

WCU-4

Wireless Compact Unit

USER MANUAL

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Scope

This instruction manual applies to the following hardware:

ARRI WCU-4

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1 Disclaimer

Before using the Wireless Compact Unit (WCU-4), make sure you read and understand all the respective instructions in the enclosed manual. The ARRI Wireless Lens Control System is only available for commercial customers. The customer agrees by its use that the ARRI Wireless Compact Unit (WCU-4) or other components of the system are only deployed for commercial use. Otherwise the customer must contact ARRI preceding the utilization.

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2 Introduction

WCU-4 Functions

- Radio control of IRIS/FOCUS/ZOOM lens motors
- Numerical and graphical lens data display *
- Remote switch camera REC/STANDBY (RUN/STOP)
- Camera information and control for ALEXA Plus and ALEXA Studio type cameras *
- Ultrasonic distance readouts information
- Connects to ARRI WHITE radio remotes:
ALEXA Plus and ALEXA Studio type cameras, UMC-3A, ARRI cameras with white coded radio modem installed

* full functionality requires ALEXA SUP9.0 software packet and the optional WCU-4 ALEXA remote license

The WCU-4 is an all-inclusive hand unit offering up to 3-axes lens control. It includes a newly designed, super-smooth focus knob with adjustable friction and backlit, focus rings that are well readable in the dark. The whole unit is completely splash proof for ARRI typical reliability. The slider has its scale on the 3" display, providing clearly readable T-stop numbers.

The left side handle includes an ergonomically designed, pressure-sensitive zoom knob. A user programmable button underneath the handle provides quick access to functions like quick zoom (ZAP) or focus setting marks. A hand strap provides extra stability and leaves the holding hand's thumb free, thus allowing even the most challenging parallel shifts of iris and focus at the same time.

The large 3" transfective TFT display reflects ambient light and thus remains clearly visible even in direct sunlight while saving battery power. It provides enough room for status information of camera and hand unit, measured distances from ultrasonic devices or lens data in a graphical form. Motor limits can be easily set by pressing one of the sealed, backlit buttons next to the display.

ARRI Lens Data Display functionality is integrated and when used with the ALEXA camera, the unit displays camera settings and status information. Pre-marked focus rings can be used with WCU-4's integrated lens mapping, providing comfort and ease of use when working with different lenses.

The optional ALEXA Remote License activates remote camera setup capabilities via WCU-4 for ALEXA Plus, ALEXA Plus 4:3, ALEXA XT Plus, ALEXA Studio, and ALEXA XT Studio cameras. This includes setting frame rate, shutter angle, exposure index, white balance, and monitor outputs.

Users can save their preferred WCU-4 settings on an SD card, enabling them to immediately personalize any WCU-4, anywhere in the world.

One of the most ground-breaking new features of the WCU-4 is the option to use Vibration-Markers, which provide haptic feedback for electronic markers. Essentially, focus pullers can set marks, and the unit will vibrate to warn them when they are at their pre-set marks. This allows them to keep their eyes on the performers at all times, leading to greater accuracy of focus.

The WCU-4 is designed to be upgradable. New firmware versions and future feature options can be easily installed to the unit via SD card. Various mounting points allow mounting of accessories. The unit is powered by an affordable camcorder battery and is compatible to existing ARRI motor controllers equipped with the white coded radio modem. It is also easily serviceable, with many exchangeable components, including the display.

2.1 About this Manual

ARRI recommends that all users of the WCU-4 read the manual in its entirety prior to use. For experienced users, the manual's structure also provides quick access for reference.

In this manual:

- Safety Guidelines
- General Precautions
- Power Supply
- Layout of the WCU-4
- Operation of the WCU-4
- Camera Control
- Lens Motors Usage
- Connections
- Technical Data

ALEXA* specific functions are not explained in detail within this manual, please refer to the respective ALEXA handbook.

* Within this manual, the term ALEXA stands for ALEXA Plus, ALEXA Plus 4:3, ALEXA Studio, ALEXA XT Plus or ALEXA XT Studio cameras.

How to use this manual:

All directions are given from the operator's point of view.

Connectors are written in all capital letters, for example, LCS. Menus and screens on the WCU-4 controls are written in all capital letters, for example, CAM menu and HOME screen. Buttons are written in bold typeface capital letters, for example, **SET** button.

The appendix at the back of the manual contains useful reference material including WCU-4 specifications, connector pin-out diagrams, error and warning message explanations, WCU-4 dimensional drawings and a menu structure tree.

3 Safety Guidelines

Any violation of these safety instructions or non-observance of personal care could cause serious injuries to users and affiliates, and damage to the equipment or other objects.

Explanation of Warning Signs and Indications



Indicates a possible risk of injury or damage to the equipment.



Indicates the risk of electric shock or fire danger that could result in injury or damage to the equipment.

Note: Indicates further information or information from other instruction manuals

3.1 General Safety Instructions



- Always follow these instructions to ensure against injury to yourself or others and damage to the system or other objects.
- This safety information is in addition to the product-specific operating instructions in general and must be strictly observed for safety reasons.
- Read and understand all safety and operating instructions before you operate or install the system!
- Retain all safety and operating instructions for future reference.
- Heed all warnings on the system and in the safety and operating instructions before you operate or install the system. Follow all installation and operating instructions.
- Do not use accessories or attachments that are not recommended by ARRI, as they may cause hazards and invalidate the warranty!
- Do not attempt to repair any part of the system! Repairs must only be carried out by authorized ARRI Service Centers.

3.2 Specific Safety Instructions



- Do not remove any safety measures from the system!
- Do not operate the system in areas with humidity above operating levels or expose it to water or moisture!
- Do not subject the system to severe shocks!
- Do not place the system on an unstable trolley/hand truck, stand, tripod, bracket, table or any other unstable support device! The system may fall, causing serious personal injury and damage to the system or other objects.
- Operate the system using only the type of power source indicated in the manual! Unplug the power cable by gripping the power plug, not the cable!
- Never insert objects of any kind into any part of the system if not clearly qualified for the task in the manual, as objects may touch dangerous voltage points or short out parts! This could cause fire or electrical shock.
- Unplug the system from the power outlet before opening any part of the system or before making any changes to the system, especially the attaching or removing of cables!
- Do not use solvents to clean!
- Do not remove any stickers or paint-marked screws!

3.3 General Precautions

Storage and Transport

- All cables have to be unplugged from the WCU-4 when it is transported or stored inside a case.
- Do not store the WCU-4 in places where it is subject to extreme temperatures, direct sunlight, high humidity or severe vibration, or near strong magnetic fields.

4 Power Supply

Battery Operation

Recommended battery:

SONY NP-FM 500H Li-Ion battery (ARRI order no. K2.47851.0)

Recommended Chargers:

SONY BC-VM10 (ARRI order no. K2.47852.0)

For safety purposes, only use the recommended charger and battery types. Please also take note of the following directives for battery handling:



Do not incinerate.



Do not expose to temperatures beyond
-20 to +50°C (-4 to +122°F).



Do not disassemble.

Replace or re-charge the battery, if the “Low Battery” message on the WCU-4 Status Screen appears.



The charger must only be used indoors. Do not expose it to humidity or high temperatures.

Note: To achieve full battery capacity, leave the battery in the charger for about one hour after the charge LED has gone out.



Defective batteries must not be thrown into domestic waste, but disposed of onshore in a safe manner consistent with all applicable regulations.

Note: For handling details please read the charger and battery operation manual.

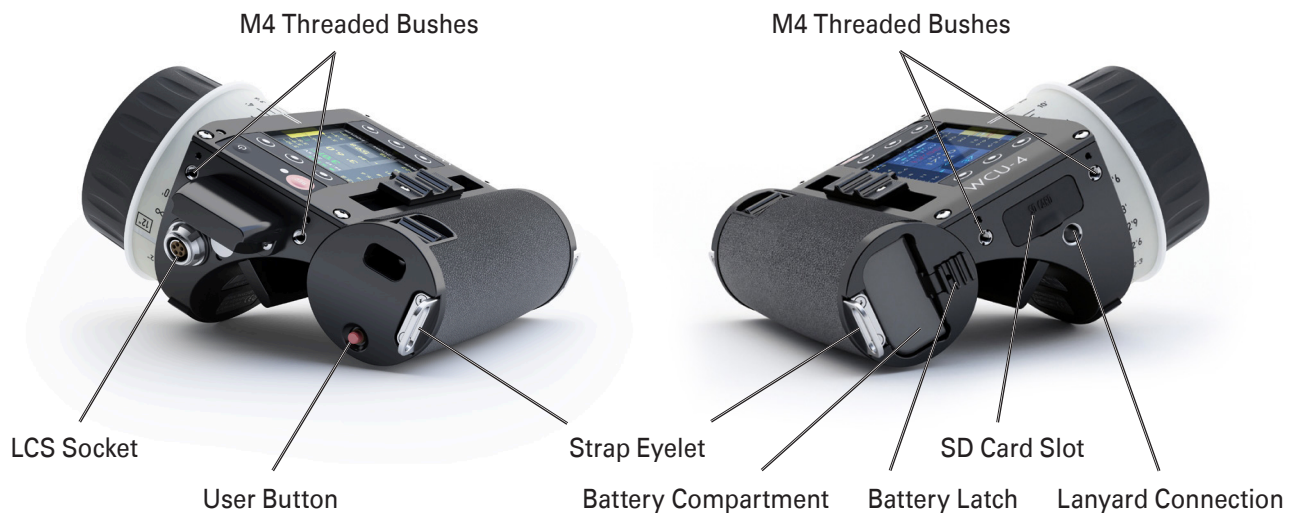
Hardwired Operation

The WCU-4 connects to the LCS bus connector on ALEXA cameras, ARRI film cameras and the UMC-3A for power supply and control, using standard LCS cables with a cable length up to 80 m (260 ft).

In hardwired operation mode, using power supplied through an LCS cable, no battery is necessary.

Battery charging is not possible through the WCU-4.

5 Layout of the WCU-4



Battery Compartment	Push in the battery completely when loading. Shift the release slider to release the battery.
Power Button	Powers on/off the unit. Press button briefly to power-on the unit. Press and hold for approx. 2 seconds to turn off.
Display	3" transfective TFT color panel. Displays camera and lens status and control information. Automatic or manual luminance control.
Ambient Light Sensor	Controls display luminance and scale ring and button illumination in automatic mode.
Focus Knob	Controls focus lens motor. Re-configurable to iris lens motor control.
Scale Ring	Detachable re-writable blank ring or pre-marked focus rings for standard lenses.
Knob Friction	Adjust the friction for the focus knob. Press and hold the center button. Turn the focus knob clockwise to increase the friction. Turn the focus knob counterclockwise to decrease the friction.
Iris Control	Slider controls iris lens motor. Re-configurable to focus lens motor control.
Zoom Control	Pressure sensitive handle knob controls zoom lens motor.
Record Button	Press button briefly for alternate camera record/standby or Run/Stop, depending on camera type and connection.
Status LED	Displays the same status as currently shown on the camera.
Upper Softbuttons	Press button briefly to select the menu item shown below.
Lower Softbuttons	Press button briefly to select the menu item shown above.
User Button	Configurable push button, default function: Zoom ZAP.
LCS Socket	Power and control connection to ARRI cameras and UMC-3A only. No support of accessory units.
SD Card Slot	Protected by an undetachable rubber cap. Save/load user setups on an SD card (SD or SDHC up to 32GB). Install new firmware and license keys to the WCU-4.
Strap Eyelet	Install the hand strap here.
Lanyard Connection	Install the lanyard bolt here.
Internal Antenna	Protected radio antenna.

6 Control Scope

Radio communication is only possible to “white” coded radio units.

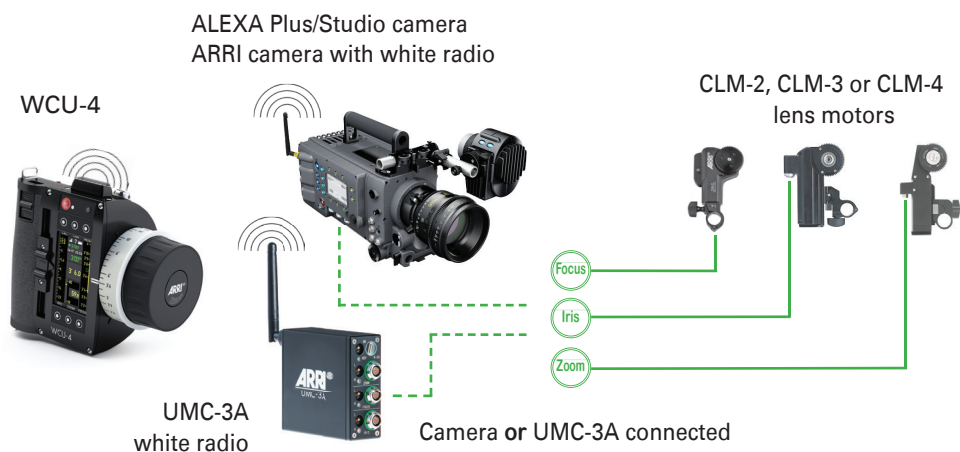
	Basic Support SUP	Advanced Support SUP	New Features
ALEXA Plus/Studio	7.0	9.0	ALEXA remote control, lens mapping, UDM/CTM support, torque adjust
UMC-3A	04B	04C	UDM/CTM
ARRICAM + LDB-ST/LT	06A		
ARRIFLEX 435 Xtreme	05A		
ARRIFLEX 416 Plus (HS)	04A		

Note: To tap the full potential of the WCU-4’s possibilities, be sure to have updated all connected units to a software version equal or higher to those listed.

7 Setup

7.1 Wireless Setup

One WCU-4 controls up to three lens motors



Up to three WCU-4s control selected lens motors and ALEXA functions

Example Configuration:

All WCU-4s are set to the same radio channel.

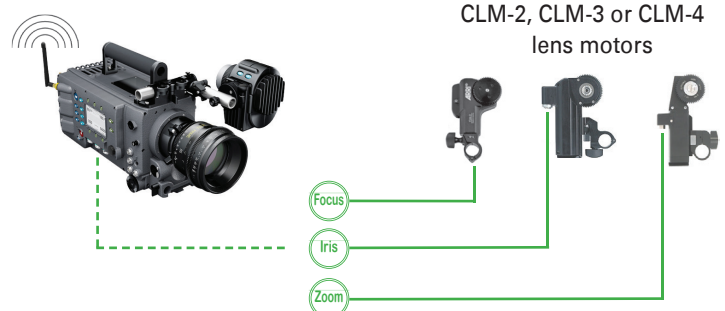
On one WCU-4 iris as well as focus control is enabled, zoom control is disabled.

On one WCU-4 iris and focus controls are disabled, zoom control is enabled.

The third WCU-4 has all lens motor controls disabled and controls ALEXA properties*.

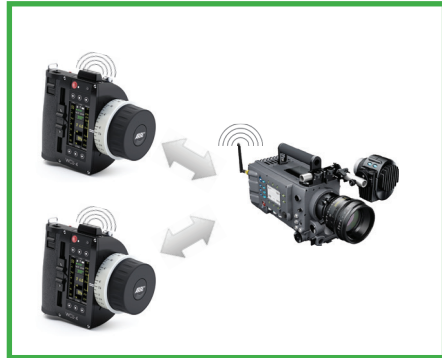


ALEXA Plus/Studio camera



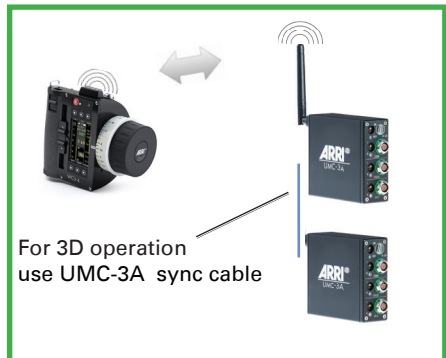
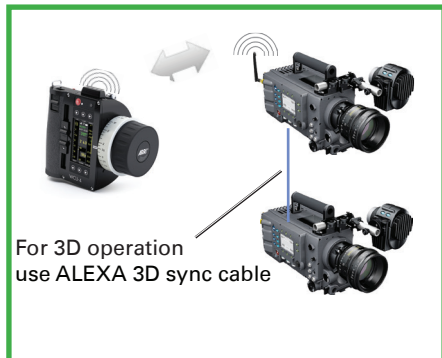
* with optionally available **ALEXA Remote** software license

Distributed Control



Note: Simultaneous lens motor control of two cameras (or UMC-3A's) with one WCU-4 on the same radio channel is NOT possible.

3D Operation



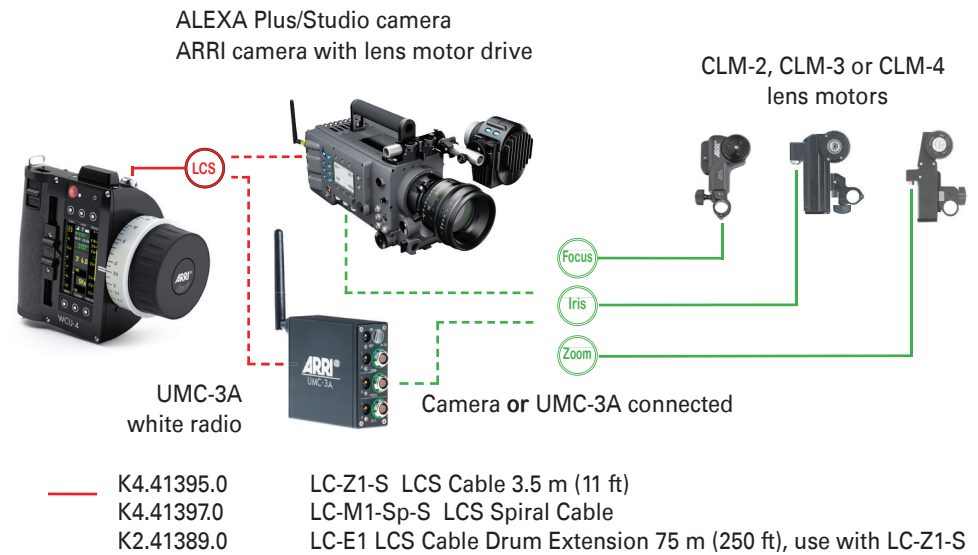
7.2 Wired Setup

Example Configuration:

Use the LCS socket and ARRI LCS cables to connect the WCU-4 to an ARRI camera with lens motor drive capability or to an UMC-3A.

The LCS wiring provides power and control lines.

Cable length may be up to 80 m (260 ft).



Note: If connected via LCS bus, the WCU-4's radio transmission will be disabled automatically.

8 Operation

8.1 Display Description

Main Screen

Typical main screen:

WCU-4 connected to an ALEXA Plus or Studio camera on radio channel 1.
LDS zoom lens with all lens motors connected.

The diagram illustrates the WCU-4 main screen layout. At the top, three menu tabs are labeled: CAL, CAM, and MENU. The main display area is divided into several sections. On the left, a vertical scale shows iris values from 2.6 to 22. The center displays camera status (STBY), time (14:00), voltage (24.0V), frame rate (fps 24,000), and zoom value (1.00). Below the zoom value is a depth of field bar with markers. On the right, another vertical scale shows focus values from 1.1 to .95. At the bottom, three softbutton menu items are shown: IRIS, ZOOM, and FOCUS. A separate inset titled 'Camera Information' shows a different screen layout with radio channel (7), battery level, time (14:17), voltage (23.5V), and various distance and focus values (3'07", 3'10", 3'9", 3'8", 3'6.0, 3'6").

This diagram shows a sample analog camera screen. The top menu tabs are CAL, CAM, and MENU. The main display shows a green 'RUN' status, a distance of 72m, a voltage of 23.4V, a frame rate of fps 24,000, and a zoom value of 11.2. The focus value is displayed as 4.01. The bottom softbutton menu items are IRIS, ZOOM, and FOCUS. The ZOOM button has a red 'X' over it, and the FOCUS button has 'knb' next to it.

Note: The WCU-4 can only display data that is provided by the connected camera or UMC-3A. Therefore the appearance of the display will vary, depending on the type of camera/UMC-3A, lens, and accessory, linked to the system. The reason for a time-delay between actuator position change and scale display is the difference between given value from knob, slider or stick and the actual motor position, sent from the camera or UMC-3A.

Upper Softbuttons

- CAL** Calibrate all connected lens motors. Press and hold for activation.
- CAM** Enter the **CAMERA INFO** and the **SETUP*** and **MONOUT*** sub-menus.
* Extended ALEXA camera control is possible with optional software license (K2.72145.0), available from the ARRI license shop.
- MENU** Enter the WCU-4 and lens motor configuration sub-menus.

Lower Softbuttons

- IRIS** Direct access to Iris function:
- Set/reset LIMITs, LOCK iris value.
- ZOOM** Direct access to zoom functions:
- Set/reset LIMITs, set zoom speed, LOCK zoom value.
- FOCUS** Direct access to FOCUS functions:
- Set/reset LIMITs, limit the focus knob (K-LIM), LOCK the focus value, set/reset MARKERS.

Transmission Quality The higher the number of bars, the better the radio connection quality.

Radio Channel Radio channels 0-7 are available (see Appendix A.4 for details).

Battery Capacity Battery symbol indicates the current capacity (completely white = full).

Camera Information

- Camera status REC - STDBY - ERROR
- Remaining record capacity in min:sec
- Camera battery voltage
- Current frame rate in fps**
- Shutter angle**

** replaced by UDM/CTM distance value if an Ultrasonic Distance Meter (UDM/CTM) is connected to the ALEXA or UMC-3A.

Iris Scale ***

- Graphical iris scale, iris position indicator
- Re-writable blank area for individual scale notes
(activate in MENU ⇨ CONTROL SETUP ⇨ SLIDER ⇨ BLANK SCREEN)

Iris Value With some ARRI analog cameras, the iris value will be shown instead of the iris scale.

Focus Scale*** Moving focus lens scale image, MARKER positions.

Focus Value Numerical focal value in metric or imperial values.

Depth Of Field Yellow depth of field range bar, if lens data is available from the ALEXA.

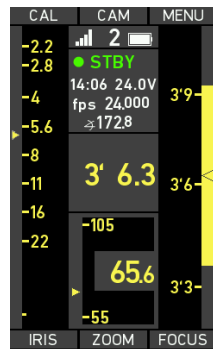
Focus Markers Up to eight pre-set markers will be shown as lines in the depth-of-field bar area.

Zoom Scale*** Zoom lens scale extents values, zoom position indication, limits indication.

Zoom Value Numerical zoom value.

*** if the display scale or pointer moves in opposite direction to the slider/stick/knob, change the respective motor direction on the camera or UMC-3A

8.2 Main Screen Menus



Press one of the following softbuttons on the main screen to enter a menu:

CAM, MENU, IRIS, ZOOM, FOCUS



To navigate through the menu items use the softbuttons:

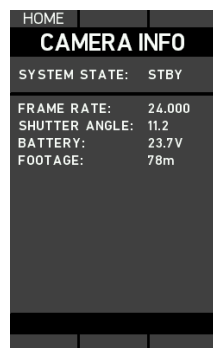
- HOME** Return to the main screen.
- BACK** Return to the previous menu screen.
- DOWN*** Step down to the next item on screen.
- UP*** Step up to the next item on screen.
- ENTER** Confirm the menu item selection.

* Keep softbutton pressed to scroll through the list.

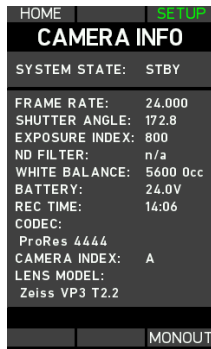
8.3 Menu CAM

The sub-menu CAM displays detailed camera information, if available from the connected camera.

Typical analog camera screen



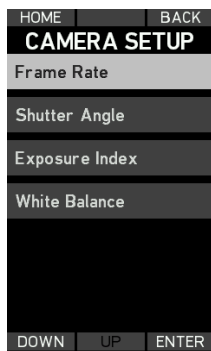
Typical ALEXA screen:



- HOME** Return to the main screen.
- SETUP**** enter the ALEXA **SETUP** screen
- MONOUT**** enter the ALEXA **MONITOR OUT** screen

** Available with optionally available **ALEXA Remote** software license. Firmware version SUP9 for ALEXA and 01.01 for the WCU-4 are required for full functionality

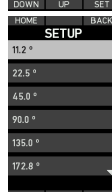
With the optionally available ALEXA Remote license installed, the user has remote access to a number of camera settings.



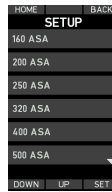
Pressing **SETUP** the following sub-menus are available:



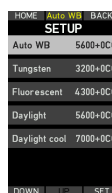
- Frame Rate
select a frame rate from the pre-set fps list of the connected ALEXA



- Shutter Angle
select a shutter angle from the pre-set shutter angle list of the connected ALEXA



- Exposure Index
sets the exposure index rated in ASA. The ALEXA has a base sensitivity of 800 ASA. The camera's EI rating can be adjusted from 160 to 3200 ASA.
Note: ASA rating is identical to ISO rating.
Note: Exposure Index is not applied to ARRIRAW signals.

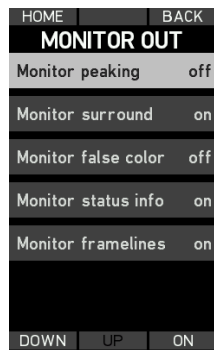


- White Balance
Sets the camera's white balance. This is the color temperature of the light source that the ALEXA is currently adjusted for. Select a white balance value from the pre-set white balance list of the connected ALEXA.
The user can execute an automatic white balance by pressing the **Auto WB** button.
Note: A pop-up window will inform, if the action has been successful or not.

- ND Filter on/off (ALEXA Studio only)

- Press **DOWN** Step down to the next item on screen.
- UP** Step up to the next item on screen.
- BACK** Return to the Camera Info screen.
- SET** Set the camera to the selected value.

A set of important camera information is available on the monitor output.



Pressing **MONOUT** the following selection list is available:

- Monitor Peaking on/off
- Monitor Surround on/off
- Monitor False Color on/off
- Monitor Status Info on/off
- Monitor Framelines on/off

Press

- DOWN** Step down to the next item on screen.
- UP** Step up to the next item on screen.
- BACK** Return to the Camera Info screen.
- ON or OFF** Toggle the respective output state.

8.4 Menu MENU

A number of user definable configurations are available in the following sub-menus. The user has also access to more detailed system information, WCU-4 firmware updates and installation of licensed software features.

Sub-Menu RADIO CHANNEL



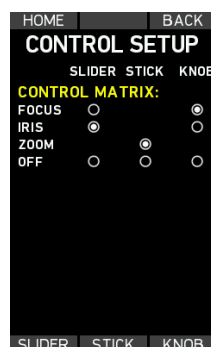
- ON OFF** Enable/disable radio transmission.
- UP or DOWN** Change the radio channel.
- SET** Confirm the radio channel selection.

Shown setting:
Radio active on channel "1".

Note: When selecting a radio channel, please consider potential local legal restrictions of transmission bands usage. A list of the WCU-4 transmission frequencies as well as the general FCC certification can be found in the Electrical Specifications section of this manual.

Sub-Menu CONTROL SETUP

This screen shows an overview of the current WCU-4 control configuration. In this menu the WCU-4 lens motor control can be pre-set, but it is not possible to change the lens motor settings on the camera or the UMC-3A. If more than one WCU-4 or an additional zoom unit shall control the lens motors at a time, it is the responsibility of the user to avoid control conflicts within the hand-units.

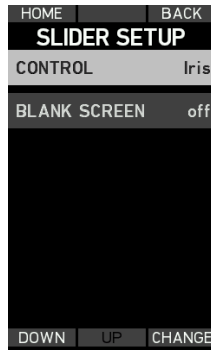


- STICK** Enter the (ZOOM)-STICK setup sub-menu.
- SLIDER** Enter the SLIDER setup sub-menu.
- KNOB** Enter the KNOB setup sub-menu.

Shown settings:
CONTROL MATRIX: All motors assigned and enabled.
Focus with knob.
Iris with slider.
Zoom with stick.

Sub-Menu CONTROL SETUP > SLIDER SETUP

Select lens motor control, enable/disable blank screen in the Iris scale area.



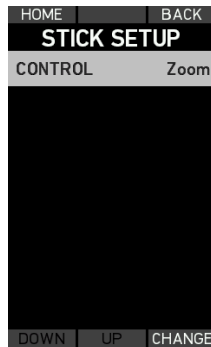
UP or DOWN Select the sub-menu item.
CHANGE Change the function.
BACK Return to the SYSTEM SETUP screen and keep changes.

CONTROL: Slider control.
 Options: iris, focus, off.
BLANK SCREEN: White marker area for slider.
 Options: on, off.

Note: For individual Iris marks on the Iris Scale display area use a water-based felt marker.

Sub-Menu CONTROL SETUP > STICK SETUP

Select zoom lens motor control.

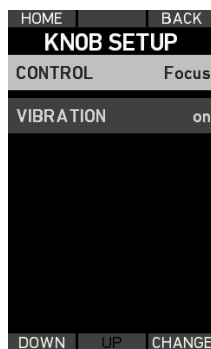


UP or DOWN Select the sub-menu item.
CHANGE Change the function.
BACK Return to the SYSTEM SETUP screen and keep changes.

CONTROL: Stick controls zoom.
 Options: zoom, off.

Sub-Menu CONTROL SETUP > KNOB SETUP

Select lens motor control, enable/disable vibration.



UP or DOWN Select the sub-menu item.
CHANGE Change the function.
BACK Return to the SYSTEM SETUP screen and keep changes.

CONTROL: Knob control.
 Options: focus, iris, off.
VIBRATION: Vibration on knob marker position.
 Options: on, off.

Sub-Menu MOTOR TORQUE

Using CLM-3 and CLM-4 motors, the motor torque can be adapted to the kind of lens and application, especially to prevent sensitive lenses from mechanical overload.

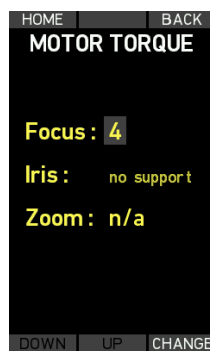
For small, less ruggedly designed lenses, the torque should be set to lower values.

For high speed applications and large lenses, the torque may be set to higher values.

For connected CLM-2 motors no torque adjustment is available.

The display will show **no support** in this case.

If no motor is connected, the display will show **n/a**.



UP or DOWN Select the focus, iris or zoom motor.
CHANGE Change the torque limit.

Shown settings:

Focus: Torque level 4 (1-4 available).

Iris: No torque setting possible (CLM-2 motor).

Zoom: Not connected to the WCU-4.



CLM-3 lens motors provide very high torque for high speed lens drive. Be sure that lens, lens motors and rods are correctly adjusted and fastened.

Take care to re-calibrate the CLM-3 motor after re-attachment of the motor and after each lens change!

Ignoring this procedure can lead to severe lens damage.

Note:

If the torque level is not adequate to lens properties or operation temperature, the electronic torque limitation may cause a high-frequency noise.

Use a higher torque level to reduce this effect.

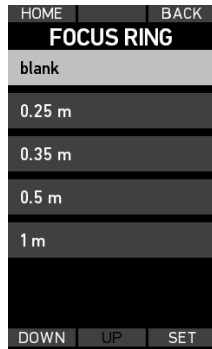
Sub-Menu PREMARKED FOCUS RING

For mapping the focus scale of ARRI LDS lenses or other lenses, represented in the ARRI Lens Data Archive, a set of replaceable pre-marked focus rings is available. For lenses not yet represented in the Lens Data Archive (LDA) a blank focus ring may be used.

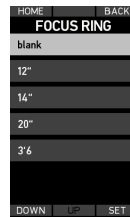
Select a focus ring with a lower value, but next to the nearest distance shown on the lens scale.

Example: Lowest focus distance on the lens: 0.8 m
 Available focus rings: 0.25 m, 0.35 m, 0.5 m, 1 m (12",14", 20",36")
 ⇒ Best fit: Focus ring with 0.5 m

- Select the lens from the ALEXA LDA menu.
- Select the focus ring from the WCU-4 menu.
- The focus lens scale on the WCU-4 will now map to the lens on the camera.



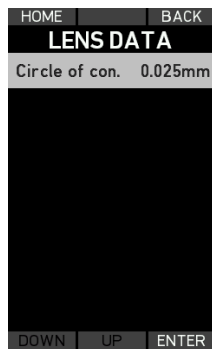
UP or DOWN SET Select the attached focus ring.
Confirm the selection.



Note: The displayed focus unit (metric - imperial) depends on the camera setting or LDS lens type.

Sub-Menu LENS DATA

The circle of confusion for correct calculation of depth of field can be set in this menu.

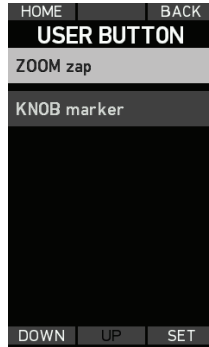


UP or DOWN SET Select the preferred circle of confusion.
Confirm the selection.



Sub-Menu USER BUTTON

The WCU-4's user button may be assigned to different functions.

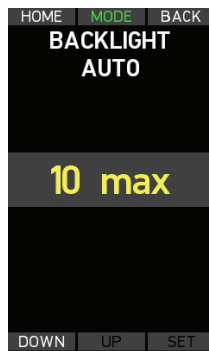


UP or DOWN Select the User Button function.
SET Confirm the selection.

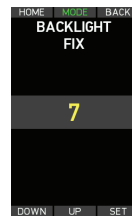
ZOOM zap Function (Zoom full speed).
 KNOB marker Set new marker on knob scale.

Sub-Menu BACKLIGHT

The WCU-4 display and knob scale illumination may be dimmed to operational needs. The backlight intensity may be set to a fixed value or automatically up to a pre-set maximum value, ambient light dependent.



MODE Toggles between FIX and AUTO mode.
UP or DOWN Change the illumination intensity from 0 to 10.
SET Confirm the selection.

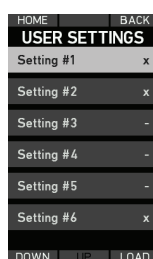


Sub-Menu USER SETTINGS

Up to six user settings may be stored and recalled on/from an SD card. The WCU-4 can also be re-set to the factory settings.



UP or DOWN Select LOAD, SAVE or factory reset.
ENTER The LOAD or SAVE sub-menu or reset to factory settings.



UP or DOWN Select the setting number.
SAVE The highlighted setup to SD card.
LOAD The highlighted setup from SD card.

X marked settings have been saved previously and can be overwritten without request.

Sub-Menu FIRMWARE

The WCU-4’s versatile layout allows many functions to be implemented. For a user-friendly integration of future functions, an easy-to-use firmware update procedure has been integrated.

In addition, fee-based licensed features, especially for ALEXA camera control, are available.

WCU-4 software licenses are bound to the WCU-4’s serial number and cannot be transferred to another WCU-4.

For a WCU-4 update you need to prepare a standard FAT-32 formatted SD or SDHC memory card up to 32 Gb (not enclosed).

The update or license file must be copied into the **Firmware** or **Licenses** folder, using the following folder structure:

- ```

ARRI
 - WCU4
 - Firmware
 - xxxx.upd
 - Licenses
 - xxxx.lic

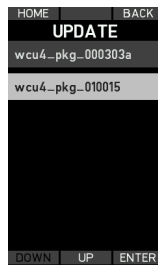
```

Load the card into the SD card slot, located at the WCU-4’s bottom (card “face-up”).

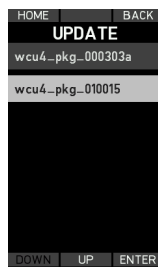
**Note:**

Be sure that the battery is completely charged prior to starting any update!  
Do not remove the battery until the WCU-4 has re-started automatically after update.

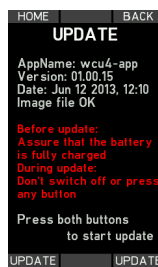
### UPDATE



**UP or DOWN** Select **Update file**.  
**ENTER** Confirm the selection.

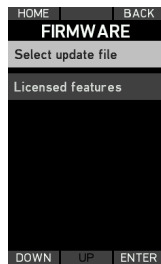


**UP or DOWN** Select the update file.  
**ENTER** Confirm the selection



**UPDATE** Press both UPDATE keys simultaneously for firmware update.  
The WCU-4 re-starts automatically when the update is finished.

## LICENSES



### INSTALL a license

A licensed feature is bound to the WCU-4's hardware serial number.

Before purchasing a license key, you must save the WCU-4's hardware info file for upload during the purchasing process.

Select LICENSED FEATURES from the FIRMWARE menu.

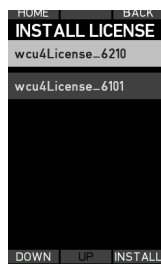
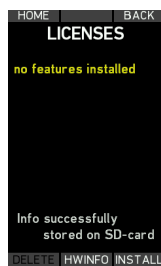
Install an SD card and press the HWINFO softbutton.

A file named "K2.72103.0-####-wcu4.ipkg" will be generated, with #### being the WCU-4 serial number.

Visit the ARRI LICENSE SHOP at <http://alshop.arri.de> and follow the instructions for purchasing and downloading license keys.

Available licenses for WCU-4 currently include:

**ALEXA Remote** License Key (K2.72145.0)

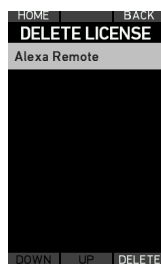


To install the new license(s) after purchase, copy the license file to the SD card, using the above described folder structure.

Install the SD card and again select LICENSED FEATURES from the FIRMWARE menu.

Press the INSTALL softbutton and select a license file from the INSTALL LICENSE screen using the UP/DOWN softbuttons, if necessary.

Press the INSTALL softbutton again, then confirm your selection by pressing both INSTALL softbuttons.



### DELETE a license

Press the DELETE softbutton and select a license file from the DELETE LICENSE screen, using the UP/DOWN softbuttons.

Press the DELETE softbutton and select a license file from the DELETE LICENSE screen using the UP/DOWN softbuttons, if necessary.

Press the DELETE softbutton again, then confirm your selection by pressing both DELETE softbuttons.

Once purchased, a license key can be re-installed again to the linked WCU-4 at any time.

**Sub-Menu SYSTEM INFO**

This screen shows the installed WCU-4 firmware version, network (MAC) address and firmware version of the installed radio module, and the MAC address(es) of the connected device(s).

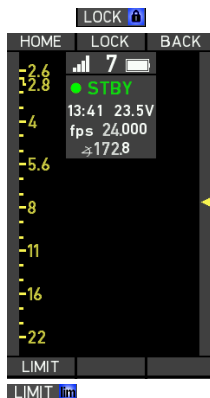


- Shown settings:
- WCU-4: Software version and date
  - Internal radio module: Radio network address and firmware version
  - Connected camera/UMC-3A: Radio network address
  - WCU-4: Serial number

**8.5 Menu IRIS**

The IRIS sub-menu allows the setting of LIMITs and LOCKing the Iris to a set value. If LIMIT is set, the complete slider travel is available for the limited Iris range, thus stretching the Iris scale.

Symbols next to the LIMIT softbutton item indicate that LIMIT or LOCK is active.



How to use the LIMIT function:

- LIMIT** Shift the slider to the first LIMIT position. Press to store the current Iris position. - LIMIT starts blinking and a LIM symbol appears
- LIMIT** Adjust slider to the second LIMIT position. Press to store the current Iris position. - LIMIT and the LIM symbol stop blinking\*
- LIMIT** Press again to clear the LIMIT positions.
- LOCK** Press to lock the current Iris position. - A padlock symbol will indicate the LOCK status
- LOCK** Press again to clear the LOCK function.

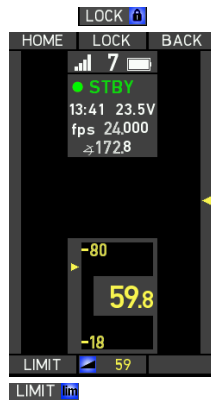
\* An alternate method to set LIMITs is to press and hold the LIMIT button on the first position, move to the second position and release the LIMIT button then.

**Note:** LOCK can be set within the LIMIT borders, even when LIMIT is active, and will override the LIMIT function in this case.

## 8.6 Menu ZOOM

The ZOOM sub-menu allows the setting of LIMITs, LOCKing the zoom to a set value and limiting the maximum zoom speed.

Symbols next to the LIMIT softbutton item indicate that LIMIT or LOCK is active.



**LOCK** Press to lock the current Zoom position.  
- A padlock symbol will indicate the LOCK status

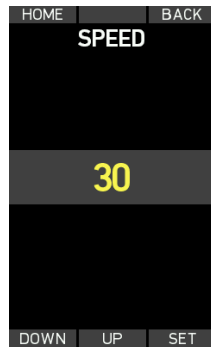
**LOCK** Press again to clear the LOCK function.

How to use the LIMIT function:

**LIMIT** Press to store the current Zoom position.  
- LIMIT starts blinking and a LIM symbol appears  
- Drive motor to the second LIMIT position

**LIMIT** Press to store the current Zoom position.  
- LIMIT and the LIM symbol stop blinking\*

**LIMIT** Press again to clear the LIMIT positions.



How to use the maximum Zoom speed function:

**30** Press to enter the zoom speed sub-menu.

**UP or DOWN** Press to select the maximum zoom speed.  
Press and hold to change the speed in steps of tens.

**SET** Confirm the selection.

\* An alternate method to set LIMITs is to press and hold the LIMIT button on the first position, move to the second position and release the LIMIT button then.

**Note:** LOCK can be set within the LIMIT borders, even when LIMIT is active, and will override the LIMIT function in this case.

## 8.7 Menu FOCUS

The FOCUS sub-menu allows the setting of LIMITs, LOCKing the focus to a set value, squeezing the focus scale to a limited knob angle (K-LIM) and setting up to eight color-coded focus markers.

With the use of LDS or LDA lenses, a scale OFFSET may be added. Symbols next to the FOCUS softbutton item indicate that LIMIT, K-LIM or LOCK is active.



**LOCK** Press to lock the current Focus position.  
- A padlock symbol will indicate the LOCK status

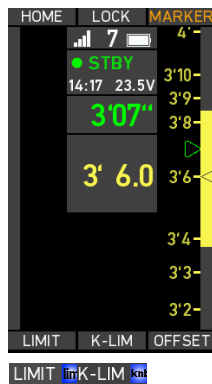
**LOCK** Press again to clear the LOCK function.

**MARKER** Press to enter the MARKER menu.  
**MARK\*\*** Press to set a marker at the current knob position.  
- A colored line occurs next to the Focus scale  
- Passing the Focus mark activates the WCU-4's vibration indicator

**REMOVE** Press to clear the actual marker position.

**RESET** Press to clear all markers.

\*\* If the function "KNOB marker" in the USER BUTTON menu is activated, pressing the user button also MARKs the actual knob position.



**MOTOR** Press to switch back to the lens drive menu.

How to use the LIMIT function:

**LIMIT** Turn the knob to the first LIMIT position.  
**LIMIT** Press to store the current focus position.  
- LIMIT starts blinking and a LIM symbol appears  
Adjust the knob to the second LIMIT position.

**LIMIT** Press to store the current focus position.  
- LIMIT and the LIM symbol stop blinking\*

**LIMIT** Press again to clear the LIMIT positions.

How to use the K-LIM function:

**K-LIM** Turn the knob to the first LIMIT position.  
**K-LIM** Press to store the current knob position.  
- K-LIM starts blinking and a **knb** symbol appears.  
Adjust the knob to the second K-LIM position.

**K-LIM** Press to store the current knob position.  
- K-LIM and the **knb** symbol stops blinking.

**K-LIM** Press again to clear the K-LIM positions.

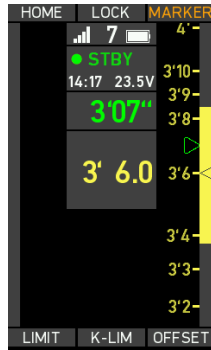
\* An alternate method to set LIMITs is to press and hold the LIMIT softbutton on the first position, move to the second position and release the LIMIT softbutton then.

**Note:** LOCK can be set within the LIMIT borders, even when LIMIT is active, and will override the LIMIT function in this case.  
K-LIM and LIMIT can be combined. A **FOCUS** symbol will be displayed next to the FOCUS softbutton.

How to use the OFFSET function:

In some cases the lens scale and the WCU-4 scale may diverge slightly or lenses have to be synchronised, eg. for 3D shooting.

Using the WCU-4 OFFSET, one can align scales easily.



**OFFSET** Press and hold, turn the knob to the desired position, then release the OFFSET softbutton.

**OFFSET** Repeat the procedure to change the offset value.

**K-LIM** Press to clear the offset setting.

**Note:** The OFFSET value is stored in the ALEXA or UMC-3A (for 3D setup only) until the connected camera or UMC-3A is powered down.

## A Appendix

### A.1 Order Numbers and Accessories

K2.72103.0 WCU-4 Wireless Compact Unit

Included accessories:

|            |                             |
|------------|-----------------------------|
| K2.72117.0 | WCU-4 Blank Focus Ring      |
| K4.72467.0 | WCU-4 Hand Strap            |
| K4.72487.0 | WCU-4 Neck Lanyard          |
| K5.74420.0 | WCU-4 Quick Guide           |
| K5.74422.0 | WCU-4 User Manual (english) |

Recommended battery and charger:

|            |                                                        |
|------------|--------------------------------------------------------|
| K2.47851.0 | SONY NP-FM 500H Li-Ion Battery 7.2 V 11.8 Wh           |
| K2.47852.0 | SONY BC-VM10 Li-Ion Battery Charger with Power Cord EU |

Charger power cords:

|            |               |
|------------|---------------|
| 05.20369.0 | Power Cord UK |
| 05.20370.0 | Power Cord US |
| 05.20368.0 | Power Cord EU |

Power Supply (via LCS connector)

|            |                    |
|------------|--------------------|
| K2.0000425 | Power supply HPS-1 |
|------------|--------------------|

LCS Cables:

|            |                                              |
|------------|----------------------------------------------|
| K4.41395.0 | K-LC-Z1-S LCS Cable 3.5 m (11 ft)            |
| K4.41397.0 | K-LC-M1-Sp-S LCS Spiral Cable                |
| K2.41389.0 | LC-E1 LCS Cable Drum Extension 75 m (250 ft) |

Licensed software keys:

|            |                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------|
| K2.72145.0 | ALEXA Remote License Key for WCU-4<br>Available from ARRI License Shop <a href="http://alshop.arri.de">http://alshop.arri.de</a> |
|------------|----------------------------------------------------------------------------------------------------------------------------------|

Pre-marked focus rings:

|            |                                    |
|------------|------------------------------------|
| K2.72129.0 | WCU-4 Pre-marked Focus Ring 0.25 m |
| K2.72130.0 | WCU-4 Pre-marked Focus Ring 0.35 m |
| K2.72131.0 | WCU-4 Pre-marked Focus Ring 0.5 m  |
| K2.72132.0 | WCU-4 Pre-marked Focus Ring 1 m    |
| K2.72133.0 | WCU-4 Pre-marked Focus Ring 12"    |
| K2.72134.0 | WCU-4 Pre-marked Focus Ring 14"    |
| K2.72135.0 | WCU-4 Pre-marked Focus Ring 20"    |
| K2.72136.0 | WCU-4 Pre-marked Focus Ring 3'6"   |
| K2.0000848 | WCU-4 Knob Calibration Ring        |



## A.2 Connector Pinout

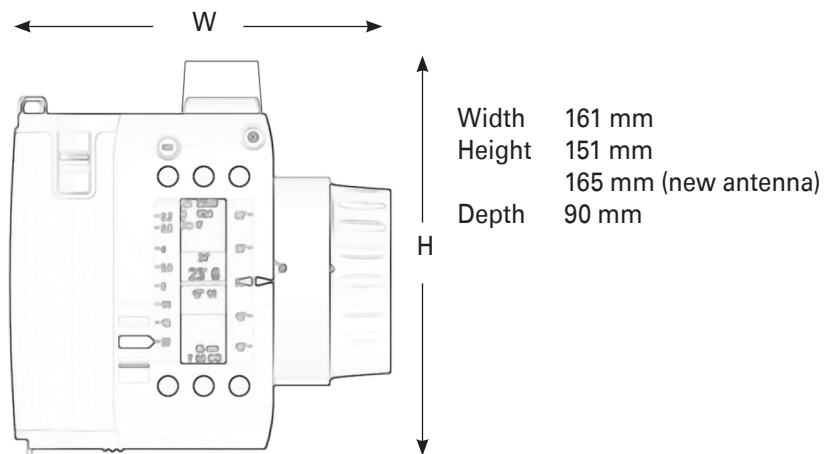
LCS Connector:



Socket View

- 1 GND
- 2 NC
- 3 CAN-L
- 4 CAN-H
- 5 Battery +10.4 to 34 V DC

## A.3 Dimensions and Weight



Ar



Weight: 730 g/25.8 oz.  
Without straps and battery

## A.4 Electrical Specifications

|                        |                                                |
|------------------------|------------------------------------------------|
| Power Supply:          |                                                |
| Battery                | 7.2 V Li-Ion battery                           |
| Via LCS socket         | 10.4 to 34 V DC (camera supply)                |
| Power Consumption      | 220 mA@7.6 V<br>70 mA@24 V                     |
| Operating Temperature: | -20 to +50 °C (-4 to +122°F )                  |
| RF Transmission:       | ISM 2.4 GHz / one of eight channels selectable |

| ARRI Channel No. | Frequency |
|------------------|-----------|
| 0                | 2.410 GHz |
| 1                | 2.415 GHz |
| 2                | 2.430 GHz |
| 3                | 2.435 GHz |
| 4                | 2.450 GHz |
| 5                | 2.455 GHz |
| 6                | 2.470 GHz |
| 7                | 2.475 GHz |



## Declaration of Conformity

We, Manufacturer  
ARRI CINE + VIDEO GERÄTE GmbH  
Pottendorferstrasse 25-27  
A-1120 Wien  
declare that the product  
Wireless Compact Unit

**WCU-4**

is in conformity with

DIN EN 55103-1: 2009  
DIN EN 55022: 2010  
DIN EN 55103-2: 2009  
DIN EN61000-4-2: 1995 +A1: 1998 +A2: 2001  
DIN EN61000-4-3: 2006 +A1: 2008



Built-in Transceiver Module  
is listed under

FCC ID: W7Z-FSTARPRO  
IC: 8254A-FSTARPRO



Alternative built-in Transceiver Module  
is listed under

FCC ID: Y7N-EMIP100  
IC: 9482A-EMIP100

Date:  
February 26, 2013

Signature

Ing. Walter Trauninger















### Class A Statement:

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment complies with the Canadian ICES-003 Class A specifications.  
Cet appareil numérique de la Class A est conforme à la norme NMB-003 du Canada.

## A.5 Symbols and Screen Messages

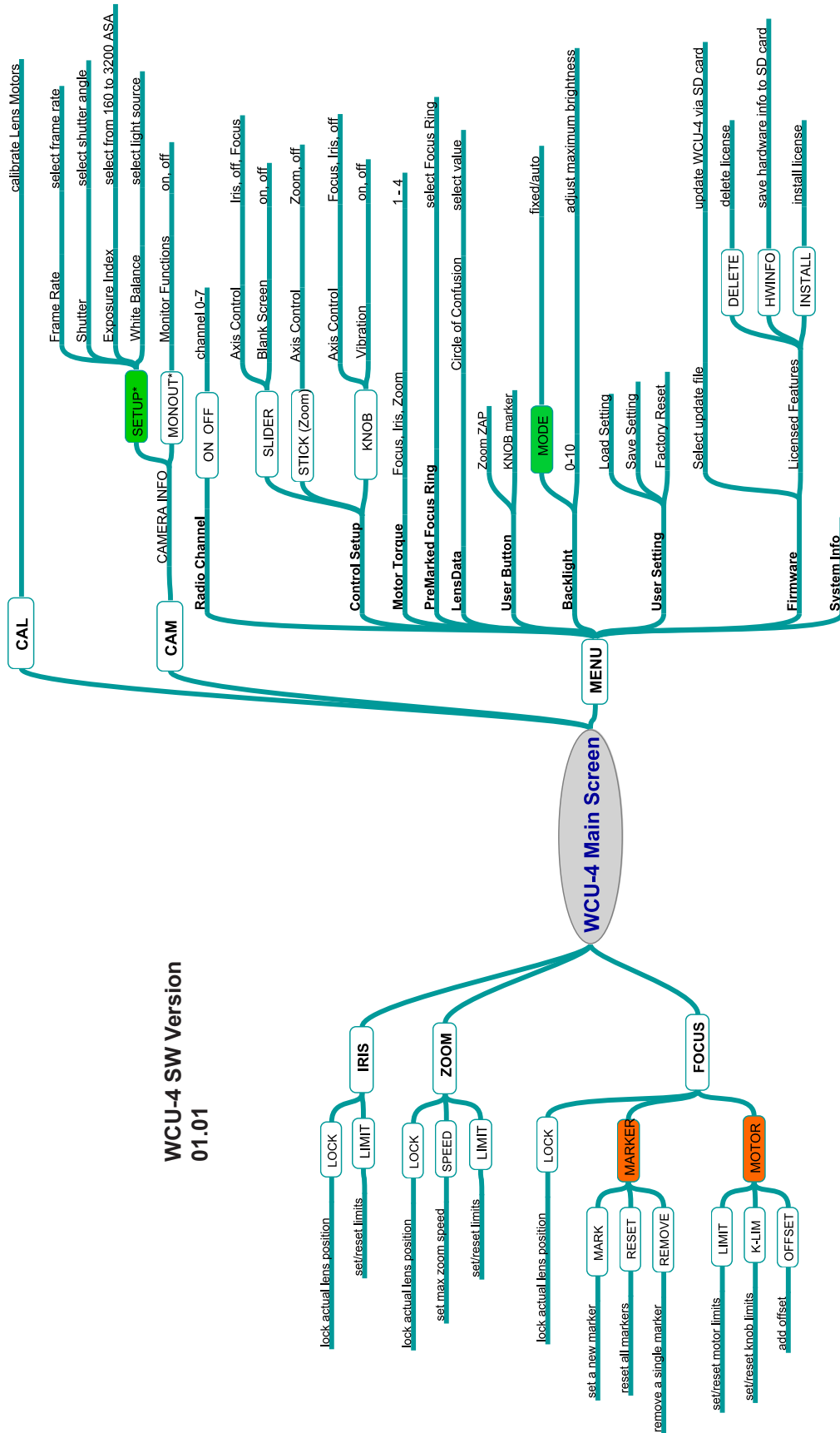
### Main Screen Symbols

|                                                                                     |                                                                                                                                       |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
|    | IRIS motor not connected, equivalent for ZOOM and FOCUS motor.                                                                        |
|    | IRIS motor connected, but not available for the WCU-4, e.g. control through another remote unit, equivalent for ZOOM and FOCUS motor. |
|    | IRIS motor status unknown, e.g. during system startup, equivalent for ZOOM and FOCUS motor.                                           |
|    | Zoom motor LOCKed, equivalent for IRIS and FOCUS motor.                                                                               |
|    | Focus motor LIMITs set, equivalent for IRIS and ZOOM motor.                                                                           |
|    | Focus motor K-LIM set.                                                                                                                |
|    | Focus motor LIMITs combined with K-LIM.                                                                                               |
|   | Zoom motor actual speed value (0-100).                                                                                                |
|  | CAM information, respond to message or CANCEL.                                                                                        |
|  | Critical CAM information, respond to message or CANCEL.                                                                               |
|  | Radio connection active.                                                                                                              |
|  | Radio connection disabled.                                                                                                            |
|  | Low battery.                                                                                                                          |
|  | Pre-marked focus ring active, but no lens data available from camera or UMC-3A.<br>ATTENTION: Focus control is disabled in this case. |

### Screen Messages

| Message                                                     | Description                                                                                                                          |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| HW Info file could not be stored.<br>Please insert SD card. | Insert a SD-card.                                                                                                                    |
| License file not valid!                                     | The license file on the SD card does not correspond to the WCU-4 serial number.                                                      |
| Used path not found!                                        | Create a valid folder structure on the SD card like shown on page 24 (sub-menu Firmware).                                            |
| Disabled during record                                      | Function not available during camera record.                                                                                         |
| Calibrate lens motors now?                                  | Calibrate lens motors - recommended.<br>In case you are sure that nothing has been changed since the last calibration, press CANCEL. |
| Motors calibrating ...                                      | Wait until calibration is finished.                                                                                                  |

## A.6 Menu Tree



WCU-4 SW Version  
01.01

\* Functions available with optional ALEXA Remote Software License

## A.7 Service Mode

The service mode offers re-calibration of focus knob, iris slider and zoom stick. This particularly fixes a potential non-linearity of the focus knob that can cause a misalignment with pre-marked focus rings and hand-marked rings that are exchanged between various WCU-4 units. All WCU-4 units above serial number 6262 are delivered with the extended knob calibration from the factory. ONLY use the service mode if you experience issues and need to re-calibrate the WCU-4 control devices! Make sure that you understand the calibration procedure before using it.

Please note that hand-marked focus rings might have an offset after re-calibrating the focus knob!

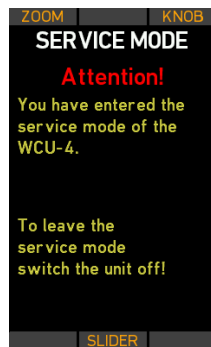


To avoid unexpected interaction with an occasionally connected camera or UMC, be sure the radio is disabled and no cable is connected to the LCS socket.

The new calibration becomes effective after rebooting the WCU-4.

Switch-on the unit, instantly press and hold both upper and lower middle softbuttons until the service mode screen appears.

Available procedures:



**ZOOM** Adjust zero position and direction.

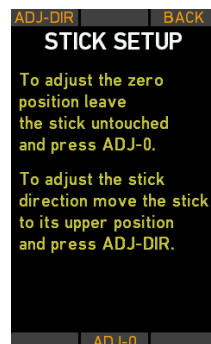
**KNOB** Adjust end-stops and linearity\*.

**SLIDER** Adjust end-stops and linearity.

\* An optionally available focus ring will be needed for linearity alignment.

### ZOOM Calibration mode

Press the **ZOOM** softbutton and the STICK SETUP screen appears.



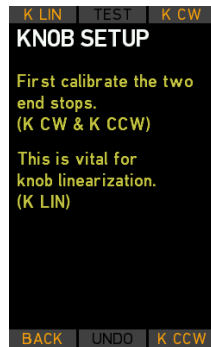
**ADJ-DIR** In the case the zoom actuator acts in the wrong direction, move the stick upwards and press **ADJ-DIR**

**ADJ-0** In the case the zero stick position is not correct (issue: the zoom motor moves without pressing the stick), leave the stick in its center position and press **ADJ-0**.

**BACK** Return to the SERVICE MODE main screen.

## Knob Calibration mode

Press the **KNOB** softbutton and the KNOB SETUP screen appears.



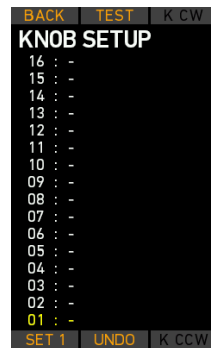
- K-CW** Turn the knob clockwise to its end-position, then press **K-CW**.
- K-CCW** Turn the knob counter-clockwise to its end-position, then press **K-CCW**.

## Knob Linearizing Procedure

Attach the WCU-4 Knob Calibration Ring K2.0000848.



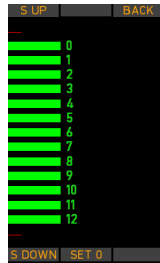
Do not start the linearizing procedure without the ARRI calibration ring applied. Once you pressed SETUP or SET1, you must go through the whole alignment procedure. By this action, the previously stored alignment points will be cleared beyond recall!



- K-LIN** Enter the KNOB SETUP screen
- Press **TEST** to check the aligned ring positions. If the scale does not correspond with the ring positions, press **SETUP** to start the knob linearizing procedure. Turn the knob exactly to ring position to number 1 and
- press **SET1** to confirm and store the alignment position. Repeat the procedure, until you finished with position **SET16**.
- Press **UNDO** if you missed the the correct alignment position and repeat the last step.
- Press **READY** at the end of the procedure to the SERVICE MODE screen.
- BACK** Return to the KNOB SETUP.

## Slider Calibration mode

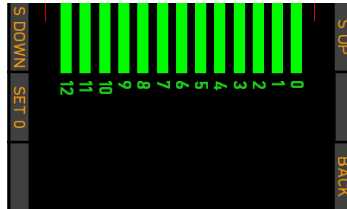
Press the **SLIDER** softbutton and the SLIDER SETUP screen appears.



- S-UP** Move the slider to its top end-position, then press **S-UP**.
- S-DOWN** Move the slider to its bottom end-position, then press **S-DOWN**.

## Slider Linearizing Procedure

**Note:** Beware of a possible parallax error between slider pointer and the displayed alignment bar.



Turn the WCU-4 as shown.

Move the slider exactly to the "0" position bar on the display and

press **SET 0** to confirm and store the alignment position. Repeat the procedure, until you finished with position **SET 12**.

Press **READY** at the end of the procedure to return to the SERVICE MODE screen.

**BACK** Return to the SERVICE MODE screen.





