

## Hand Control Unit

### Power Button (On/Off) & LED

Green = Battery Good  
Flashing = Battery Low - change battery  
Unit switches off automatically, when battery power becomes too low

### 6x 1/4" Threads

for attaching of additional accessories.

### Caution:

Maximum length of screw turned into the thread is <= 8 mm (5/16")!

### Camera Record Start/Stop

LED flashes = Record is on

### Area of built-in GHz Antenna

Do not cover- keep clear!

### Menu Navigation

Press Center button to enter the Setup Menu



### Hand wheel with fixed Fluid Drag

Accepts 2 different types of scales:  
Big Ring  
Small Ring (as shown in photo)

### 4 User assignable Keys (U1 .. U4)

Currently fixed to spread the wheel scale

### Light socket

Only for original scale illumination LED light!



**Battery**  
7.2V SONY FM-50/55  
Type

**Battery Release**  
Slide to the right to change battery

### USB Socket for Software Updates (always update both MCU and hand unit)

Software updates are provided by Chrosziel, when available.

### Update Procedure:

- Copy the two provided software files into the root of an USB stick (FAT/FAT32 formatted)
- Power down the handset
- Plug USB stick into socket.
- Press and hold down "REC" button and power on the handset.
- Unit will perform the update indicating the progress by different LED flashing patterns on the front. After update the unit restarts automatically

## Motor Control Unit

### Cam Start/Stop

Type: Lemo ECB.0B.309  
Pin 8: CAM Relay 1  
Pin 9: CAM Relay 2

### Power In (10V -30V; with electronic Fuse & reverse protection) & Cam Start/Stop

Type: Lemo 0B.305  
Pin 1: Battery plus  
Pin 2: CAM Relay contact 1  
Pin 3: CAM Relay contact 2  
Pin 4: Battery minus / GND

### Motor Socket

Type: Lemo EGG. 1B. 307

Pin 1: Motor -  
Pin 2: Motor +  
Pin 3: Encoder channel A  
Pin 4: +5V  
Pin 5: earth/ground  
Pin 6: Encoder channel B  
Pin 7: Sense

### Power LED

Green = Power Good (>12V)  
Red = Input voltage low  
Flashing = voltage drop occurred

### Area of Built-in GHz Antenna

Do not cover- keep clear!



### Motor Status Red LEDs

#### Signaling

Slow blinking = motor limits need to be calibrated  
Fast flashing = motor calibration in progress  
Off with motor connected = motor limits are calibrated, ready to shoot

### Cam Start/Stop indicator LED

blue = relay switches active/connected  
off = relay switches inactive/disconnected

### Rf Error LED

Rf Error LED goes on if no connection to at least one hand unit could be established.  
Choose same channel in the Set Up menu of the hand unit.

### Radio Channel Selector + Rf Error LED

Select radio channel within the 2.4 GHz Band (select 5 .. F). Red LED goes on if connection error occurs. Channels 0..4 not valid! If chosen, LED is flashing.



### Automatic adjustment of lens-scale limits and motor-test of connected digital motor:

This adjustment has to be made whenever motor and/or lens are changed. Do not block or stop the lens while end stops are checked, all parameters will then be stored incorrectly!

#### Procedure:

- engage motor onto lens (not at an end stop)
- Push "Motor Cal." button, red LEDs flash
- Motor starts turning slowly

The lens-scale limit will be checked and stored automatically.

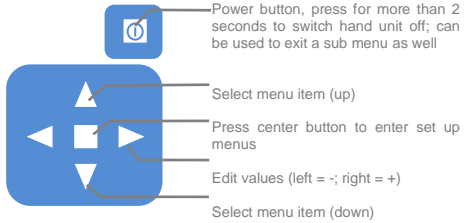
### USB Socket for Software Updates and USB Status LED (always update both MCU and hand unit)

Software updates are provided by Chrosziel, when available .

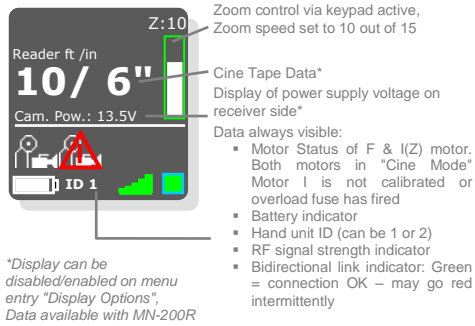
#### Update Procedure:

- Copy the two software files into the root of an USB stick (FAT/FAT32 formatted)
- Plug USB stick into socket.
- Power down the unit
- Press and hold down "Motor Cal" button and repower the receiver.
- Unit will perform the update indicating the progress by different LED blinking patterns on the front. After update the Unit restarts automatically

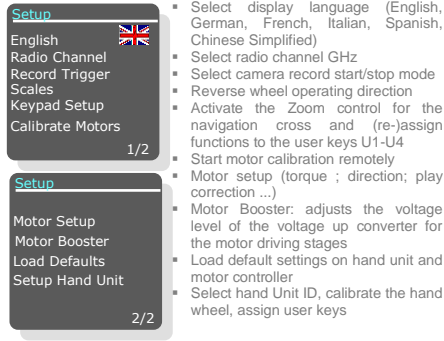
## Menu Navigation



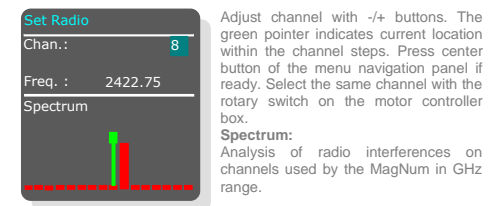
## Main Screen



## Setup Screen (press Center Button from Main Screen)

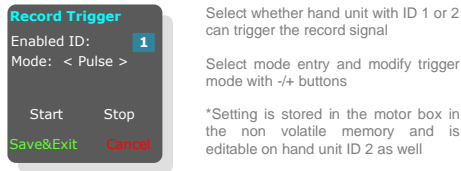


## Set the Frequency Range and the Radio Channel

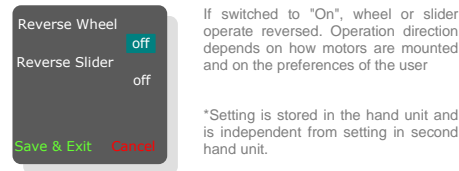


**Please note: When this screen is visible the MagNum wireless connection is temporarily disconnected as the hand unit scans through all available RF channels at this time searching for possible frequencies. For GHz range (Channels 5 - F) internal antennas are used. Channels 0.4 unavailable.**

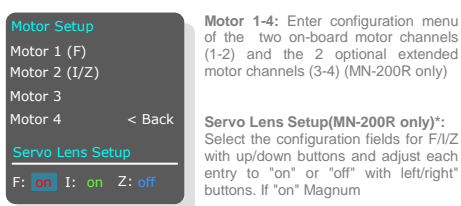
## Set Up the Record Start/Stop Trigger\*



## Setup Scales - Reverse Scale Direction\*



## Set Up Motors & Servo Lens Control

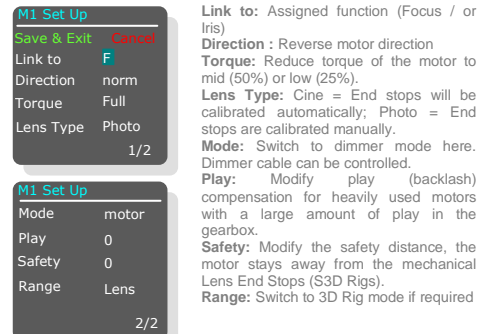


takes over control of the desired internal servo motor.

"Z" is switched off by default but can be activated as well. If so, a connected zoom demand controller on the 12pin Hirose socket of the MagNum motor controller controls the zoom servo motor of the servo lens. If "I" is switched to "off" the camera can control the iris through the camera lens port if applicable.

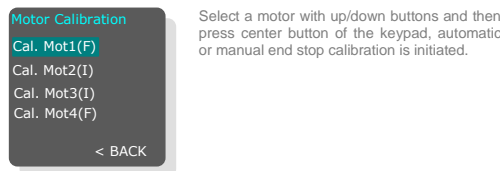
\*Setting is stored in the motor box in the non-volatile memory and is editable on hand unit ID 2 as well

## Set Up Motor Output\*

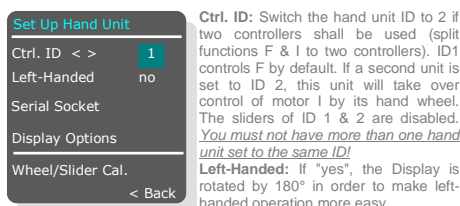


\*Setting is stored in the motor box in the non-volatile memory and is editable on hand unit ID 2 as well

## Start Motor Calibration remotely



## Setup Hand Unit



**Display Options:** Select, whether several displays shall appear on the main screens info area (Cine Tape reader, Cam.-Power)

**Wheel/Slider Cal.:** Basic calibration of hand wheel to the respective mechanical operating range

## Frequency Table:

| Channel | Center Frequency    |
|---------|---------------------|
| 0       | n.a.                |
| 1       | n.a.                |
| 2       | n.a.                |
| 3       | n.a.                |
| 4       | n.a.                |
| 5       | 2.400.75 GHz (30mW) |
| 6       | 2.40375 GHz         |
| 7       | 2.40975 GHz         |
| 8       | 2.42275 GHz         |
| 9       | 2.44075 GHz         |
| A       | 2.44375 GHz         |
| B       | 2.44975 GHz         |
| C       | 2.46275 GHz         |
| D       | 2.47075 GHz         |
| E       | 2.47375 GHz         |
| F       | 2.48175 GHz         |

## Voltage Levels for Motor Booster:

| Setting    | Voltage level on motor driving stages (U <sub>mot</sub> )                    |
|------------|--|
| 0          | Booster is off. U <sub>mot</sub> = Upower in - 0.5V                          |
| 1          | U <sub>mot</sub> = 15V; (if Upower in > 15V -> U <sub>mot</sub> = Upower in) |
| 2          | U <sub>mot</sub> = 20V; (if Upower in > 20V -> U <sub>mot</sub> = Upower in) |
| 3          | U <sub>mot</sub> = 25V; (if Upower in > 25V -> U <sub>mot</sub> = Upower in) |
| 4(default) | U <sub>mot</sub> = 30V; (Do not apply power sources higher than 30V)         |

## Calibrating motors in manual "Photo Lens" mode

Unlike commonly used lenses in the film industry the lenses for still cameras do not feature physical end stops on their gears in every case. Therefore it is not possible to calibrate so-called photo lenses by the motor controller automatically. The MagNum motor controller addresses this issue by allowing a desired motor socket to be configured as "Lens Type = photo". The manual procedure is as follows:

- switch hand unit on, check for proper connection between motor controller and hand unit, turn wheel/slider away from end stops
- mount motor as normal on the support rod and engage it to the lens in a middle position of the available range of movement
- press calibration button once; motor LEDs start flashing fast but motor will not start moving on its own as it would in "Cine" mode
- move motor(s) by carefully operating hand wheel/slider/zoom device to the first desired stop point
- press calibration button a second time
- move motor(s) by carefully operating hand wheel/slider/zoom device to the second desired stop point
- press calibration button a third time.
- motor will now automatically start moving measuring lens parameters between the two chosen end points
- after this calibration is finished

Hints: As most motors show a certain amount of play/backlash, turn the motor(s) always from the inner part of the scale range towards the end stops for best results. Vice versa do not drive the motor(s) from the outside towards the inside direction.

Each motor can be calibrated separately from the hand unit menu also. If a motor which is setup to photo mode is chosen for calibration, a sub menu will appear. This sub menu indicates the 3 steps with "Start", "Set A Point" & "Set B Point". Using the calibration button and the calibration menu within the same calibration process should be avoided. The photo mode is currently not supported on the extension module!

## Spreading of the Wheel

Spreading is done by pressing one of the user keys 1 .. 4. Spreading function needs to be assigned to the desired user keys\*. Default mode is: U1-4 spread the wheel scale. So there are four different spreading setups available.

**To set a spreading:**

- Move wheel to the desired first starting point, press a user key for more than 1 second and keep pressing during the procedure
- Respective yellow LED starts flashing
- Move wheel to the desired second point, release the user key
- Spreading is applied between the two points, respective yellow LED lights up continuously

**To switch off a spreading:** Press the user keys for which a spreading is activated less than 1 second, respective yellow LED goes off.

**To recall a formerly programmed spreading:** Press the same user key again for less than 1 second.