RTMOTION **MK3**

Lens Control System

User Guide

(Updated: Aug 15th, 2012)
www.rtmotion.com/support

QUICK-START GUIDE

- **Plug 10-17V into the RECEIVER's "PWR" port.**
  (Plug: Hirose HR10, 1=GND, 4=VOLTAGE)

- **Affix one or more motors to the rods/lens**

- **Plug the motors into the RECEIVER unit.**
  The motor port that the motors attach to isn't important.

- **Put a Canon LP-E6 battery in the Hand Unit and hold down the PWR button**

IN CASE OF CONGESTED WIRELESS SPACE

- **Connect the HAND UNIT with a Motor/Wired cable to one of the RECEIVER's "Motor" ports.**

- **To change Wireless Channel, go to the WIRELESS section of the Hand Unit's Menu.**

QUICK TROUBLESHOOTING

THE WIRELESS WON'T CONNECT

What is the STATUS LED colour?

GREEN

The wireless link is good, make sure your motor is assigned to the correct class (Focus, Iris), see below.

ORANGE

- Go to MENU... WIRELESS... FIND RECV. To do a scan.
- Attach the CONTROLLER to the RECEIVER via a Wired/Motor cable. They will synch wireless channels

PURPLE

Please wait. If there is no change after 30 seconds, power-cycle the Controller (remove battery).

MY MOTOR CALIBRATES BUT THEN WON'T MOVE

Perhaps the motor is not set to the correct CLASS. Go to MENU... MOTORS... CHANGE CLASS

THE MOTOR ROTATES IN THE WRONG DIRECTION

Rotation Flip is set by the CONTROLLER. Enter the Menu … INPUTS … FLIP … and then flip the Input Axis (such as Main Knob, or Slider) that you wish to reverse.

THE MOTOR IS IN A STRANGE MODE, IT IS SLOW

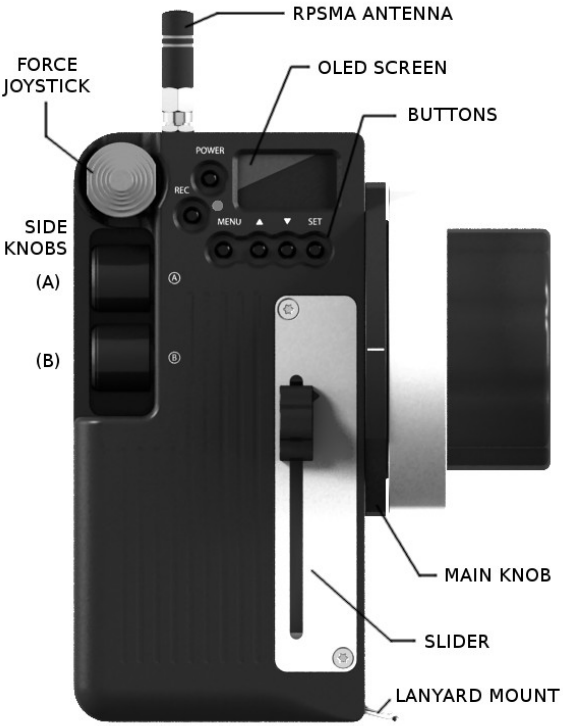
Each motor is given a RESPONSE, and the motor remembers its response even through a power cycle. To change it, Enter the Menu … MOTORS … SET RESPONSE.

THE ZOOM MOTOR CALIBRATES BUT THEN DOESN'T RESPOND

ZOOM SPEED might be set to minimum. This is usually set by SIDE KNOB A.

MK3 CONTROLLER

The MK3 CONTROLLER gives from 3 to 6 axis control.



MK3/Z Variant

CONFIGURATIONS

Any **INPUT** (Large knob, Side Knob A, etc.) can be assigned to any **LENS AXIS**.

For example, an MK3/B "Basic" controller can be configured so that the MAIN KNOB controls Focus, SIDE KNOB A controls Iris, and SIDE KNOB B controls Convergence.

All variants are capable of simultaneously controlling at least 3 axis, so are effectively "FIZ" and "3D" capable. There are however significant ergonomic advantages to industry standard controls, so for fine control it is recommended that the Force Joystick is used for Zoom, and the Slider is used for IRIS.

VARIANTS

MK3/B, "BASIC". 3 AXIS CONTROL

Large Focus Knob, 2x Side Knobs (A and B).

MK3/S, "STEREO". 4 AXIS CONTROL

Large Focus Knob, Slider, 2x Side Knobs (A and B).

MK3/Z, "FIZ". 6 AXIS CONTROL

Large Focus Knob, Slider, Force Joystick (X/Y), 2x Side Knobs (A and B).

OPERATION

POWER ON

Hold down the POWER button for 2 seconds to turn the unit ON / OFF.

CAMERA RUN/ STOP

Press button once to start recording. Press again to stop recording. Please note, you must use the correct Run/Stop cable for your camera, and select the correct option in MENU … CAMERA.

STATUS LED

OFF – Unit is OFF	**ORANGE** – No Connection	**GREEN** – Unit is Connected
BLUE – Wired Mode	**RED** – Camera Recording	**PURPLE** – Please Wait

PC MODE / BOOTLOADER

Turn off the Controller. Hold down the SET button. Keep SET held, and also hold down the POWER button. The ✳STATUS LED will go Orange, and the screen display: "PC MODE". You can now connect the controller to a PC and it will show as a USB device.

BATTERY / POWER

The Controller takes a CANON TYPE LP-E6 BATTERY, as used in the Canon 5D, 7D, etc.

It can also run from the MICRO USB connector (5V). Please note, minimum is approx 4.65V.

FACTORY RESET

Enter the MENU ... ADVANCED ... FAC RESET.

Short-cut: You can also hold POWER and press MENU.

CONTROLLER MENU

RECALIB	Force one or more motors to re-calibrate the lens.
CAMERA	Set the Run "Trigger" signal produced by the Receiver.
MOTORS	Change the CLASS or RESPONSE of attached Motors.
SCREEN	Change OLED brightness/ behaviour.
FLIP KNOB	Short-cut to quickly flip the MAIN KNOB rotation direction.
WIRELESS	Change channel. Or, Find a receiver on a different channel.
INPUTS	Which input knob controls which Axis. Also, Flipping, etc.
BUTTONS	Configure the three short-cut buttons (OLED screen bottom).
ADVANCED	Factory Reset. Engineer debug tools.

DEFAULT CONFIGURATIONS

		MK3/B "BASIC"	MK3/S "STEREO"	MK3/Z "FIZ"
Large Knob	→	**FOCUS**	**FOCUS**	**FOCUS**
Slider	→	(not present)	**IRIS**	**IRIS**
Force Joystick Y	→	(not present)	(not present)	**ZOOM**
Force Joystick X	→	(not present)	(not present)	(Inactive)
Side Knob A	→	**IRIS**	**ZOOM**	**ZOOM SPEED**
Side Knob B	→	**ZOOM**	**INTER-OCULAR**	**INTER-OCULAR**

LOW BATTERY INDICATION

The Controller will give a warning and automatically shut down when the battery voltage falls to approx 6.1V. This is to protect the Battery from being over-drained and reducing its life.

If your battery is fully drained and you wish to continue on USB power, you must remove the LP-E6 battery from the unit.

WIRING INFORMATION

4-pin Lemo 0B

Pin 1	GND
Pin 2	Signal A
Pin 3	Signal B
Pin 4	(Not Connected)

SPECIFICATIONS

Approx Dimensions	140 x 70 x 30 mm (excluding knob)
	140 x 115 x 85 mm (including knob)
Approx Weight	560g excluding battery
Power Requirements	Canon LP-E6 battery: 6.2V to 8.4V.
	USB Socket: approx 4.75V to 9V max.

MK3 RECEIVER

The MK3 Receiver is a unique, ultra-compact design.

SUPPORTED MOTORS

3x RTMOTION motors are supported. An optional "1-7 Breakout" box enables control of 8 simultaneous motors + wired mode.

The Receiver does not natively support motors from other manufacturers. It is planned to release a "dongle" adapter to support 3rd party motors (Heden, Preston, etc.) soon.

OPERATION

STATUS LIGHT

SOLID GREEN – CONNECTED	**PURPLE** – Please Wait
ORANGE – No Connection (or PC Mode)	**RED** (Pulse) – Run/Stop Trigger

CONNECTIONS

MOTORS	Lemo 0B 4-pin	Any motor can connect to any port Attach Controller here for Wired-mode
PWR	Hirose HR10 4-pin	Power Input, 1=GND, 4= Voltage
CAM	Hirose HR10 4-pin	Trigger (Output) for CAMERA
USB	Micro USB	For connection to a PC

SPECIFICATIONS

Approx Dimensions	85 x 30 x 21mm
Approx Weight	90g
Power Requirements	5 – 14V DC (17V absolute max)

(e.g. 13.8V broadcast battery fresh off a charger)

WIRING INFORMATION

MOTOR PORTS

Lemo 4-pin 0B

Pin 1	GND
Pin 2	Signal A
Pin 3	Signal B
Pin 4	Power **OUT**

POWER

Hirose HR10 4-pin

Pin 1	GND
Pin 2	(nc)
Pin 3	(nc)
Pin 4	Power **IN**, 5-14V DC (17V absolute max)

CAMERA

Hirose HR10 4-pin

Pin 1	GND
Pin 2	CAM TRIG (Output)
Pin 3	(currently un-used)
Pin 4	(nc)

(nc) = Not Connected

MK3 BRUSHLESS MOTOR

A powerful and quiet lens motor with smooth performance. The brush-less vector-drive gives unparalleled smoothness during high-torque / slow-speed moves.

WARNINGS

The motor is a powerful device which is capable of causing injury or damage.

- Never touch the drive gear when the device is powered on.
- The motor is not to be used on extremely stiff or damaged lenses.

OPERATION

Affix the motor to the rods, but don't yet mesh the drive gear to the lens gear. Rotate the focus ring so that it is not too close to either end stop. Now mesh the gears, and plug the Digital Motor into the Receiver. The Digital Motor will begin its Auto-Calibration Routine.

ACCURACY & ELECTRONIC BACKLASH COMP

The MK3 motor features a high-precision encoder that will never lose steps. If you see evidence of backlash affecting accuracy, please make sure that your mount, rails and camera are extremely rigid, as mounting flex is the main cause of inaccuracy. Unique electronic backlash compensation is calibrated at the factory and will be tweak-able via future firmware update.

FOCUS/ IRIS/ ZOOM ASSIGNMENT

The Digital Motor is internally assigned a “Motor Class”, which is saved to non-volatile memory. The motor will identify itself to the CONTROLLER via its SERIAL NUMBER (lasered onto the motor back, example: 0500). To change the class of a Digital Motor, or other performance parameters (performance mode, direction of rotation, etc.) please refer to the manual for the Controller.

MAINTENANCE

The motor requires no user maintenance. Please note that opening the motor can affect its internal calibration and voids the warranty.

MOTOR WIRING INFORMATION

Lemo 4-pin 0B

Pin 1	GND
Pin 2	Signal A
Pin 3	Signal B
Pin 4	Power In, 5-17V DC

(n.b., motor amplifier shuts off at <7V, but electronics remain active).

SPECIFICATIONS

Approx Dimensions	106 x 43 x 24mm (excluding gear)
Weight	235g (including gear and 15mm clamp)
Max Allowable Torque	2.2Nm
Standard Gear	0.8 mod, 50 Teeth
Nominal Current	Approx 0.6A loaded
Power Requirement	5-17V

UPDATING FIRMWARE

You can use your ORDER HASH to access the latest Manual and Firmware updates by visiting … www.rtmotion.com/page/support . Your order hash can be find in your original Order Confirmation email, and looks something like:- Fgj4VLdbYWeDy4hsQwZzjIme. It will be saved for future visits.

ADDITIONAL INFORMATION

USAGE & ENVIRONMENT

The system should not be opened, doing so can cause damage on closure, and voids the warranty. The MK3 system is not water proof- do not expose the system to any type of water, or condensation-prone situations.

12/24 MONTH WARRANTY

RT Motion Systems products are guaranteed for a period of 12 months with effect from the date of delivery (or date-of-purchase, if purchased from a 3rd party) and applies to defects arising from defective materials and or faulty workmanship that become evident during the guarantee period only and does not include consumable items. This guarantee is extended to 24 months if purchased direct from the manufacturer, or registered with the manufacturer within 3 months of purchase from a 3rd party. The manufacturer will repair or replace the product at their discretion subject to the following. That the product has been used in accordance with the guidelines as detailed in the product manual and that it has not been subjected to misuse, abuse or used for a purpose for which it was not intended. That is has not been tampered with or has been serviced by unauthorised persons. It shall be the customer's responsibility to return the product at their cost ensuring that the product is adequately packed to prevent transit damage. If the product was purchased from a 3rd party such as a distributor, proof of date-of-purchase must be included. The manufacturer shall not be liable for any consequential loss or damage arising from faults that occur either within, or outwith the guarantee period. This guarantee is in addition to and does not affect any rights which the consumer may have by virtue of UK or EU law.

CONTACT INFORMATION

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