Marshall

Broadcast A/V Division

RCP-PLUS

Camera Controller



User Manual

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Chapter 1: Introduction

1.1: Overview

The **Marshall RCP-PLUS** is a professional camera controller designed for use in live video productions. Its features are optimized for use with Marshall's popular miniature and compact cameras. A large 5" LCD user-friendly touchscreen provides quick selection of camera functions. Two high-precision rotary controls allow fine-tune adjustment of camera exposure, video levels, color balance and more. Camera adjustments can be made "live" without user menus appearing on screen. A variety of cameras may be connected via Ethernet and traditional serial RS485 at the same time.

1.2: Main Features

- 5-inch TFT LCD Touchscreen with two fine-tune adjustment knobs
- Make camera adjustments without menus appearing on-screen
- Visca-over-IP and Visca via serial RS485 in one unit
- Mix-and-match camera select buttons between control types. No mode changing!
- Up to 100 total cameras may be assigned. (RS485 connection limited to 7).
- IP cameras may be automatically searched and discovered
- Automatic discovery of available IP cameras on a network
- Quickly control exposure, shutter speed, iris, white balance, focus, zoom and more
- Powered via PoE or included 12 volt power supply
- Quick, easy field-update via USB thumb drive

1.3 What's in the Box

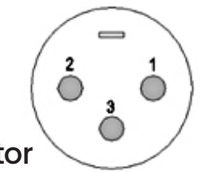
- **Marshall RCP-PLUS** Camera Controller Unit
- Mounting extender "wing" and screws
- XLR 3-pin connector adapter to screw terminal
- + 12 Volt DC Power Adapter - Universal 120 – 240 volt AC input

Chapter 2: RCP-PLUS Interfaces & Specifications

2.1: Interfaces



RS-485 XLR Connector



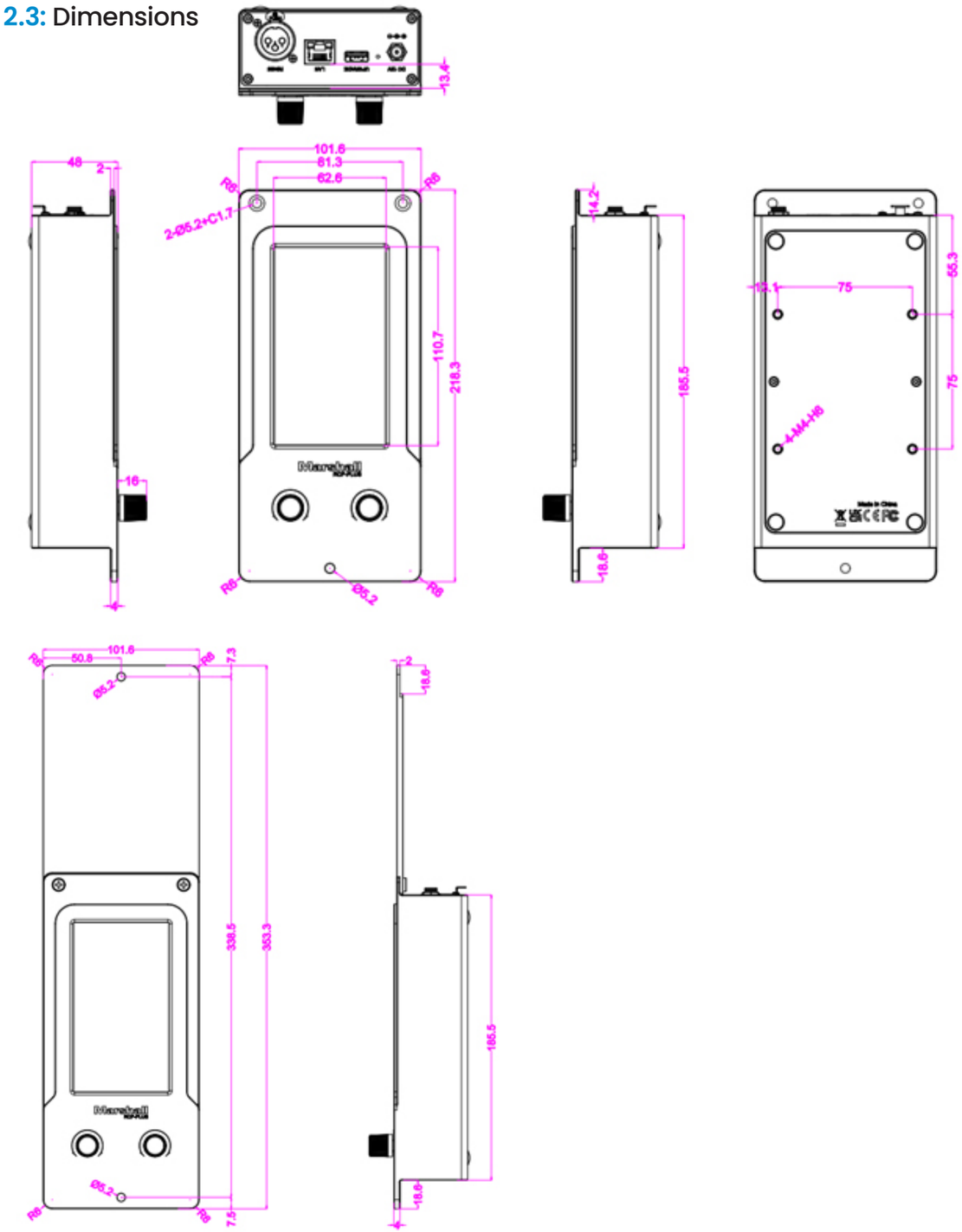
Pin #1	N/A
Pin #2	RS485 -
Pin #3	RS485 +

1	DC 12V Power 5.5mm x 2.1mm coaxial locking connector – Center +
2	USB Port（For update via thumb drive）
3	Gigabit Ethernet LAN port (VISCA-IP control and PoE power)
4	3-pin XLR for RS485 connection（VISCA） S crew-terminal breakout adapter included

2.2: Specifications

CONNECTIONS	3-pin XLR Receptacle	For RS485 serial control
	USB 2.0	For Product Update
	LAN RJ-45	VISCA-over-IP control and POE power supply
	Control Type	IP: VISCA-over-IP RS485: VISCA
	RS485 Serial Baud Rates	4800，9600（default），19200，38400，115200
USER INTERFACES	Display	5-inch TFT LCD touch screen
	Brightness	400 cd/m²
	Resolution	480 x x854
POWER	Power	DC 12V or PoE
	Power Consumption	Less than 3 Watts　2.5 Watts typical
ENVIRONMENT	Working Temperature	-20℃~70℃　-4°F~158°F
	Storage Temperature	-30℃~80℃　-22°F ~175°F
Mechanical	Dimension	101.6mm (L) × 218.3mm (W) × 48mm (H) 4.0” (L) x 8.6” (W) x 1.9” (H)
	Weight	725g　1.6lbs

2.3: Dimensions



Chapter 3: Assigning Cameras via RS485

3.1 Wiring

Use either the included 3-pin XLR to 2-pin terminal adapter cable or build a cable using a 3-pin XLR plug. RS485 needs only two wires to communicate. *For tips on wiring for RS485, see chapter 8.*

3.2 Power Up

Connect the included 12V Power Supply or Ethernet with PoE to the RCP-PLUS. The unit will display the main page after approximately 10 seconds. There are 10 buttons available for camera assignment in this Group. This may be all that is needed when using RS485 connections. (Visca protocol is limited to 7 cameras). IP connectivity allows up to 100 cameras in 10 pages (*see Section 4 below*).

3.3 Assigning a Camera to a button.

The upper left button will be highlighted. If not, press and hold a blank button for 3 seconds and release.



Step 1. Press VISCA over RS485. The camera add page appears.

Step 2. Press Select Camera Model

Step 3. Select the camera model number that most closely matches the Marshall camera that is connected.
For example: select CV36/CV56* when using a CV368.*

Note: Selecting Universal is only recommended for 3rd party products. The RCP-PLUS can control only functions that exist in the attached camera even though that function may appear as a choice on the display.

Step 4. **The RCP-PLUS** assigns the first camera "Label" as **1**. If the camera will be referred to as some other number during live production, the label on the button may be changed to a number or letter as desired. Press **RCP Label**, turn the left knob clockwise for numbers, counterclockwise for letters. Choose one. Next, press **Camera ID**, turn the right knob to set the ID number to match the ID number that is set in the camera. **With Visca, each camera much have a unique ID number from 1 – 7.**

Step 5. Press **Select Output Format** to set the desired camera output format and **Frame Rate** by making selections on the next page.

Step 6. Press **Apply** to make these changes active. The display will change to the White Balance page (WB is highlighted) and is ready for use.

Step 7. Assuming the camera is connected and powered, a quick check can be performed by pressing the **OSD** button, then press **On**. The camera's on-screen menus should appear in the camera's video output. Press **On** again once or twice to clear the menu display.

If this quick check worked, normal operation can begin by selecting the desired function from the right side of the screen (White Balance, Exposure, etc.). **If the quick check did not work, check all connections, try having only one camera connected, check that the Visca ID # in the RCP-PLUS and the camera are the same, and try swapping + and – at one end of the cable.**

Chapter 4: Connecting RCP to a Network

Choose DHCP or Static Address

Setting DHCP mode (Automatic IP Address)

To control cameras via IP, it is necessary to first connect the RCP-PLUS to the local network. This means assigning an IP address, Subnet Mask and Gateway. If a Static address is not required, then it is a simple process of placing the controller in DHCP (automatic address) mode, connecting it physically via a CAT 5 or 6 cable to the network and moving on to section

4.1 Connecting Cameras via IP.

To place the RCP-PLUS in DHCP mode, tap on any blank square then tap on Net. Now tap on the DHCP button in the middle of the screen so that it says DHCP ON, then Tap Net again.

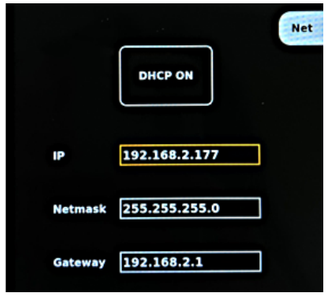
Static Address

If it is desired to assign a Static IP address to the RCP-PLUS controller, this can be accomplished in either of two ways:

- Through the RCP-PLUS touch screen. This method would be chosen if it is not possible to access a computer that is on the local network. Setting a network address via the touch screen will require knob turning, button tapping and some patience.

- Through a web browser. If a network computer is available, this method is quicker as address numbers may simply be typed.

To use the Web Browser, jump to section 5. Web Browser Setup.
To use the touch screen, continue with the steps below.
On the touch screen, tap any blank square, tap **Net**, then tap the **DHCP** button so that it says **DHCP OFF**.



This will cause the IP address box to have a highlighted border and the default address of 192.168.2.177 will appear there. (If a Static address has been set previously, that address will appear instead).

The address may be changed by following this step-by-step process:

Step 1. Press down on the Right Knob. An arrow will appear to the left of the address indicating that the first part of the address is to be changed. If this part of the address is OK (for example 192), turn the Right Knob until the arrow is pointing to the portion of the address that needs to be changed.

Step 2. Turn the Left Knob until the desired number appears. Turn the Right Knob again to move the arrow to the next 3 digits. When the desired address has been entered, press down on the Right Knob to complete the process. This is indicated by the numbers turning white and the border around the numbers being highlighted with a color.

Step 3. Now, turn the Right Knob again to select **Netmask** or **Gateway**. Repeat the process above to enter new values into those boxes. Press **Net** again to finish. This sets the new Static address as the Default address.

Chapter 5: Assigning Cameras via IP

Now that the RCP-PLUS is connected to the local IP network (**section 4.1 above**), cameras can be assigned to control buttons and labeled.

Press and release an available square button (2 seconds). The camera add page will appear.

TAP the **VISCA over IP button**. The message "*Searching Visca IP*" will appear for a moment.



An IP address will appear in a window. When more than one IP camera is on the network, tap the address to see a list of all camera addresses. Choose the address of the camera that is to be assigned by sliding up or down on the list to highlight the desired camera.

Tap **Choose** to select a camera or **Cancel** to start again.

Step 1. Press Select Camera Model

Select the camera model number that most closely matches the Marshall camera that is connected. For example: select CV37*/CV57* when using model CV374.

Note: Selecting Universal is only recommended for 3rd party products. The RCP-PLUS can control only functions that exist in the attached camera even though that function may appear as a choice on the display.

Step 2. The RCP-PLUS names the first camera button label as "1". If the camera will be referred to as some other number during live production, the label on the button may be changed to a number or letter as desired. Press RCP Label, turn the left knob clockwise for numbers, counterclockwise for letters.

Step 3. Press **Camera ID**, turn the right knob to set the ID number to match the ID number that is set in the camera. With Visca, each camera much have a unique ID number from **1 – 7**. *It is important that this number matches the Visca ID number set in the camera.*

Step 4. Press Select Output Format to set the desired Output Format and Frame Rate.

Step 5. Press **Apply** to make all changes active. The display will change to the White Balance page (WB is highlighted) and is ready for use.

Confirmation: A quick check can be performed by pressing the OSD button, then press **On**. The camera's on-screen menus should appear in the camera's video output. Press **On** again once or twice to clear the menu display.

If this quick check worked, everything is OK and normal operation can begin by selecting the desired function from the right side of the screen (White Balance, Exposure, etc.).

If the quick check did not work, check all connections, confirm that the video being monitored is from the camera being controlled.

Chapter 6: Web Browser Operation

6.1 Logging in

To access the RCP-PLUS via a web browser, simply enter the RCP IP address into a browser window (Firefox works reliably). The log-in screen will appear. Enter the Username **admin** and the password **9999**.

A pop-up window allows changing the password and ID at this point or select Not Now to move on.

The Web Browser interface is provided as an assistant to simplify two setup functions:

- Set a Static IP address in the RCP-PLUS

- Quickly assign IP cameras to the RCP-PLUS

The Web Browser interface does not assist with an RS485 connection and it does not provide camera control functions. Its purpose is quite simple.

6.2 Setting a Static address.

Step 1. Select the Network tab at the top of the page.

Step 2. Check that the DHCP button is to the left which means DHCP mode OFF, Static mode **ON**.

Step 3. Enter the desired IP, Gateway and Subnet Mask into the fields provided.

Step 4. Click the Submit button. Done!

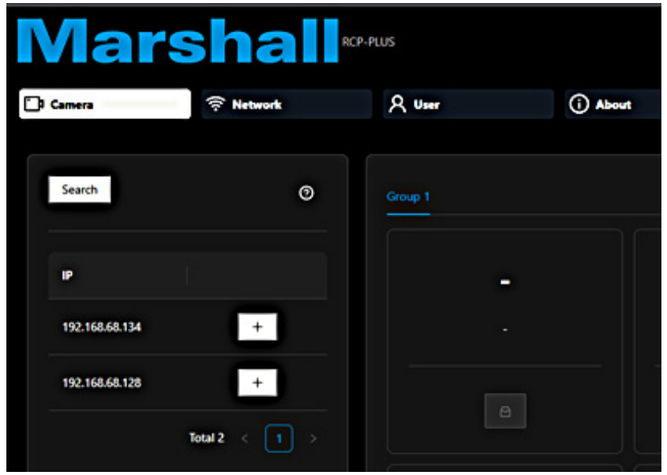
The Web Browser interface will restart with the new address.

6.3 Assigning an IP Camera to a button "label" on the RCP-PLUS

Step 1. Select Camera tab at the top of the page.

Step 2. Click on the Search button. IP cameras on the local network will be listed.

Step 3. Click on the "+" next to a Camera IP address. A blue icon will appear on the page.



Step 4. **Click that to assign the camera to a button.**

This pop up form will appear:



Step 5. **Enter the following information:**

Label: Enter a number or letter to appear on a camera button

IP: The camera IP address appears here automatically

ID: Enter any single number or letter (future application)

Model: Select the camera model type from the pulldown list

Resolution: Select the desired video output format

FrameRate: Select the desired video output frame rate

Step 6. **Click the Save button**

Confirmation. Check that the RCP-PLUS shows the camera label in the assigned button.
Continue these steps until all cameras have been assigned.
When finished, click the **Logout** button in the upper right corner of the page

Chapter 7: Screen Descriptions

Camera control functions are organized by buttons on the right side of the display. The images below are representative examples of the types of controls that are available. The actual screen appearance may be different based upon the camera model that has been selected.

Adjustments are divided into two columns. Each column has an adjustment knob below it. Two functions may be selected at the same time and adjusted using the knob associated with that column. For example, Shutter Speed and Gain may be selected and adjusted at the same time.

Sometimes a button will appear in gray, indicating that the function is not available. This can appear when the camera model does not support the function or when the function has been overridden by another control. An example of this would be when White Balance is in Auto Mode, Red and Blue level adjustments will be in gray.

7.1 WB White Balance

All controls associated with camera color processing appear on this page.



7.2 EXP Exposure

This page controls how the camera processes varying light levels.



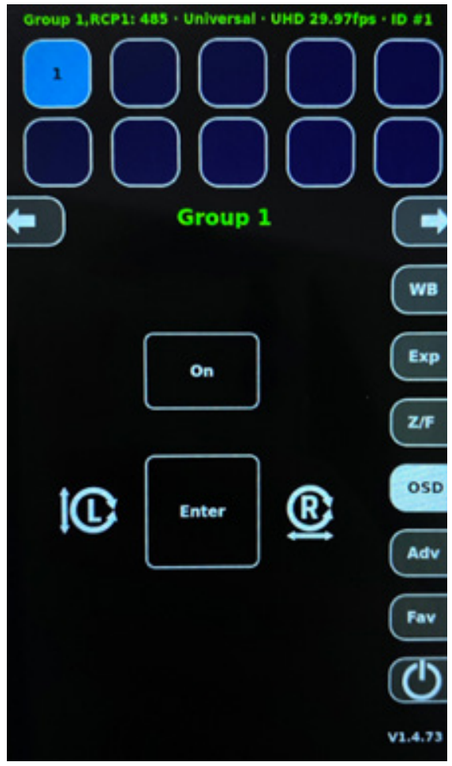
7.3 Z/F Zoom and Focus

Simple controls are provided here for use with cameras that have internal motorized lenses. This is also compatible with many PTZ cameras though joystick control is usually preferred.



7.4 OSD On-Screen Display

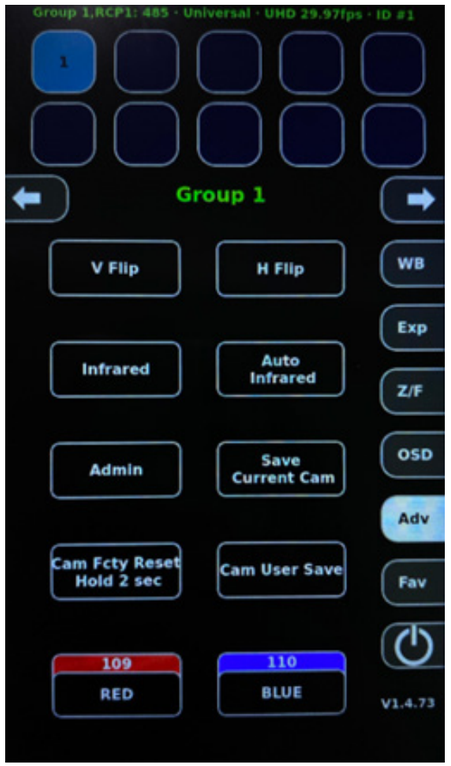
Selecting OSD then the On button will bring up the camera's live video output (careful!). Turning the Left knob will move up/down in the menu system, Enter selects an item, the Right knob adjusts the item. With some cameras, it may be necessary to spin the left knob several times.



7.5 Adv Advanced

Special functions are collected on this page as well as access to Administrator Level functions.

See section below for details.



7.6 Fav Favorites

Commonly used Exposure and Color adjustments are collected on one page.



7.7 Power Symbol



Standby Mode

Press this button 5 seconds to blank the screen to avoid unwanted button presses. Press the screen anywhere for 5 seconds to return to normal operation.

7.8 Adv Advanced Functions Page

Flip – Press to flip or mirror, press again to cancel
Infrared – On most cameras this is simply black & white mode
Save Current Camera – Save current camera setting to a named profile

Step 1. Press **Yes**

Step 2. Touch a check box

Step 3. Press **Save**

Step 4. Enter a name using Left & Right knobs

Step 5. Press **Accept**

A saved profile may be recalled when assigning a new camera to a button.
(*See section 3 or 5 Assigning Cameras*).

An existing Profile may be Loaded to the camera or Saved to a new Profile.

Cam Fcty Reset – This triggers a Factory Reset to the connected camera (not the RCP). Careful**!**

Admin – Administration setting special functions

Basic Mode – Limits RCP panel to only essential functions

Step 1. Enter a 4-digit Pass code using knobs and press **Lock**. A simplified page appears allowing only exposure adjustments

Step 2. To return to normal function, press **Unlock**, enter the Pass code, press **Unlock**.

Factory Reset – This clears all settings and all camera assignments. It does not erase saved Profiles and does not change the IP address.

Sync Camera(s) – Sync (match) cameras to the current RCP adjustments.

Baud Rate – For RS485 connections only.

Chapter 8: Tips and Best Practices for RS485 Connections

RCP-PLUS is designed to work under adverse conditions and to be simple to implement.
Key features:

- Simple, two-wire balanced connections (like balanced audio). Ground wire is not required.
- Multiple devices can be connected across the same pair of wires. There is normally no need for hubs, active repeaters, etc.
- The preferred wire type is simple twisted pair. Doorbell wire, a pair inside CAT5/6 cable, etc.
- Shielded wire is OK but attaching the shield at only one end is best practice. This is especially true when cameras are powered from a different source than the controller which could lead to AC current flowing through the shield.
- Speaker wire, AC wire is not recommended due to no twist. Twisting rejects interference which becomes important for long wires.
- While many devices can be connected at once, the use of Visca protocol limits the number of devices (cameras) to 7.
- RS485 connections are usually labeled "+" and "–". This does not indicate power, only data polarity so it is safe to connect wires backwards, they simply won't work that way.
- Marshall Miniature and Compact camera models follow the rule of "plus" to "plus" and "minus" to "minus". That is, the connection marked + at the camera should go to the connection marked + at the controller.
- The most common reason a camera does not respond to the controller is that the Visca ID # in the camera does not match the Visca ID # set in the controller.
- The second most common reason is that the wire polarity is reversed. Some 3rd party cameras follow a + to – rule which can be confusing. This is why simply swapping the connections at one end of the wire is worth trying when an RS485 system does not work.
- If one camera on a string is connected in reverse, it will stop all devices on the string from communicating. It is best to test with just one camera before attaching the rest of the cameras to a string.
- Several Baud rates (data speed) are selectable with RS485. All devices on a string must be set to the same rate. The default value is always 9600. There is no real advantage to using higher Baud rates since camera control information is very small and undemanding. In fact, a higher Baud rate reduces reliability over long wire runs.
- A common question is whether RS485, RS422 and RS232 can be connected together. RS485 and RS232 are not compatible without a converter and, even then, they may not work together. Some devices using RS422 will work with RS485. Refer to the manufacturer of those devices for details.
- Two controllers can often operate on the same RS485 system. The RS485 specification states that this is possible. However, Visca protocol assumes a controller has ID #0, which leaves ID # 1-7 for cameras. Conflicting may occur when using 3rd party controllers.

For Warranty information, please refer to Marshall website page:

marshall-usa.com/company/warranty.php