

# JVC Connected Cam Studio RCP

RM-LP250S

RM-LP250M

Preliminary Version



# USER GUIDE | NOVEMBER 2019

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# Important Information

## Legal Notice

### **Attention:**

The content and instructions of this document are subject to change without prior notice. Updates will be added to the manual.

Best effort have been conducted to verify the correctness of the content in this manual, but no statement, information, or recommendation in this manual shall constitute formal guarantee of any kind, expressed or implied. We shall not be held responsible for any technical or typographical error in this manual.

The product and graphic appearance demonstrated in this manual is for reference only, and may differ from the actual appearance of your device and associated software applications.

Use of this manual and the subsequent result shall be entirely on the user's own responsibility.

Reference to product names of other companies in this manual are the trademark or registered trademark of the respective companies.

## Warnings

- If the product does not work properly, please contact your dealer. Never attempt to disassemble the controller yourself (we will not assume any responsibility for problems caused by unauthorized repair or maintenance)
- This installation should be made by a qualified service person and should conform to all the local codes
- When shipping, the controller should be packed in its original packaging
- Make sure the power supply voltage is correct before using the controller
- Do not drop the controller or subject it to physical shock

## Maintenance Precautions

- If there is dust on the controller and the displays, remove the dust gently using a oil-free brush or dust blowing apparatus

- Do not use organic solvents, such as benzene or ethanol when cleaning the surface of the controller

## Regulatory Compliance

### **For private households: Information on Disposal for Users of WEEE**

This symbol on the product(s) and / or accompanying documents means that used electrical and electronic equipment (WEEE) should not be mixed with general household waste. For proper treatment, recovery and recycling, please take this product(s) to designated collection points where it will be accepted free of charge.



Alternatively, in some countries, you may be able to return your products to your local retailer upon purchase of an equivalent new product.

Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling.

Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with your national legislation.

### **For professional users in the European Union**

If you wish to discard electrical and electronic equipment (EEE), please contact your dealer or supplier for further information.

### **For disposal in countries outside of the European Union**

This symbol is only valid in the European Union (EU). If you wish to discard this product please contact your local authorities or dealer and ask for the correct method of disposal.

## What's In the Box



- 1 x RM-LP250M or RM-LP250S RCP Controller
- 1 x Power Adaptor including power plug
- 1 x 2m CAT.5E Ethernet cable
- 1 x 1m USB 2.0 Type A/Type Micro B cable

## Overview

This user guide is suitable for the following models

- RM-LP250M
- RM-LP250S

- High-quality encoders with RGB backlight for function identification
- Camera ID display with OLED technology
- RGB tally bar
- Preview button for GPI or control of video router
- Four-way buttons with OLED legends for dynamic labelling and functionality
- Pressure and direction sensitive joystick pad
- Master black knob with dedicated OLED display
- Classic iris joystick or encoder wheel with display and LED bar
- Industry standard form factor (4"/102mm wide)
- Sits console style on table top or mountable in OB van rack
- Power: DC 12V, PoE (48V IEEE 802.3af )
- Firmware Upgrade via USB2.0
- DB9 (EXT I/O) connector
- Option for changing configuration layout

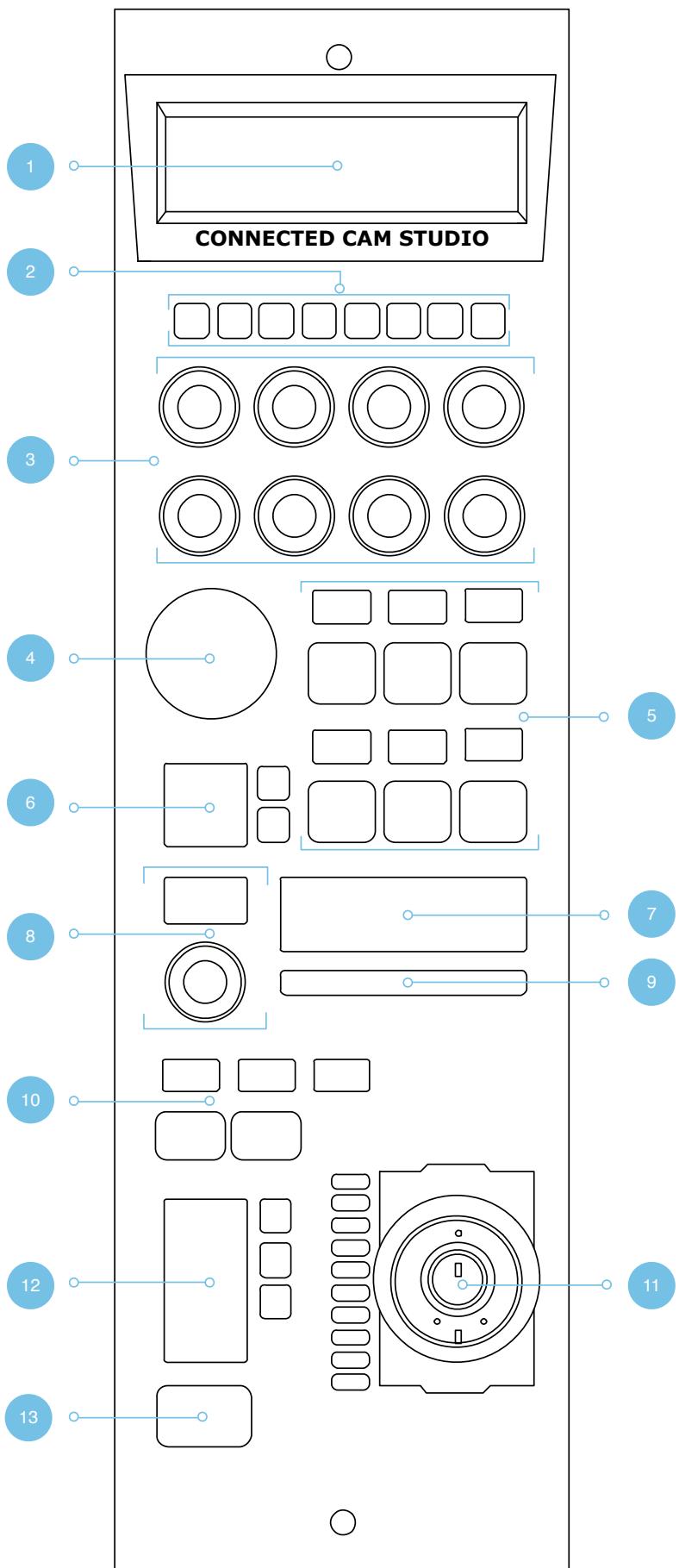
## Features

- Support for JVC GY-HC900 including
  - Iris control
  - Zoom + focus control (if lens supports it)
  - Master Black control
  - Gain Settings
  - AE Levels
  - Shutter mode and speed
  - WB Mode, WB One Push and WB Paint
  - Detail
  - Tally
  - Menu and Menu Navigation
  - Character Output Mix
- Super crisp window with large display tiles for settings

# Controller Diagrams

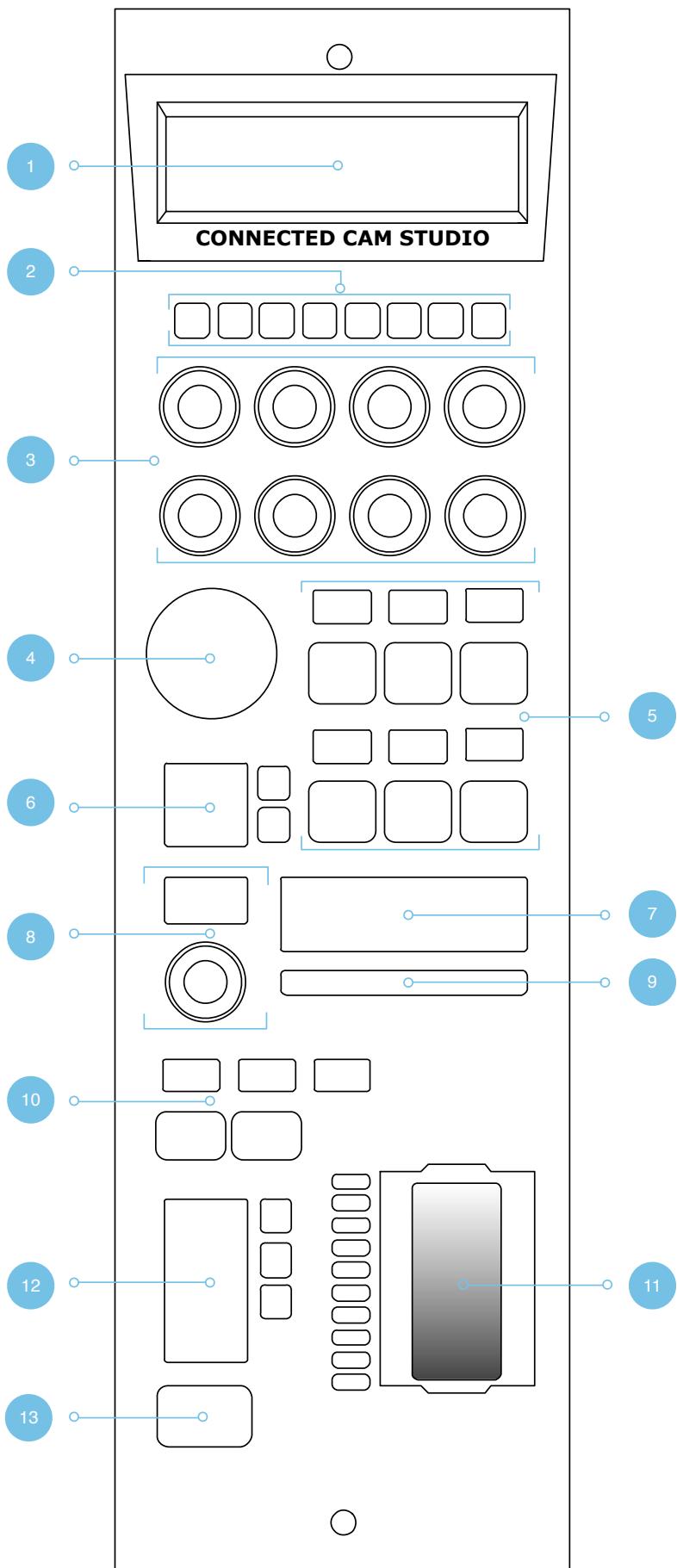
## Top - RM-LP250S

1. Large display with 8 tiles. Functions associated with encoders from group 3
2. 8 user buttons
3. 8 rotary encoders with RGB backlight for function identification
4. Elastomer joypad
5. Group of 6 4-way buttons with associated displays
6. Recording + streaming buttons with associated display
7. Camera ID display
8. Master black encoder with associated display
9. Tally bar
10. Shift and system status
11. Joystick with master black ring and push button
12. Iris control parameters
13. 4-way button for Preview

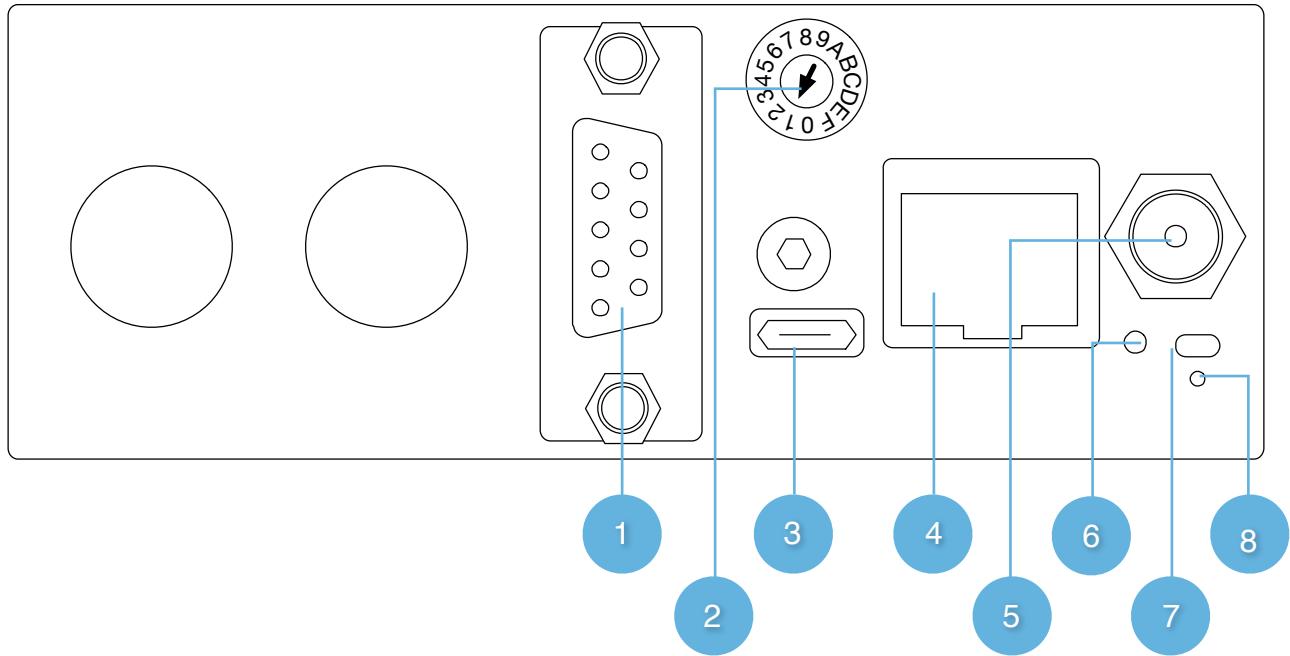


## Top - RM-LP250M

1. Large display with 8 tiles. Functions associated with encoders from group 3
2. 8 user buttons
3. 8 rotary encoders with RGB backlight for function identification
4. Elastomer joypad
5. Group of 6 4-way buttons with associated displays
6. Recording + streaming buttons with associated display
7. Camera ID display
8. Master black encoder with associated display
9. Tally bar
10. Shift and system status
11. Iris wheel
12. Iris control parameters
13. 4-way button for Preview



## Backside



### 1. **DB9 (EXT I/O)**

For external routing/tally systems

### 2. **Camera Selector**

Used on RM-LP250S to select camera number for Camera ID display

### 3. **USB 2.0 Port**

Used for firmware upgrade and IP settings only

### 4. **IP Network RJ45 Port**

For IP Control with PoE (48V IEEE 802.3af)

### 5. **12V DC Power Supply**

Connect the supplied DC Power adaptor

### 6. **Status LED**

For monitoring and debugging

### 7. **Reset button**

Controller reset - same as taking the power of the controller

### 8. **Programming mode reset**

Only to be used if contact with support have been established

# System Configuration

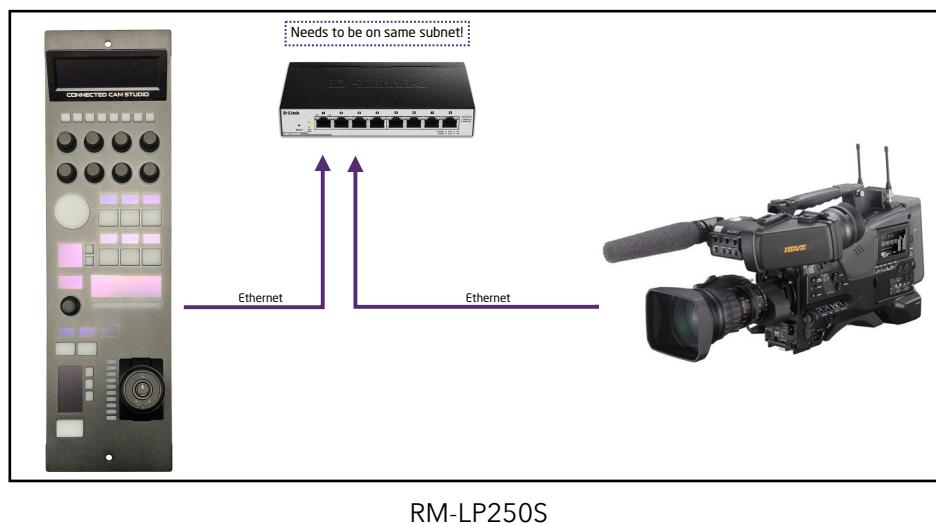
## Connection

The RM-LP250S and the RM-LP250M communicates to camera(s) via wired ethernet communication. This is the supported case.

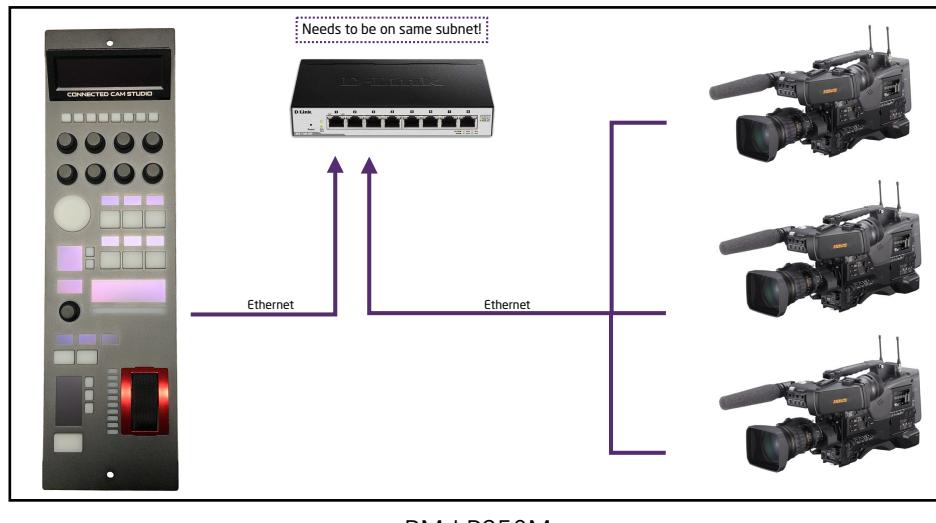
The controllers connects to the cameras and changes settings on the camera itself. No video signal processing are done on the RM-LP250S or the RM-LP250M.

The RM-LP250S is designed to control **one** camera.

The RM-LP250M is designed to control **up to 3** cameras at the same time.



RM-LP250S



RM-LP250M

## Power

- Use only the DC power adapter supplied with the controller. Do not use any other DC power adaptor
- If using PoE to power the controller, make sure the network switch supports PoE (48V IEEE 802.3af)
- Ensure the PoE provider has sufficient power budget to power the controller. Otherwise it will not function properly

# Camera Settings

## Network Interface

If the camera does not have a native ethernet port directly on the camera body, a USB/Ethernet adapter must be utilized from the USB2.0 HOST port.



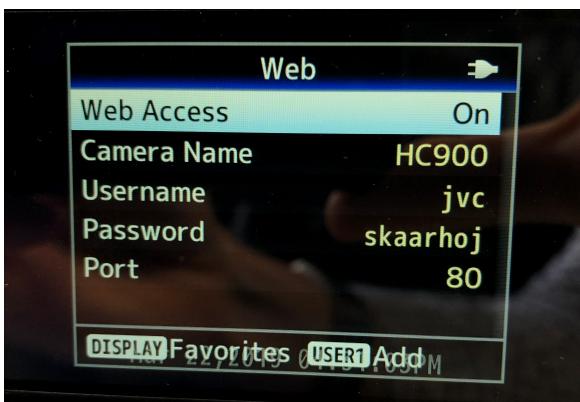
## Authentication

Web access **must** be enabled on the camera with

Login Name: jvc

Login Password: skaarhoj

In order for the controllers to authenticate with the cameras. The above login name and login password are set by default on the controllers. Please consult the camera manual for instructions in setting web access.



## IP settings

A static IP address must be set on the camera  
Please consult the camera manual for instructions.

## Firmware

The JVC GY- HC900 must have the firmware version **v0230-0217** or newer.

# Controller Settings

In order to change IP or to update the Firmware on the controller the Firmware Updater Application is used: <https://www.skaarhoj.com/support/firmware-updater/>

The application is available for PC, Mac and Linux.

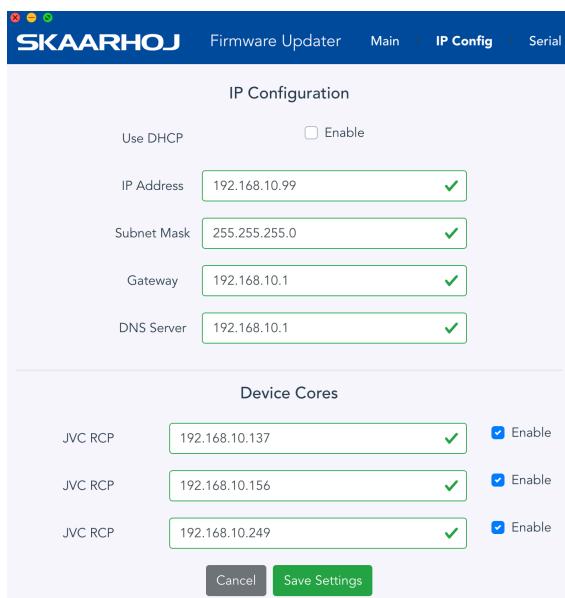
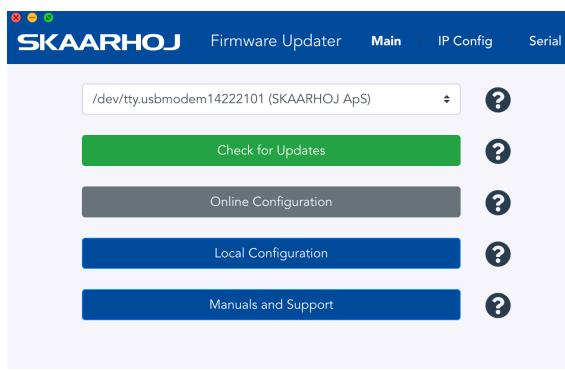
## IP Settings

1. Download and install the Firmware Updater Application
2. Connect the USB cable to the controller and to the computer. Power the controller
3. Press "IP Configuration"
4. Change IP address and press "Save Settings"

The controller reboots and will look for cameras on the provided IP addresses.

The controller and the camera must be on the same subnet.

Avoid having Device Cores activated which does not connect to an actual camera.

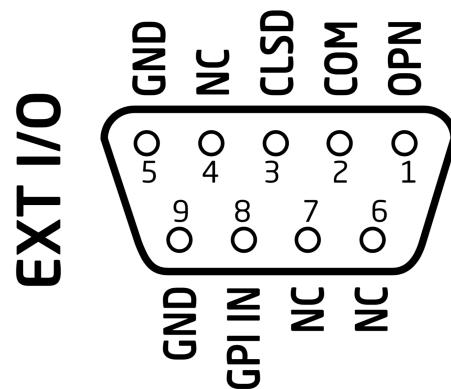


## Firmware Update

1. Download and install the Firmware Updater Application
2. Connect the USB cable to the controller and to the computer. Power the controller
3. Press "Check for Updates"  
*This generates a new firmware file and downloads it to the controller. It will reboot once completed.*

## DB9 (EXT I/O)

This is the pinout for the DB9 connector



- When the joystick top button or the "Prev" button is pressed, a relay is shorting pin 1 and 2
- For RM-LP250S: If pin 8 is shorted to GND (pin 5 or 9) the RGB Tally bar will light red and Tally will be sent to camera (Tally System must be set to Studio on camera)
- For RM-LP250M no tally is sent to the cameras as the GPIO connector only have 1 input

## Network Interface Details

- The controller have a 100 mbps network interface
- Network switch must have Auto-MDI/MDIX
- Network switch must support 100 mbps
- PoE: IEEE 802.3af

## Power over Ethernet (PoE) Specifications

The PoE industry standard 48V IEEE 802.3af is used. If powering the controller using PoE it is important the network switch supports this standard. Please notice some manufactures such as Ubiquity have their own non-standard 24V type of PoE which is incompatible with the controller. Especially pay attention to the standard if using a PoE injector.

## Troubleshooting

If experiencing no network activity at all, try one or more of the following suggestions:

- Use a managed network switch
- Force network switch port to 100 mbps
- Try a different network switch

# Controller Use

## RM-LP250S

Overall the controller have two Menus. To change between the two menus press M1 and M2. The controller have 1 shift level. To activate this press M7.

### C1-C8

Activate User Switch 1-8. If B13 is pressed and hold on the upper edge, the main display is hijacked and shows actions for C1-C8

### K1-K8

The tiles in the main display are associated with Knob 1-8

	Menu: WB/Sh	Menu: Lens
<b>K1</b>	WB Paint: Red	Focus
<b>K2</b>	WB Paint: Blue	Focus One Push
<b>K3</b>	WB Mode	Focus Mode
<b>K4</b>	WB One Push <i>Press and hold to activate</i>	Detail
<b>K5</b>	Full Auto	Iris Mode
<b>K6</b>	Gain Mode	Iris
<b>K7</b>	Shutter Mode	Iris One Push
<b>K8</b>	Shutter Speed	AE Level

### Position UD

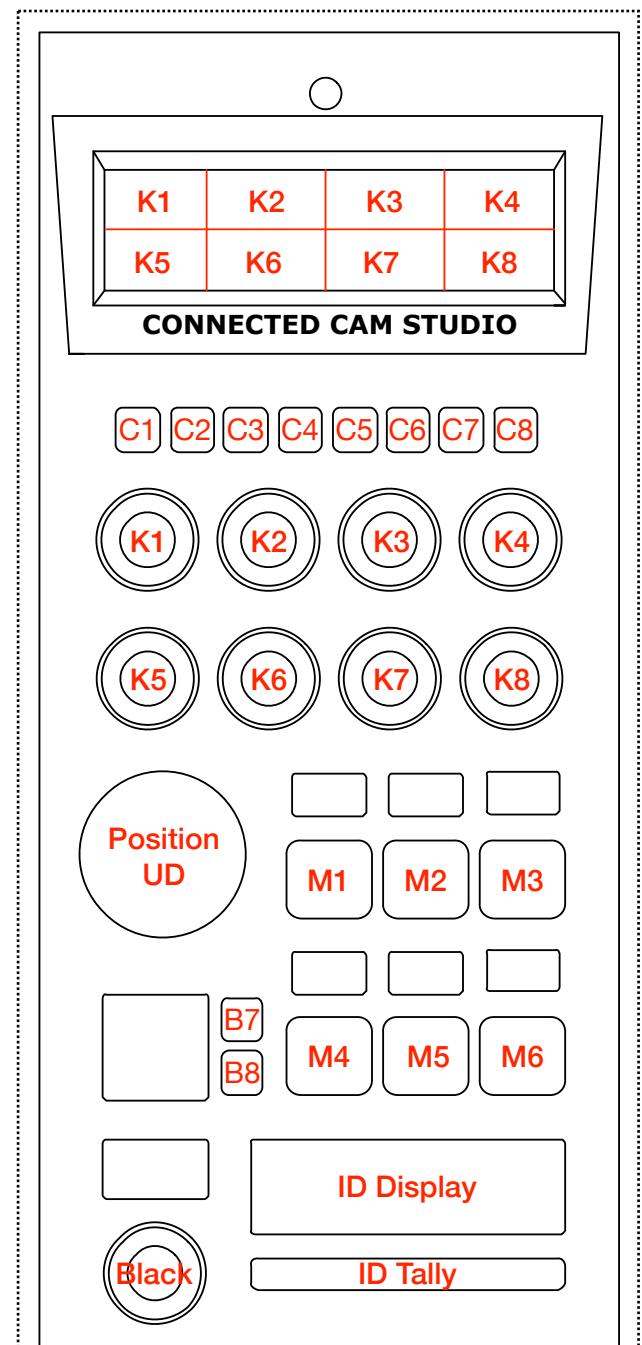
Zoom in/out on upper/lower edge of rubber pad if lens supports it

### M1-M6

	Menu: WB/Sh	Menu: Lens
<b>M1</b>	Sets "Menu: WB/Sh"	Sets "Menu: WB/Sh"
<b>M2</b>	Sets "Menu: Lens"	Sets "Menu: Lens"
<b>M3</b>	Full Auto	Full Auto
<b>M4</b>	User Switch 1	Character Mix - SDI2 <i>Can be changed to HDMI or video</i>
<b>M5</b>	User Switch 2	Activates Menu
<b>M6</b>	User Switch 3	Menu Navigation <i>Upper/Lower edge and left/right edge of button is used</i>

### B7

Activates recording



### B8

Activates streaming

### ID Display

Displays "CAMERA X" where X is set via the Camera Selector on the backside. See Backside section.

### ID Tally

Lights up white by default and red when pins on DB9 connector is set or if Tally have been set on the camera via other systems/via the B13 button

### Black

Controls Master Black

### M7

Shift level via toggle

### M8 Connection Status

Shows connection status. Button have no function

### Iris

Displays Iris value

### B9-B11

	<b>Shift: Off</b>	<b>Shift: On</b>
<b>B9</b>	Active Panel. If enabled no hardware interface will respond	Iris Range: Reset Points
<b>B10</b>	Iris one Push	Iris Range: Set fully open
<b>B11</b>	Iris Mode. Light up Red when in Auto. Green when in manual	Iris Range: Set fully closed

Iris range is used for calibrating the iris joystick to match the maximums aperture open/closed conditions for the lens. To calibrate:

Reset Points

Move joystick to fully open aperture and set: Open

Move joystick to fully closed aperture and set: Closed

### LED Bar

Indicates Iris value

### Joystick

Controls iris value

### Ring

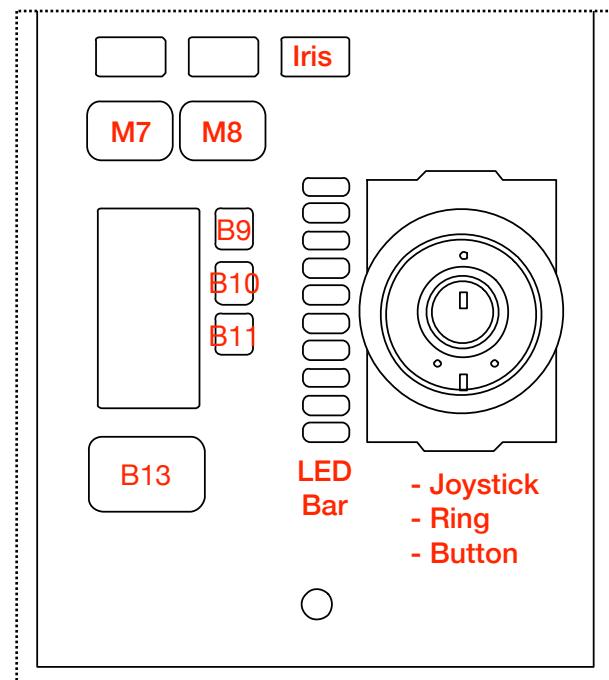
No function assigned to the joystick ring. The camera protocol does not support setting an absolute value for Master Black.

### Button

Activates "Preview" relay on DB9 connector

### B13

	<b>Shift: Off</b>	<b>Shift: On</b>
<b>B13</b>	Upper Edge hold down: Hijacks main display to show actions for C1-C8  Lower Edge hold down: Activates "Preview" relay on DB9 connector	Sets Tally on camera via Toggle



# RM-LP250M

Overall the controller have two Menus. To change between the two menus press M1 and M2. To change between camera 1-3 press M4-M6. The controller have 1 shift level. To activate this press M7.

## C1-C8

Activate User Switch 1-8. If B13 is pressed and hold on the upper edge, the main display is hijacked and shows actions for C1-C8

## K1-K8

The tiles in the main display are associated with Knob 1-8

	Menu: WB/Sh	Menu: Lens
<b>K1</b>	WB Paint: Red	Focus
<b>K2</b>	WB Paint: Blue	Focus One Push
<b>K3</b>	WB Mode	Focus Mode
<b>K4</b>	WB One Push <i>Press and hold to activate</i>	Detail
<b>K5</b>	Full Auto	Iris Mode
<b>K6</b>	Gain Mode	Iris
<b>K7</b>	Shutter Mode	Iris One Push
<b>K8</b>	Shutter Speed	AE Level

## Position UD

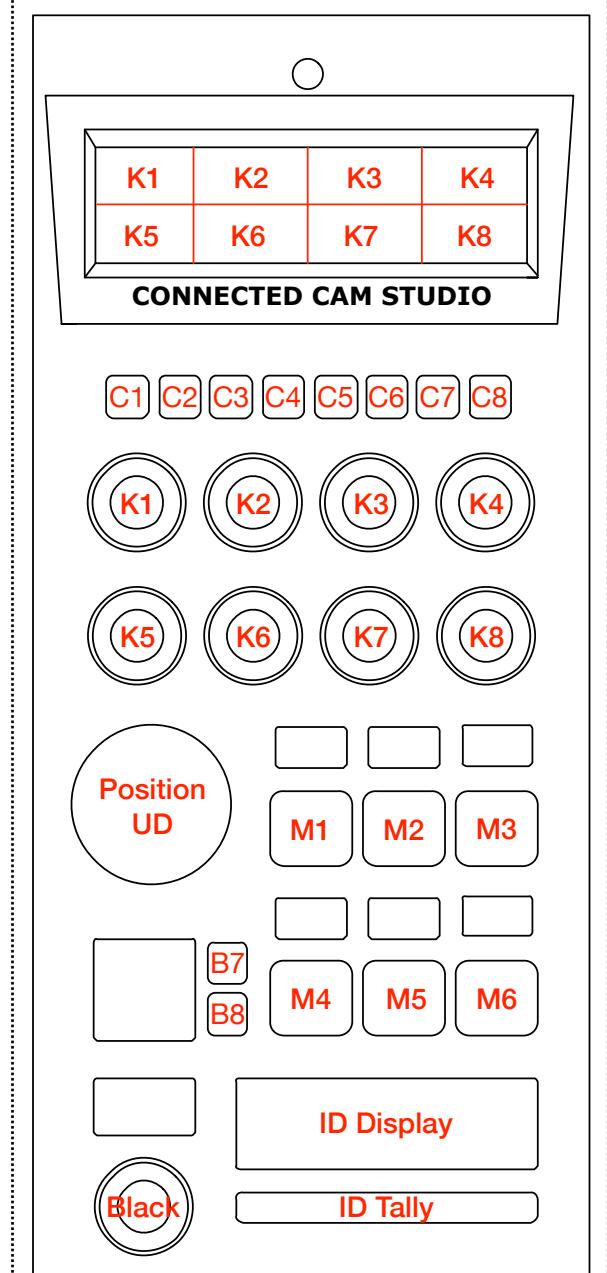
Zoom in/out on upper/lower edge of rubber pad if lens supports it

## M1-M6

	Shift: Off	Shift: On
<b>M1</b>	Sets "Menu: WB/Sh"	Sets "Menu: WB/Sh"
<b>M2</b>	Sets "Menu: Lens"	Sets "Menu: Lens"
<b>M3</b>	Full Auto	Full Auto
<b>M4</b>	Cam 1	Character Mix - SDI2 <i>Can be changed to HDMI or video</i>
<b>M5</b>	Cam 2	Activates Menu
<b>M6</b>	Cam 3	Menu Navigation <i>Upper/Lower edge and left/right edge of button is used</i>

## B7

Activates recording



## B8

Activates streaming

## ID Display

Displays "CAMERA 1-3" (the number associating is set via the Memory Parameter A on M4-M6 - see [Changing Default Configuration](#) to change this)

## ID Tally

Lights up white by default and red if tally on the cameras are set by other systems or if tally have been enabled via button B13

## Black

Controls Master Black

**M7**

Shift level via toggle

**M8 Connection Status**

Shows connection status. Button have no function

**Iris**

Displays Iris value

**B9**

Active Panel. If enabled no hardware interface will respond

**B10**

Iris one Push

**B11**

Iris Mode. Light up Red when in Auto. Green when in manual

**LED Bar**

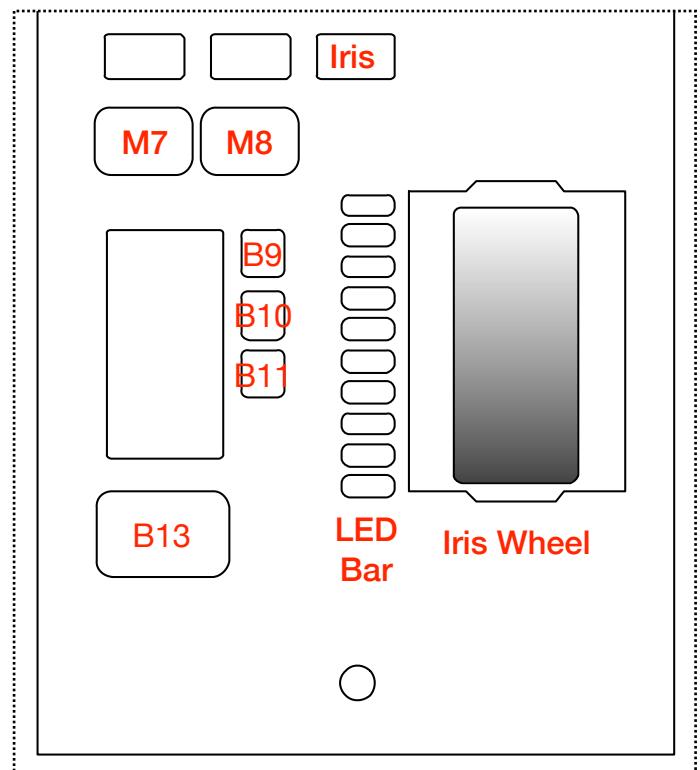
Indicates Iris value

**Iris Wheel**

Controls iris value.

**B13**

	<b>Shift: Off</b>	<b>Shift: On</b>
<b>B13</b>	<p>Upper Edge hold down: Hijacks main display to show actions for C1-C8</p> <p>Lower Edge hold down: Activates "Preview" relay on DB9 connector</p>	Sets Tally on camera via Toggle



## Parameter Settings

When changing a parameter the icon illustrated below will appear. This indicates that communication is being sent to the camera, which the camera is currently processing. This method have been adopted to accommodate how the protocol between the controller and the cameras work.



# Changing Default Configuration

In some cases it can be desirable to change mapping of functionality on the different hardware components on the controller. This is presented in the following section.

If one would like to change the default username and password for authentication please see: [Changing Default Username/Password for Authentication](#)

## Different Mapping of Functions

*Coming soon*

# Changing Default Username/Password for Authentication

As mentioned in the section [Authentication](#) the default username/password for authentication is:

Login Name: jvc

Login Password: skaarhoj

This can be changed via a Device Core Options:

- Index 0: **Sets username (maximum characters = 9)**
- Index 1: **Sets Password (maximum characters = 9)**
- Index 2: **Sets port**

Notice for the RM-LP250S and RM-LP250M the Device Core option strings have *already* been set on the default configurations. This makes the procedure less error-prone.

String for RM-LP250S: D0:0="jvc";D0:1="skaarhoj";D0:2=80

String for RM-LP250M:

D0:0="jvc";D0:1="skaarhoj";D0:2=80;D1:0="jvc";D1:1="skaarhoj";D1:2=80;D2:0="jvc";D2:1="skaarhoj";D2:2=80

Example 1:

Setting username + password could look like this device configuration code in the generic form:

D0:0=**"Username"**;D0:1=**"Password"**

A example could be

**D0:0="bryan";D0:1="1234567"**

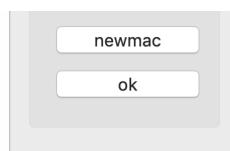
Where username is set to: bryan and password set to: 1234567

The general form of Device Core options are "Dx:y=z" where "x" is the number of the device core as installed on the controller (starting with zero for the first device core), "y" the index number and "z" the value for that index.

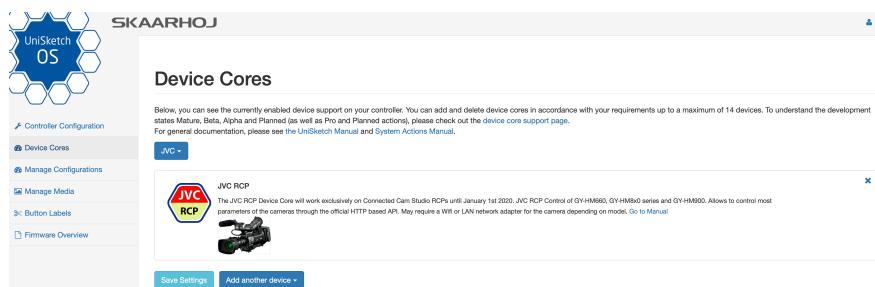
To confirm that a device configuration is in fact detected by the controller, please check it out on the serial monitor where it will be mentioned:



Memory A-D restored  
Compiled: Sep 10 2019 12:43:58  
D0[0] = "bryan"  
D0[1] = "1234567"  
DeviceCore #0: JVCRCPO, IP = 192.168.10.137  
JVC: Override default username with: bryan  
JVC: Override default password  
setup() Done



Example: If the JVC device core is the first like below:



The screenshot shows the UniSketch OS interface under the "Device Cores" tab. It lists a single device core entry for "JVC RCP". The entry includes a thumbnail image of a video camera, the model name "JVC RCP", a brief description stating it works exclusively on Connected Cam Studio RCPs until January 1st 2020, and links to "Go to Manual" and "Go to Settings". Below the list, there's a button to "Add another device".

Then setting the username + password would be set by this configuration under "Manage Media" on your configuration page for your controller on [cores.skaarhoj.com](http://cores.skaarhoj.com)

## Device Core Options

Some device cores support additional options that can be defined through this text field. Please refer to the manual for the particular device core for details.

```
D0:0="bryan";D0:1="1234567"
```

Example 2:

Setting port could look like this device configuration code in the generic form:

```
D0:2=12345
```

To confirm that a device configuration is in fact detected by the controller, please check it out on the serial monitor where it will be mentioned:

```
D0[2] = 12345
DeviceCore #0: JVCRPC0, IP = 192.168.10.137
JVC: Using Port 12345
setup() Done
-----
HWC#46 Down Analog: 63
System action 2
Mem A: 1
System action 23
```

