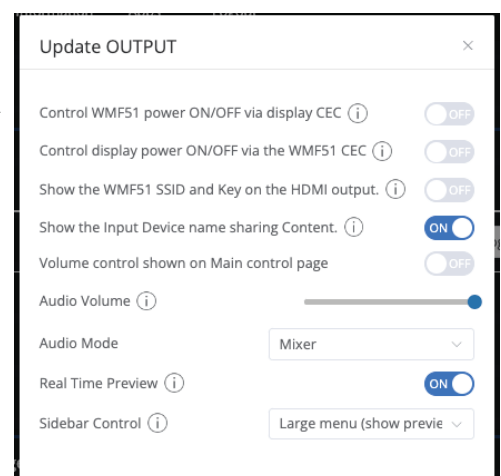
The Output page allows for the user to manage settings relating to the audio and video output of the WMF51.



- Output scaling: set the resolution of the HDMI output of the WMF51 between the provided 4k, 1080p and 720p output settings. The default setting is Auto which will look at the EDID of the display and output an appropriate resolution.
- Audio output: set the audio output setting between HDMI output, analogue audio jack output or both.
- Airplay streaming resolution: set the resolution of Airplay streams being received by the WMF51. The default setting is High (1920x1080) for best image quality however adjusting this setting can improve performance in applications where wireless bandwidth may be reduced.
- Home screen background setting: Allows you to upload and select a custom background image, or use the default WMF51 home screen. The home screen displays via the HDMI output when there are no devices currently broadcasting to the WMF51. The home screen by default provides a user with all the necessary information to connect their device to the WMF51. To upload a custom home screen simply press the '+' box and select the image file from your PC. To delete a custom home screen, hover over the home screen image and select the bin icon in the top right corner of the image. Please note that a maximum of 4 home screens can be loaded onto the unit at once. The home screen image must meet the following requirements:
 - File type: .jpg or .png
 - Resolution: 1920 x 1080 pixels
 - Maximum file size: 1Mb

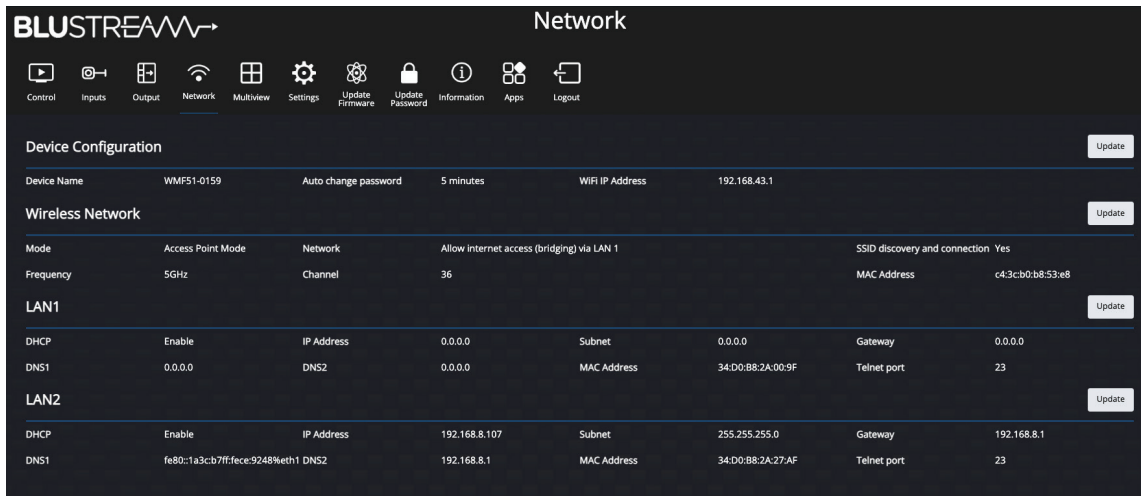
The Actions button allows for adjustment of the following output settings:

- Control WMF51 power ON/OFF via Display CEC: this allows for a CEC power toggle command to be sent from the connected display to set the WMF51 to go in or out of standby when powering the display
- Control display power ON/OFF via the WMF51 CEC: this allows for a CEC power toggle command to be sent from the WMF51 to set the display to go in or out of standby when powering the WMF51
- Show the WMF51 SSID and Key on the HDMI output: this allows for the Device ID and password to show on screen even when sharing
- Show the Input Device name sharing content: show or hide the Input Device name sharing for 3 seconds
- Volume control shown on Main control page: allows for volume controls to be adjusted from the Control tab
- Audio Volume: adjust volume for both analogue audio and HDMI output
- Audio Mode: allows for the audio output to be defaulted to: First In, Last In, Window, Single, or Mixed
- Real Time Preview: enable or disable the on screen preview image.
- Sidebar Control: allows the on screen display sidebar to show large items including image previews, small items (excludes image previews) or hide the side bar from the on screen display.



Network Page

The Network page allows for the configuration of the LAN ports, and WiFi connectivity of the WMF51.



The Device configuration section allows configuring of network settings relating to the WMF51.

- Device name: this is the name of the device as well as the SSID used for the wireless broadcast.
- Guest network SSID: this is the SSID of the guest network if connected to a third party network. This is not the SSID of the internal access point however this will show up in the on screen display.
- Staff network SSID: this is the SSID of the staff network if connected to a third party network. This is not the SSID of the internal access point however this will show up in the on screen display.
- Auto change password: this will automatically change the internal access points WiFi password after the specified time limit.

The Wireless Network configuration section allows for configuring of the internal WiFi access point settings of the WMF51.

- Mode: select the network mode of the WMF51 between Access Point Mode, Wireless Infrastructure Mode and LAN infrastructure mode. Please see the Network Connectivity Options section of this manual for an explanation of these modes. Note: when in WiFi access point mode, the internal WiFi access point handle its own DHCP on the 192.168.xxx.xxx range.
- Network: select the method of allowing external internet access (bridging the network) to the WMF51 between LAN 1, LAN 2 or disabled.
- SSID discovery and connection: enable or disable the SSID broadcast of the WMF51. If disabled, the WMF51 does not broadcast a WiFi network.
- Frequency: select the WiFi broadcast frequency between 2.4GHz or 5GHz.
- Channel: select the WiFi broadcast channel within the specified frequency range.
- Password: Set the password for connecting to the WiFi network.

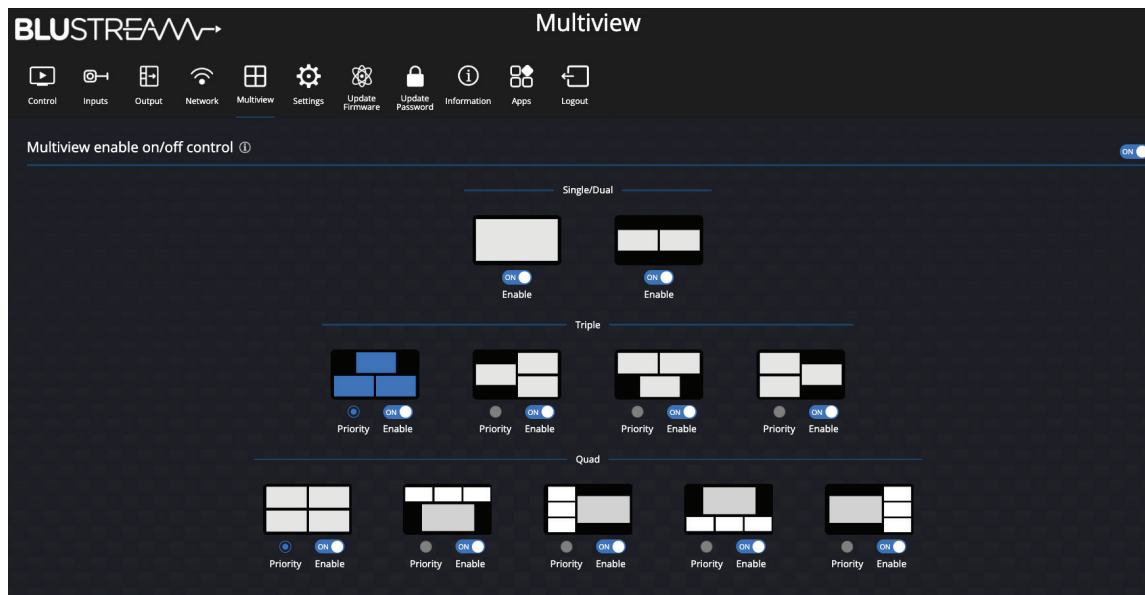
The LAN1 / LAN2 configuration section allows for configuring the hardwired LAN ports.

- DHCP: when DHCP is enabled, the corresponding LAN port will get its IP address via the DHCP server/router on the network. When disabled you can enter a static IP address into the WMF51
- IP Address: the static IP address of the corresponding LAN port.
- Subnet: the subnet mask of the corresponding LAN port.
- Gateway: the gateway address of the corresponding LAN port.
- DNS1 / DNS2: the DNS server(s) of the corresponding LAN port.
- Telnet Port: the Telnet port (note that both LAN ports will utilize the same port).

Where applicable, each of the specific settings can be adjusted by clicking the Update button at the top of each section.

Multiview Page

The Multiview page allows for the configuration of multiview output functionality of the WMF51. The multiview function allows up to 4 connected devices to be display on the screen simultaneously.



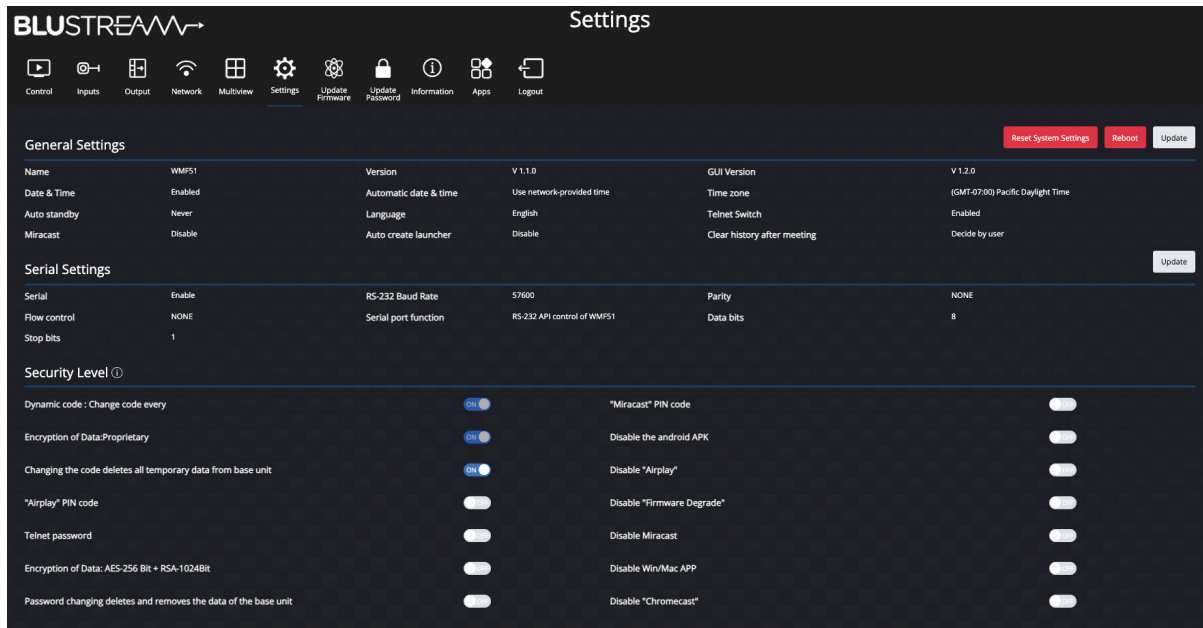
Multiview enable ON/OFF control enables or disables the multiview layout selection within the main Control page. When enabled a user can manually change the layout via the main Control page. When disabled, this function is removed for the user however multiview can still function if Auto mode is enabled.

It is also possible to enable or disable each individual layout depending on the end users specific requirements.

For triple and quad sources, it is possible to choose a priority layout which will be selected as default during autoswitching mode.

Settings Page

The Settings page allows for the configuration of the many settings within the WMF51. It also provides the ability to reboot or factory reset the system.



The General Settings section shows the following information, where applicable the Update button will allow for the configuration of variable functions:

- Name: the device name corresponds with the WiFi SSID broadcast
- Version: displays the MCU firmware version of the WMF51
- GUI Version: displays the web GUI firmware version of the WMF51
- Date & Time: when enabled, the date and time will be displayed on the onscreen display home screen. It is also possible to select the time format between a 12hr or 24hr clock
- Automatic Date & Time: enables automatic NTP time if the WMF51 is connected to the internet
- Time Zone: select the time zone of the region the device is being used within
- Auto Standby: specify a time in which the WMF51 enters standby mode when no wireless connections are detected
- Language: the default language of the WMF51 is English
- Telnet Switch: enable or disable the telnet port of the WMF51
- Miracast (MICE protocol): enable or disable the ability to control a Miracast device using WMF51 touch back feature via Miracast over Infrastructure connection establishment Protocol (default = disabled). Use this feature to also allow for Miracast to be used over a WiFi connection to the WMF51
- Auto Create Launcher: enable or disable the ability for the Blustream WMF control app to be copied to external USB drive connected to WMF51 front panel
- Clear History After Meeting: when using the Whiteboard or the annotation feature, this selection alters how files are saved either to the in-built memory of the WMF51, a connected USB drive, or disabled.

The Serial Settings section allows configuring of the RS-232 serial port functions:

- Serial: enable (default) or disable the serial port
- RS-232 Baud Rate: select the desired RS-232 communication baud rate (default = 57600)
- Parity: select RS-232 parity between even, odd or none (default).
- Flow Control: select RS-232 flow control between XON/XOFF or none (default).
- Serial Port Function: select the RS-232 serial port function between Function as Telnet, where the serial port can be used to control the WMF51, or Function as Commander where by commands are output from the WMF51 to control a device connected via serial to the WMF51
- Data bits: select RS-232 data between 5, 6, 7 or 8 (default).
- Stop bits: select RS-232 data of either 1 (default), or 2.

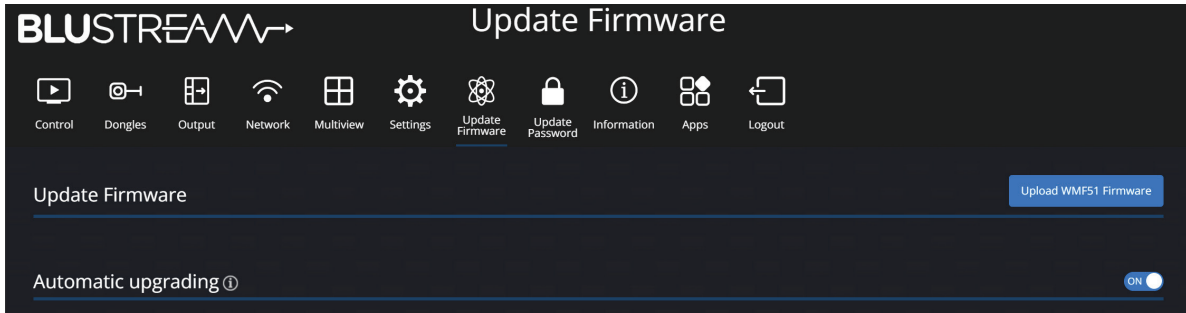
The Security Level section allows configuring of the important security functions:

- Dynamic code: enable to allow the WiFi password to change automatically after a specified time period. The duration for the password to refresh when there are no devices connected can be set on the Network page under Device Configuration -> Auto Password change
- Encryption of Data: Proprietary: enable or disable the encryption of transmitted data
- Changing the code deletes all temporary data from base unit: when password resets, remove data such as saved annotation pages and/or saved screenshots with annotations
- "Airplay" PIN code: enable or disable a pin code for Airplay devices. The pin code will pop-up on the WMF51 HDMI output for 8 seconds. Airplay device will pop-up a passcode screen, please enter the 4-digit passcode
- Telnet Password: enable or disable Telnet password function (note: the password will be the Admin password). Use format "Login <password>" to log in as Admin via Telnet
- Encryption of Data: AES-256 Bit + RSA-1024Bit: set the Dongle to WMF51 data transmission to use encryption method, this is a more secure communication between devices
- Password Changing Deletes and Removes Data of Base Unit: when admin password is changed, all saved logs are cleared
- "Miracast" PIN code: enable or disable a pin code for Miracast devices. Miracast pin code will follow WMF51's passcode found on the on screen display of the HDMI output
- Disable the Android APK: enable or disable the ability for Android devices to share content
- Disable "Airplay": enable or disable the ability for Airplay devices to share content
- Disable "Firmware Degrade": enable or disable the ability for the unit to load older firmware versions
- Disable Miracast: enable or disable the ability for Miracast devices to share content
- Disable Win/Mac APP: enable or disable the ability for Windows or Mac devices to share content
- Disable "Chromecast": enable or disable the ability for Chromecast devices to share content

Update Firmware Page

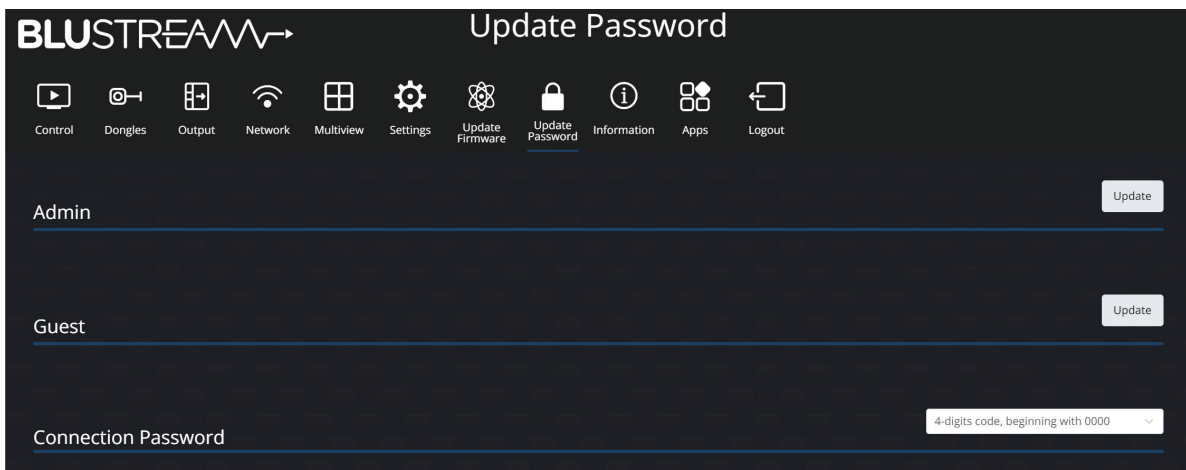
The Update Firmware page provides the ability to upload new firmware directly to the WMF51 by pressing the Upload WMF51 Firmware button and selecting the firmware file from your PC.

The Automatic upgrading function allows for dongles to have their firmware updated automatically when they are connected for pairing to the WMF51 USB pairing ports. This function can be enabled or disabled as required (ON by default - recommended).



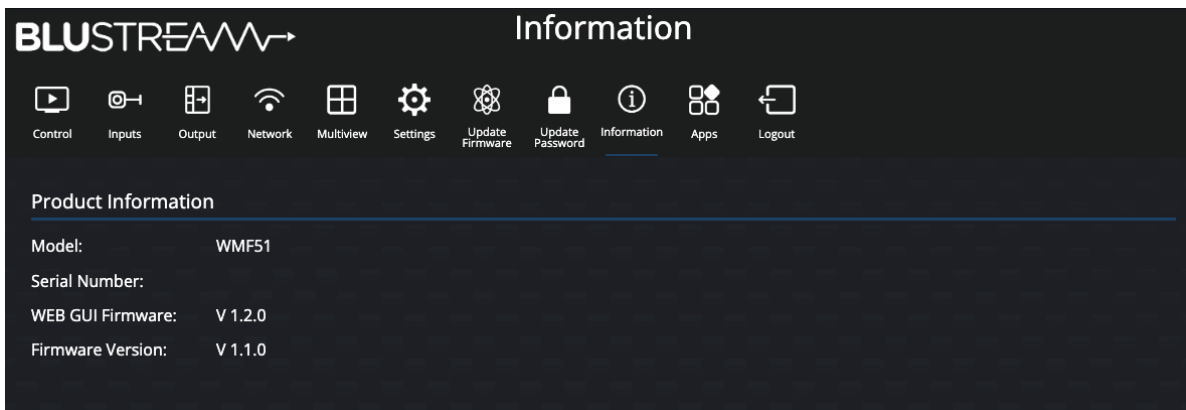
Update Password Page

The Update Password page allows updating of the Admin password, the Guest user password, or selecting the devices WiFi passcode to either be an 8 digit number starting with 0000 and then 4 random digits, or 8 random digits. The generated password will be displayed on the on screen display for devices to connect to the WMF51.



Information Page

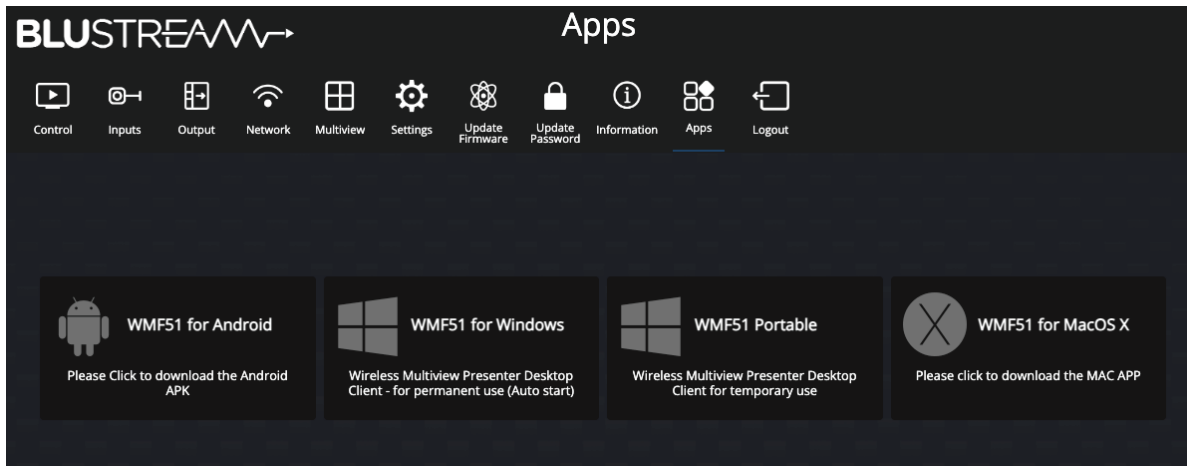
The Information page displays model name, serial number, web GUI firmware version and MCU firmware version of the WMF51.



Apps Page

The Apps page allows for a user to download an App for their specific device. The App can be useful in allowing a user who frequently utilises the WMF51 to connect with greater speed and performance. It is not necessary to utilise an App to connect and transmit video to the WMF51.

Individual Apps are available for Android, Windows (via installer or as a portable file) or MacOS X. By clicking on the corresponding icon it will download that App to your device.



Apps Download

The links in the Apps page of the WMF51 GUI will take the user directly to the relevant download for their device. The downloads can also be obtained from the WMF51 web-page in the Downloads section.

Specifications

- **Video Output Connectors:** 1 x HDMI Type A, 19-pin, female
- **Audio Output Connectors:** 1 x 3.5mm stereo jack (2ch analogue audio)
- **RS-232 Serial Port:** 1 x 3-pin Phoenix connector
- **TCP/IP Control:** 2 x RJ45, female (1000Mbps x1, 100Mbps x1)
- **USB Connector:** 1 x USB 3.0 Type A female
- **USB Pairing Connector:** 1 x USB 2.0 Type A female, 1 x USB Type C female
- **WiFi Antenna Connections:** 3 x SMA, female connector, MIMO antennas (2.4G & 5G, WIFI IEEE 802.11 b/g/n/ac up to 1200Mbps)
- **WiFi Encryption:** AES WPA PSK, WPA2 PSK
- **WiFi Specification for Europe only:** 2.4GHz EIRP < 20dBm
5.150~5.250GHz EIRP < 23dBm
5.725~5.850GHz EIRP < 13.98dBm
- **Dimensions (W x H x D):** 165mm x 22mm x 90mm (excluding antennas)
- **Shipping Weight:** 1.5kg
- **Operating Temperature:** 0°C to 45°C (32°F to +113°F)
- **Storage Temperature:** -20°C to 70°C (-4°F to +158°F)
- **Power Supply:** Class 0 IEEE 802.3af PoE PD or 12V/1.5A DC

NOTE: Specifications are subject to change without notice. Weights and dimensions are approximate.

Package Contents

- 1 x WMF51
- 1 x 3-pin Phoenix Connector (RS-232)
- 3 x Antenna
- 1 x Mounting Kit
- 1 x Quick Reference Guide
- 1 x 12V/1.5A DC Power Supply

Power Supply Specification:

Model: GME18A-120150FXR
Rated Input: 100-240vAC 50/60Hz 0.8A
Rated Output: 12.0v 1.5A 18.0W
Includes: US changeable plug, EU changeable plug, AU changeable plug, UK changeable plug
Manufacturer: GME Technology Co.,Ltd
Address: Building A19, Tantou West Industrial Park, Songgang Street, Baoan District, Shenzhen, Guangdong

Maintenance

Clean this unit with a soft, dry cloth. Never use alcohol, paint thinner or benzene to clean this unit.

RS-232 Configuration and Telnet Commands

The WMF51 can be controlled via serial and TCP/IP.

The default RS-232 communication settings are:

Baud rate: 57600

Data bit: 8

Stop bit: 1

Parity bit: none

The following pages list all available serial / IP commands.

Commonly used Serial Commands

There are several commands that are commonly used for control and testing:

STATUS	Status will give feedback on the switcher such as outputs on, type of connection etc...
PON	Power on
POFF	Power off
OUTON/OFF	Toggleing the main output ON or OFF as required
Example:-	OUTON (This would turn the main output on)
OUT FRYy	(yy is the input)
Example:-	OUTFR04 (This would switch the main output to source input 4)

Common Mistakes

- Carriage return – Some programs do not require the carriage return where as other will not work unless sent directly after the string. In the case of some Terminal software the token <CR> is used to execute a carriage return. Depending on the program you are using this token maybe different. Some other examples that other control systems deploy include \r or 0D (in hex)
- Spaces – Blustream commands do not require space between commands unless specified. There may be some programs that require spacing in order to work.
 - How the string should look is as follows OUTON
 - How the string may look if spaces are required: OUT{Space}ON
- Baud rate or other serial protocol settings not correct

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
? / HELP	Print help information
STATUS	Print system status and port status
INSTA	Print All Input Status
OUTSTA	Print All Output Status
CTRLSTA	Print All Control Status
AUDSTA	Print All Audio Status
SECSTA	Print All Security Status
NETSTA	Print All Network Status
PON/OFF	Set System Power On Or Off
KEY ON/OFF	Set System Key Control On Or Off
RESET	Reset System To Default Setting
REBOOT	Set System Reboot
OSD HOME	Force to Home Screen
OUT MUTE ON/OFF	Set Output Video Mute On Or Off
OUT OSD ON/OFF	Show the base device name and password when mirroring
OUT ooo FR yyy	Set Output ooo From Input yyy
OUT ooo W widx FR iii	Set Output ooo Multiview Window widx From Input iii ooo = 00 all output widx = 01-04 Multiview Window iii = 01-n Select input
AUTO LAYOUT yy	Set Auto Layout Mode To yy yy=[01]: Single Source yy=[02]: Multiview
LAYOUT TRIPLE DF yy	Set Default Triple Window Layout To yy yy=[03]: Triple-T yy=[04]: Triple-L yy=[05]: Triple-B yy=[06]: Triple-R
LAYOUT QUAD DF yy	Set Default Quad Window Layout To yy yy=[07]: Quad yy=[08]: Quad-B yy=[09]: Quad-R yy=[10]: Quad-T yy=[11]: Quad-L
OUT LAYOUT yy	Set Multiview Window Layout To yy yy=[01]: Single Source yy=[02]: Dual yy=[03]: Triple-T yy=[04]: Triple-L yy=[05]: Triple-B yy=[06]: Triple-R yy=[07]: Quad yy=[08]: Quad-B yy=[09]: Quad-R yy=[10]: Quad-T yy=[11]: Quad-L

COMMAND	ACTION
OUT xx RES rr	Set Output Scaler Resolution To rr xx = [00..01]: Select One Output Port rr = 00: Auto rr = 01: 720P@50Hz rr = 02: 720P@60Hz rr = 03: 1080P@30Hz rr = 04: 1080P@50Hz rr = 05: 1080P@60Hz rr = 06: 4K@30Hz rr = 07: 4K@50Hz rr = 08: 4K@60Hz
SEC xx ON/OFF	Set Security Level every xx = 01: Dynamic code : Change code xx = 02: Encryption of Data:Proprietary xx = 03: Changing the code deletes all temporary data from base unit xx = 04: "Airplay" PIN code xx = 05: Telnet password xx = 06: Encryption of Data: AES-256 Bit + RSA-1024Bit xx = 07: Password changing deletes and removes the data of the base unit xx = 08: "Miracast" PIN code xx = 09: Disable the android APK xx = 10: Disable "Airplay" xx = 11: Disable "Firmware Degrade" xx = 12: Disable Miracast xx = 13: Disable Win/Mac APP xx = 14: Disable "Chromecast"
AUD OUT xx	Audio output selection xx = 00 Set output audio to Analogue and HDMI. xx = 01 Set output audio to Analogue only. xx = 02 Set output audio to HDMI only.
AUDIO MODE yy	Set Output Audio From Input yy yy=[01]: Audio Mixer yy=[02]: Single Input source yy=[03]: Single Input Window yy=[04]: Single Input First IN yy=[05]: Single Input Last IN
AUDIO MUTE yy ON/OFF	Mute input when in Audio Mixer Mode yy=[1-15] Connected Input Devices
AUDIO FR yy	Set Output Audio From Input yy [Can only use on Single Audio Source yy=[01]: input 1 yy=[02]: Input 2 yy=[03]: Input 3 yy=[04]: Input 4 yy=[05]: Window 1 yy=[06]: Window 2 yy=[07]: Window 3 yy=[08]: Window 4
VOL w	Set Volume Level w On Output

RS-232 Configuration and Telnet Commands

COMMAND	ACTION
INFORCE xxx	xxx = 000 : Stop fullscreen sharing xx = 001-00n Fullscreen selected Input xx = IP Address xx = Name xx = MAC xx = Serial Number
STBYON/OFF	Enables / Disables Auto Standby mode
STBDLY xx	Set Auto standby Delay xx = 00 STBYOFF xx = 01-30 = time in minutes
OUT SIDEBAR ON/OFF	Statusbar show/Statusbar hide
PAIR	Get button info
PAIRREMOVE xx	Remove paired dongle
RS232BAUD x	Set RS232 Baud Rate To x x = 1 2400, 2 4800, 3 9600, 4 19200, 5 38400, 6 57600 (Default), 7 115200
LAN yy DHCP ON/OFF	Set Auto IP(DHCP) On Or Off
LAN yy IP xxx.xxx.xxx.xxx	Set IP Address
LAN yy GW xxx.xxx.xxx.xxx	Set Gateway Address
LAN yy SM xxx.xxx.xxx.xxx	Set Subnet Mask Address
LAN yy TCPPORT xxxx	Set TCP/IP Port
LAN yy RB	Set Network Reboot And Apply New Config!!!
LAN yy DNS xxxx	Set DNS Domain Name To xxxx yy=1 LAN1 yy=2 LAN2
WIFI ON/OFF	Turn Wifi Hotspot On or Off
WIFI FREQ ff CH ccc	Set Wifi Hotspot Frequency And Channel ff = 2: 2.4Ghz ff = 5: 5Ghz ccc = For 2.4Ghz: 1-11 ccc = For 5Ghz: 36, 40, 44, 48, 149, 153, 157, 161, auto
WIFI SSID xxxx	Set Wifi SSID
WIFI PASS xxxx	Set Wifi PASS
REFRESH PASS xx	Change Wifi Password xx = 00: Change password xx = 01: 5 mins xx = 02: 30 mins xx = 03: 1 hour xx = 04: 24 hours xx = 05: Never

Certifications

FCC Notice

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.

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

CANADA, INDUSTRY CANADA (IC) NOTICES

This Class B digital apparatus complies with Canadian ICES-003.

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CANADA, AVIS D'INDUSTRY CANADA (IC)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003.

Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

CORRECT DISPOSAL OF THIS PRODUCT

This marking indicates that this product should not be disposed with other household wastes. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmentally safe recycling.





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