



# UMC-4

Universal Motor Controller

U S E R M A N U A L

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## Imprint

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## Scope

This instruction manual applies to the following product: Universal Motor Controller UMC-4 with Software Update Package (SUP) 1.1

## Document Information

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## Disclaimer

Before using the products described in this manual be sure to read and understand all respective instruction.

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# For Your Safety

Always keep this document on hand. It should be read, understood and observed by all persons using the Universal Motor Controller UMC-4. All other products must be handled as prescribed by their manufacturers.

## Risk Levels and Alert Symbols

Safety warnings, safety alert symbols, and signal words in these instructions indicate different risk levels:



This symbol alerts you to personal injury hazards or damage to the equipment. Obey all warnings that follow this symbol to avoid possible injury or death or damage to the equipment.



This symbol alerts you to electrical hazards. Obey all warnings that follow this symbol to avoid possible injury or death.



**DANGER!**

Indicates an imminent, hazardous situation which, if not avoided, will result in death or serious injury.

**NOTICE:** Explains practices not related to physical injury. The safety alert symbol is not used with this signal word.

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**Note:** Provides additional information to clarify or simplify a procedure.

---

## **Vital Precautions**

NOTICE: Read and follow all instructions before using the product. Use the product only as described therein. Never open it. Never insert objects.

Never attempt to repair the product: Always have it repaired and serviced by authorized ARRI Service Centers.

Never remove or deactivate any product safety equipment (incl. guarantee stickers).

Always protect the product from moisture, cold, heat, dirt, vibration, shock, or aggressive substances.

## **General Precautions**

Use only the tools, materials and procedures recommended in this document. Unplug all cables during transport.

Do not store the UMC-4 in places where it may be subject to temperature extremes, direct sunlight, high humidity, severe vibration, or strong magnetic fields.

## **Audience and Intended Use**

NOTICE: The product is solely and exclusively available for commercial customers and shall be used by skilled personnel only. Always contact ARRI preceding other uses. Every user should be trained according to ARRI guidelines.

The UMC-4 is a motor controller solely and exclusively for iris, focus or zoom control and lens data capture:

- Wireless via ARRI white radio modem
- Wired via ARRI LCS connection, serial or Ethernet interfaces

Never use the product for any other purpose. Always follow the valid instructions and system requirements for all equipment involved.

# Introduction

The Universal Motor Controller UMC-4 is an advanced 3-axis motor controller. Up to three different hand units can connect to the UMC-4 at the same time, controlling focus, iris and zoom on any camera. The intuitive user interface helps to quickly setup the system and makes it easy to use. The high-performance radio system offers reliable radio connectivity.

The UMC-4 incorporates the LDS Lens Data Archive and generates frame-accurate lens data with any lens. Lens data is used for lens mapping to pre-marked focus rings and depth-of-field display on the WCU-4 hand unit. It also enables focus tracking – setting the focus motor to continuously follow a subject by using an ultrasonic distance measurer. For VFX tasks in post, the UMC-4 records lens data with timecode and inclinometer data, helping match the virtual lens to the recorded image.

The UMC-4 supports internal and external timecode that is recorded with frame-accurate lens data onto SD card, making the lens data usable for postproduction. The internal timecode clock can be jam-synced from external devices, but can output LTC timecode as well.

The UMC-4 includes multiple interfaces for maximum flexibility on set. Two serial interfaces connect peripheral equipment such as ARRI's UDM-1 distance measure. Optional connector modules interface directly with focus and zoom demands from Fujifilm and Canon. An Ethernet connector integrates the UMC-4 with standard IT equipment.

The UMC-4 is splash-proof and embodies the reliability and durability for which ARRI is famous. The worldwide ARRI Service network ensures rapid second level support if needed. New firmware versions can be installed to the unit by means of an SD card.

Visit [www.arri.com/ecs/umc-4](http://www.arri.com/ecs/umc-4) for up-to-date product information and software updates.

## How to Use This Manual

Connectors are written in all capital letters, for example, FOCUS.

Buttons are written in all capital letters, for example, USER button.

Menus and screens are written in italic letters, for example, *Lens* menu and *Home* screen.

The appendix at the back of the manual contains useful reference material including radio frequencies, spare parts and additional accessories, connector pin-out diagrams and dimensional drawings.

## Scope of Delivery

On delivery, please check if the package and its contents are intact. Never accept a damaged/incomplete delivery. A complete delivery includes:

- Universal Motor Controller UMC-4, including antenna
- L-Bracket
- SD card
- Instruction manual
- Original packaging

For scope of warranty, please ask your local ARRI representative. ARRI is not liable for consequences from inadequate shipment, improper use, or third-party products.

## System Requirements

To tap the full potential of the device, have all connected units updated to a firmware equal or higher to those listed below.

Product	Firmware
Wireless Compact Unit WCU-4	SUP 2.0

Product	Firmware
Single Axis Unit SXU-1	SUP 1.0
Zoom Main Unit ZMU-3A	SUP 02G
Wireless Zoom Extension WZE-3	SUP 02A

## QUICK START GUIDE

This quick start guide walks you through setting up the UMC-4 with one hand unit and three motors for wireless lens control.

### Mounting on Camera

Mount the UMC-4 on the camera, preferably in a vertical position by using the L-Bracket, with the antenna pointing upwards and the motor connectors pointing towards the lens. Such a position is necessary for the generation of valid tilt and roll data from the built-in inclinometer.

### Powering up

Connect the UMC-4 to a power source with one of the power cables listed on pages 41 and 42. Power-up the unit by pressing the power button momentarily.

### Setting Time and Date

The time and date of the device are factory preset; however, they are set to Central European Time, which might not be suitable for your location. To set time and date, go to *Menu>System>Date/Time>Set Date/Time*.

Time and date are used in the naming of metadata files recorded to SD card, as well as in the log file. The UMC-4 will keep time and date even if it is disconnected from a power source, as it includes a built-in lithium battery that normally lasts for more than five years.

### Setting up Motors

Attach the motors for focus, iris and/or zoom to the lens. Make sure the motors are properly mounted to their respective lens axes and will not loosen up when operated.

Connect the motor cables to their respective FOCUS, IRIS and ZOOM connectors on the UMC-4.

Go to the *Focus*, *Iris* or *Zoom* sub-page of the *Home* screen and press CAL. ALL to calibrate all motors.

Set up the motor mounting side and torque (if applicable) in the *Focus*, *Iris* and *Zoom* sub-page of the *Home* screen.

*Side* refers to the side of the lens the motor is mounted to (on standard support rods underneath the lens).

*Torque* refers to the motor torque; a higher value means higher torque.

### **Connecting to Hand Unit**

Set the radio channel on the UMC-4 in the *Radio* sub-page of the *Home* screen. Make sure that the radio power is switched on and that the selected radio channel is not already in use by another motor controller.

Set the hand unit to the same radio channel (see the hand unit's user manual for further instructions). Once connected, the UMC-4 status LED will turn blue and the number of connected hand units will display on the UMC-4 *Home* screen.

### **Selecting a Lens File**

Select a lens table if you want to display lens data on the WCU-4 hand unit, or use lens mapping to pre-marked focus rings and focus tracking with the WCU-4 hand unit, or record lens data to SD card:

Go to the *Lens* sub-page of the *Home* screen.

Go to *Add to Favorites* and select the lens you want to use from the list. Press ADD+USE to use the lens table and add it to your list of favorites.

You are now ready to shoot.

---

Note: After connecting a lens motor to the UMC-4 and the lens, it must be calibrated. The lens motor must be recalibrated under the following conditions:

- When the lens motor is detached from the lens
- After changing lenses
- After a change in motor position while powered down



Omitting motor calibration might lead to damage of the lens due to the high level of motor torque!

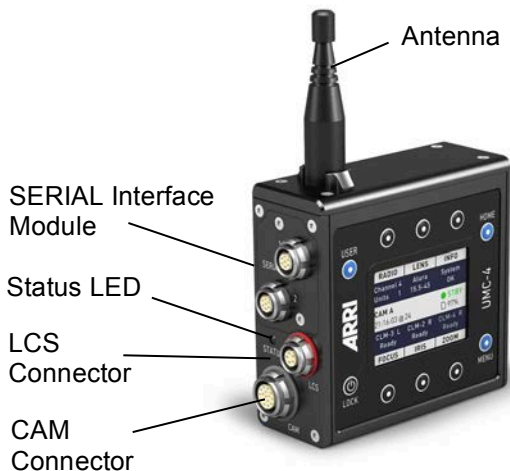
Note: You can program a custom lens file through the ALEXA web interface or with the Wireless Compact Unit WCU-4 (SUP 2.0 onwards)

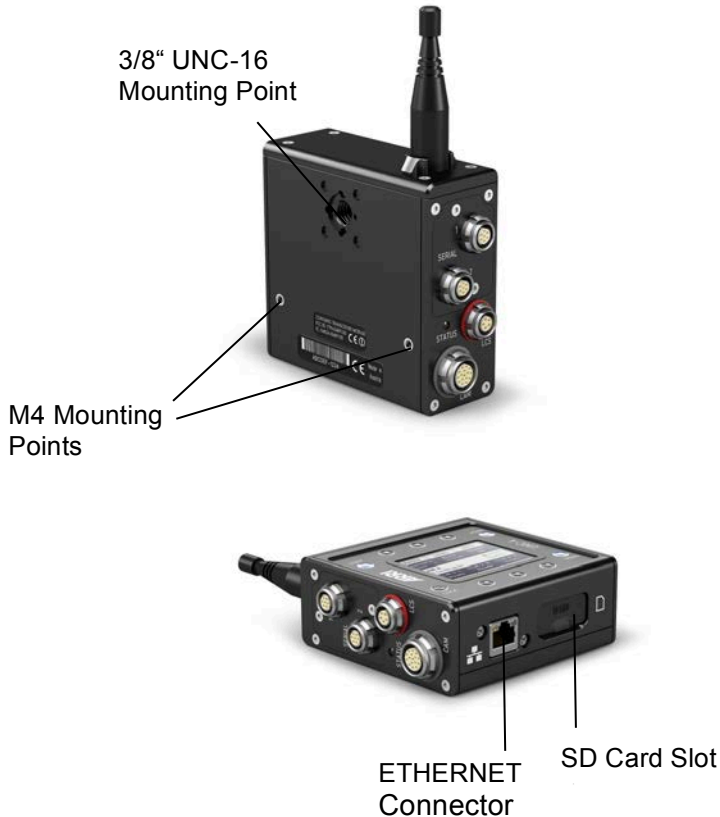
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# Interfaces

The UMC-4 includes multiple interfaces for maximum flexibility on set.





Interface	Description
Antenna	Rugged outdoor antenna
SERIAL Interface Module	Two serial interface connectors to attach peripheral equipment like Ultrasonic Distance Measure UDM-1. Note: Further protocols will be added with subsequent software updates. Optional modules: UMC-4 connector module to Canon focus/zoom demands CAN-1 UMC-4 connector module to Fujinon focus/zoom demands FUJ-1

Interface	Description
Status LED	<p>Indicates controller status:</p> <p>Blue = radio connection is established, motors are calibrated, no warnings</p> <p>Green = wired connection is established, motors are calibrated, no warnings</p> <p>Yellow = motors are calibrated, but no controlling device connected</p> <p>Yellow flashing = motors are currently calibrating</p> <p>Red = motors are not calibrated, not ready to use for lens control</p>
LCS Connector	Connects to hand units via ARRI LCS cable, for wired operation
CAM Connector	Multi-pin connector, offering a variety of protocols, providing REC and tally control for most film and digital cameras
FOCUS Motor Connector	Connects to ARRI Controlled Lens Motor
RS IN Connector	Connects to power source (9.5-34 V), triggers REC and receives tally status via camera RS interface
IRIS Motor Connector	Connects to ARRI Controlled Lens Motor
TC Connector	LTC timecode input and output
ZOOM Motor Connector	Connects to ARRI Controlled Lens Motor
ETHERNET Connector	Connects to Ethernet and provides access to the UMC-4 web interface
SD Card Slot	Mounts an SD card
3/8" UNC Mounting Point	Mounting point for accessories like L-Bracket or V-Plate
M4 Mounting Points	Mounting point for accessories

## Optional Connector Modules

Two optional connector modules interface directly with broadcast-style focus and zoom demands from Fujifilm and Canon. They replace the standard SERIAL connector module that is delivered with the UMC-4.

The installation of the connector modules requires basic skills and knowledge of electronics. Please follow the installation instructions delivered with the modules or contact ARRI Service.



K2.0002043      Module to Fujifilm focus/zoom demands FUJ-1

K2.0002042      Module to Canon focus/zoom demands CAN-1

# Control Panel

The UMC-4 features a comfortable and comprehensive user interface with backlit buttons enabling the user to quickly configure the system. The 2.4" transfective LCD display shows vital status information and is easily readable in any ambient light conditions.



Fig. 1: UMC-4 Control Panel

## Soft Buttons

Six soft buttons are located above and below the display. They change their behavior depending on the screen content. Two rows at the top and the bottom of the screen show the function related to each button. Buttons without a label have no function in that screen.

## **Menu Navigation**

To access a new menu level, press the SELECT soft button. To go one level back up, press the BACK soft button.

Use the up/down arrow soft buttons to navigate through the menu.

A parameter has its value displayed on the right hand of the screen. Edit it with the CHANGE soft button. Cancel an edit action by pressing the BACK (or depending on the context, the CANCEL) soft button.

## **POWER/LOCK Button**

Press and release to switch the UMC-4 on; to switch off the UMC-4, the button must be pressed for three seconds, and a countdown is displayed. If the button is released before the countdown has elapsed, the UMC-4 does not shut down.

Press and release the POWER/LOCK button twice to lock or unlock the user interface. A lock or unlock status symbol will be displayed.

## **HOME Button**

Press the HOME button to enter the *Home* screen.

## **USER Button**

Press the USER button to enter the *User* screen, providing user-definable function shortcuts.

## **MENU Button**

Press the MENU button to enter the UMC-4 main menu. The main menu includes sub menus for system setup, firmware updates, Lens Data Archive, and more.

# HOME

The *Home* screen is the default screen. It shows the most important parameters and gives quick access to changing them through the six soft buttons:

## HOME>RADIO

The RADIO soft button area displays the currently selected radio channel and the number of connected hand units. The soft button is a shortcut to *Menu>Radio*. The radio can be switched on or off and the radio channel can be selected.

### Radio Status

Radio status levels are:

- *Off*: Radio modem is switched off.
- *Initialize...*: Radio modem is initializing.
- *Ready*: Radio modem is initialized and ready to connect to the indicated radio channel.
- *Units 1-3*: Radio is connected to between one and three hand units.
- *Blocked*: Another motor controller is already using the currently selected radio channel. Select another radio channel!

## HOME>LENS

The LENS soft button area displays the currently selected lens file. The soft button is a shortcut to *Menu>Lens*. The *Lens* menu contains the Lens Data Archive with pre-programmed lens tables for many common lenses. Select a lens file to use lens data on the WCU-4 hand unit or if you want to record lens data for postproduction.

## HOME>INFO

The INFO soft button area displays warnings and errors. Press the soft button to open the live info screen. The live info screen displays the UMC-4's current system state and current error messages, and provides the following sub-screens:

- **SYSTEM:** Shows the UMC-4 firmware version, the device's serial number and the voltage level of the power supply
- **SD CARD:** Shows the SD card capacity and the number of recorded metadata clips

Press the CLEAR soft button to reset warning and error messages.

## **HOME>FOCUS**

The FOCUS soft button area displays the motor type, the side the motor is currently set on, and the motor status. The soft button is a shortcut to *Menu>Motors>Focus*, where you can set the motor side and motor torque.

## **HOME>IRIS**

The IRIS soft button area displays the motor type, the side the motor is currently set on, and the motor status. The soft button is a shortcut to *Menu>Motors>Iris*, where you can set the motor side and motor torque.

## **HOME>ZOOM**

The ZOOM soft button area displays the motor type, the side the motor is currently set on, and the motor status. The soft button is a shortcut to *Menu>Motors>Zoom*, where you can set the motor side and motor torque.

### Motor Status

Motor status levels are:

- *None:* No motor connected
- *Calibrate!:* Motor needs to be calibrated
- *Calibrating:* Motor is currently calibrating
- *Idle:* Motor is not assigned to hand unit
- *Ready:* Motor is ready to use

### **Info Area**

The info area in the center of the *Home* screen shows camera index (if set), timecode (if active), the camera recording status and SD card status.



## SD Card Status

The SD card status is indicated by the color of the SD card symbol on the center right side of the HOME screen. The symbol will only show up if an SD card is inserted.

- White-colored symbol: SD card is inserted, write-protection is disabled, and ready to record
- Grey-colored symbol: SD card is inserted, but is write-protected
- Red-colored symbol: Data is currently being recorded on the SD card

The percentage value to the right of the SD card symbol indicates the free capacity left on the SD card.

---

Note: Do not remove the SD card during recording!

---

## MENU

The *Menu* contains parameters for the basic UMC-4 setup. It has a tree structure and the current path in the menu is displayed in the top section of every screen.

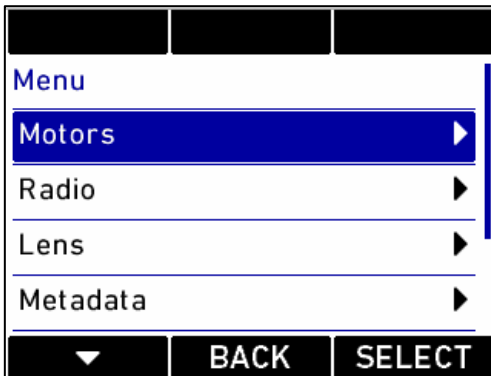


Fig. 2: UMC-4 Menu

## Motors Menu

The *Motors* menu lets you set up the focus, iris and zoom motor, calibrate motors and select the calibration speed.

Press CAL ALL to calibrate all motors.

Press INFO to get a motor status overview.



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Select *Low* calibration speed for mechanically delicate lenses.

---

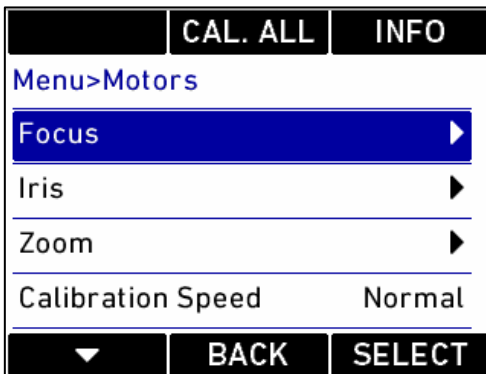


Fig. 3: Motors Menu

### Focus, Iris, Zoom Menu

The *Focus*, *Iris* and *Zoom* menu pages allow the setting of motor mounting side and motor torque.

*Side*: Select the side on which the motor or lens data encoder is mounted to the lens.

*Torque*: Set the torque level for CLM-3 and CLM-4 motors.



Ensure that the motor torque level matches the lens to avoid lens damage. Stiff, hard-to-move lenses require a higher torque level.

---

Torque setting is not available for the CLM-2 motor.

Press CAL ALL to calibrate all motors.

Press CALIBR. to calibrate the current lens motor.

#### Manual Calibration of Lens Data Encoder LDE-1

To manually calibrate a Lens Data Encoder LDE-1, proceed as follows:

Attach the LDE-1 to the lens and connect it to its respective motor connector on the UMC-4 (e.g. if it encodes the focus scale, connect it to the FOCUS motor socket).

Press CALIBR. or CAL. ALL to activate calibration mode. Turn the encoded lens scale to its limits. After reaching both limits, leave the lens encoder still for at least three seconds. The motor status will change from *Calibrating* to *Calibrated*. The calibration is now completed.

---

Note: The *Side* setting for lens motors and lens data encoders refers to mounting on standard support rods on the bottom of the camera.

Note: The *Side* setting for the LDE-1 lens data encoder refers to mounting it with the tying knob facing away from the lens.

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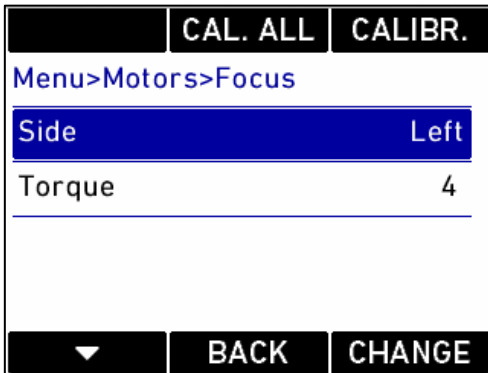


Fig. 4: Focus Motor Menu

### Radio Menu

The *Radio* menu lets you switch the radio on and off and select the radio channel. Select the same channel both on the hand unit and the UMC-4.

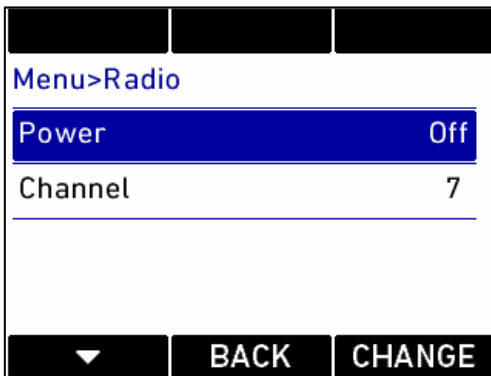


Fig. 5: Radio Menu

### Lens Menu

The *Lens* menu contains the Lens Data Archive with a set of pre-defined lens tables, including ARRI/ZEISS Master Primes, Ultra Primes, Master Anamorphics, Super Speeds, ARRI/FUJINON Alura Zooms and the ARRI Ultra Wide Zoom. Commonly used lenses (e.g. during a specific job) can be added to a user-generated *Favorites* list for quick access.

Press SHOW to display live lens data.

## Favorites

To add a lens table to the *Favorites* list, select *Add to Favorites* from the *Lens* menu. This opens the Lens Data Archive including a library of pre-defined lens tables.

Select a lens type, then a lens model and, in case of Zeiss lenses, a lens class. The lens class can be found on the lens barrel below the infinity symbol of the focus scale.

To add the lens table to the *Favorites* list press ADD; to use it without adding it to *Favorites* press USE; or to do both press ADD+USE.

Press REMOVE to delete the currently selected lens table from the *Favorites* list. Press REM. ALL to delete all lens tables from the *Favorites* list.

## Copying Lens Tables from SD Card

Custom lens tables can be added to the Lens Data Archive's *Custom* folder via SD card. To add a new lens table to the UMC-4, place the lens table on the SD card and insert the SD card into the UMC-4.

Go to *Menu>Lens>Copy from SD Card*. Navigate the SD card's file system until you reach the desired lens table, then press SELECT to select the specific one lens table or press SEL. ALL to select all lens tables in the SD card folder. A popup message will appear offering to instantly add the selected lens table(s) to the favorites list as well. Press YES to add the table(s) to the *Favorites* list, press NO to not add the table(s) to the *Favorites* list or press CANCEL to cancel the whole operation.

Custom lens tables can be deleted in the *Delete Custom Lens Tables* menu.

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Note: You can program a custom lens file through the ALEXA web interface or with the Wireless Compact Unit WCU-4 (SUP 2.0 onwards)

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### Copying Lens Tables to SD Card

Lens tables located in the UMC-4 *Custom* folder of the Lens Data Archive can be copied to the SD card.

Go to *Menu>Lens>Copy from SD Card* to copy all lens tables from the *Custom* folder to the SD card's /ARRI/ALEXA/LDA directory.

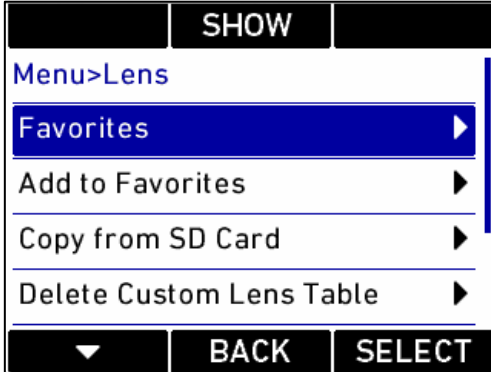


Fig. 6: Lens Menu

### **Metadata Menu**

The *Metadata* menu handles the metadata that is recorded onto SD card.

#### Record Mode

Set *Record Mode* to *Auto* if you want metadata to be recorded to SD card each time the UMC-4 gets a tally (recording) feedback from the camera it is connected to.

Set to *Manual* if you want to start metadata recording to SD card manually. Manual metadata recording can be activated by a USER button. Press the USER button to enter the *User* screen and assign *Record Metadata* to one of the USER buttons (see the USER menu section). Start manual recording by pressing the assigned USER button.



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We recommend using high quality SD cards with the UMC-4. We also recommend formatting each card before use, as this will avoid issues with excessive fragmentation on the card's file system.

---

## Timecode

The UMC-4 can sync to an external LTC timecode. The precise crystal oscillator in the UMC-4 will count accurately with +/- 1 ppm stability. It is recommended to jam-sync after every shooting break to avoid the risk of losing timecode sync during a shot.

The *Timecode* menu allows the setup and display of timecode. Timecode is recorded with the metadata onto SD card and can be used to synchronize metadata with the images in postproduction.

Select *Show in Home Screen* to switch the timecode display in the info area of the *Home* screen on and off.

Select *Frame Rate* to change the time base (23.97, 24, 25, 29.97, 29.97DF, 30, 30DF).

Select *Jam* to change the jam sync mode:

- *Off*: Jam sync is not active. The UMC-4 continuously generates timecode itself and functions as a timecode master clock.
- *Once*: The UMC-4 synchronizes its timecode with the external LTC source and continues counting on its own. After synchronization, a pop-up will appear to indicate the operation was performed.
- *Cont.*: The UMC-4 continuously reads the LTC-timecode signal at the TC connector as long as it is present. Upon disconnection or loss of signal, the UMC-4 continues counting on its own. When the external signal is reconnected, the UMC-4 uses the values of the external signal again.

Select *Set Timecode* to set the timecode. Use the arrow soft buttons to navigate the timecode values. Press the OK soft button to set the timecode. Press the CANCEL soft button to cancel the timecode setting.

Press the SHOW soft button to display the current timecode. Press any soft button to return to the menu.

---

Note: It is recommended to jam-sync after every shooting break to avoid the risk of losing timecode sync during a shot.

Note: The UMC-4 will keep its timecode for at least 30 minutes, even after disconnection from the power source or if it is switched off.

---

## Camera ID

The *Camera ID* entry allows the selection of a camera ID. Use the selection list to assign a letter from A to Z as per the setting of your camera. This information will be shown on the *Home* screen and will be recorded in the metadata file. By selecting “—” the camera ID information will be disabled, both from the *Home* screen and the metadata file.

## Level

Shows the tilt and roll of the UMC-4 in degrees, as measured by the internal inclinometer. This sensor can be reset if it appears to have an offset. Press the RESET soft button to reset the sensor.

---

Note: Mount the UMC-4 on the camera in a defined position. If possible, use the L-Bracket.

Note: The inclinometer can only be reset while both axes are within a threshold of +/- 10 degrees around 0.

---

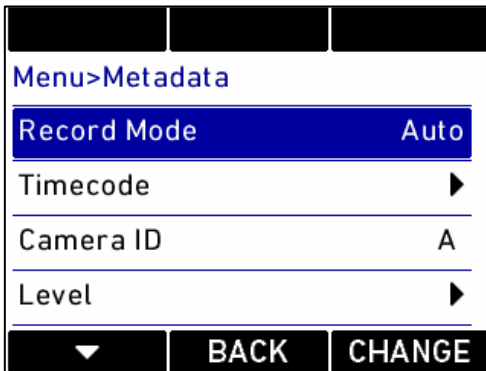


Fig. 7: Metadata Menu

## **Focus/Zoom Demands Menu**

The *Focus/Zoom Demands* menu allows the calibration of the broadcast-style focus and zoom demands.

To calibrate the limits for a demand, connect the demand to the UMC-4 and set the zoom speed control knob to the highest speed setting ('Fast' or 'Max').



Select *Menu>Focus/Zoom Demands>Set Limits*.

Press the FOCUS or ZOOM button and start turning the demand's control knob to its limits to activate calibration mode. After reaching both limits, leave the demand still for at least three seconds. The text on the screen will change from *Calibrating...* to *Calibrated*. The calibration is now completed.

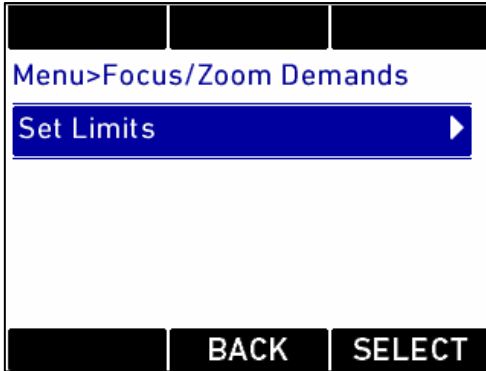


Fig. 8: Focus/Zoom Demands Menu

## System Menu

The *System* menu contains a series of submenus that allows you to configure the UMC-4 to better suit your needs.

### Display Menu

The *Display* menu allows you to set the preferences for the display:

*Color Theme* offers various color themes for the UMC-4 display.

*Display Backlight* lets you set the backlight intensity for the LCD screen.

*Button Backlight* lets you set the backlight intensity for all UMC-4 control buttons.

Select *Enter Sleep After* to set the sleep mode timing.

*Sleep Mode* lets you set whether the sleep mode will apply to only buttons or display and buttons.

### Date/Time Menu

By selecting the *Date/Time* menu you can either show the current date and time on the screen, or set the current date and time of the UMC-4:

Press the SHOW soft button to display the current time.

Press any soft button to return to the menu.

Enter the *Set Time/Date* submenu to set the current time and date. Use the arrow soft buttons to navigate through the time and date settings. Press the OK soft button to save your settings. Press the CANCEL soft button to abort the setting and return back to the menu.

### Network Menu

The network menu includes the following entries:

**Show Parameters:** All the relevant parameters of the network interface are shown in this screen.

**Configuration Source:** Pressing this button toggles between *DHCP* and *Manual*. If *DHCP* mode is selected, the UMC-4 will search for a DHCP server on the LAN to provide all the required network parameters. If *Manual* mode is selected, then the next menu *Set Parameters* will become active and should be used to manually configure the network parameters.

**Set Parameters:** This menu is accessible only if the menu entry *Configuration Source* is set on *Manual*. You can set here the IP Address, the Network Mask, the Gateway Address and the DNS address. Use the right and left arrows to select a specific parameter and the up and down arrows to modify their values.

---

**Note:** The UMC-4 supports Apple's Bonjour® protocol; its Bonjour name is similar to "UMC4-#####.local", where "#####" stands for the UMC-4 serial number. For simple setups consisting of a PC and one or more UMC-4 units, connect the PC to the UMC-4 using a standard Ethernet cable. Make sure that your PC supports Bonjour protocol (e.g. by installing Apple's Safari browser) and select in the Bonjour bookmarks, or type the Bonjour name of the unit you want to access in the browser's URL edit box. Set the *Configuration Source* in UMC-4 to DHCP.

---

## Settings Menu

The *Settings* menu allows users to save the current settings of the UMC-4, to load some previously saved settings or to load the factory default settings.

Select the *Save Settings* menu to save the current settings onto the SD card (a writable SD card must be inserted in the card slot). The settings file will be saved in the directory /ARRI/UMC4/settings. If the directory does not exist, it will be automatically created.

Select *Load Settings* and navigate to the previously saved settings on the SD card (normally /ARRI/UMC4/settings). Select the settings file. The settings in the file will replace the current settings in the UMC-4.

Select *Factory Defaults* to load the factory defaults into the UMC-4.

---

Note: The current settings in the UMC-4 will be lost after loading a settings file!

Note: The current settings in the UMC-4 will be lost after loading the factory defaults!

---

## Firmware Update Menu

To keep your UMC-4 up-to-date, you may need to update its firmware. Please check ARRI's website for the latest firmware packages. To update the device, proceed as follows:

1. Copy the firmware update package onto an SD card.
2. Insert the SD card in the SD card slot of the UMC-4.
3. Select *Menu>System>Firmware Update*, and navigate to the update package on the SD card.
4. Select the package. A list of modules will be shown on the screen.
5. Press UPDATE. A new warning screen will be displayed. Proceed by simultaneously pressing the two UPDATE buttons. The screen will blackout and the status LED starts blinking red and green. The unit is being updated. This can take up to 30 seconds.

6. The UMC-4 will reboot after the update is completed. Depending on the update package content, additional modules might need to be updated after reboot; this is done automatically and is clearly indicated on the screen of the device. The second phase of the update procedure may take several minutes.



---

Do not switch power off and do not remove the SD card during the update as this may damage the UMC-4! In case of problems, see the troubleshooting section.

---

### Save Log to SD Card Menu

Select the *Save Log to SD Card* menu if you want to save the log file to the SD card. This may be required when you contact the ARRI support staff. The log file will be saved immediately and can be found in the `/ARRI/UMC4/logs` directory.

### Format SD Card

Select *Format SD Card* to format the SD card and add the ARRI specific directory structure:

```
/ARRI/UMC4  /Firmware
              /Logs
              /Metadata
              /Settings
```

---

Note: All the data on the SD card will be lost after formatting the card!

---

### System Info Menu

Select the *System Info* menu to identify the current firmware version, the serial number, and the power source's current voltage.

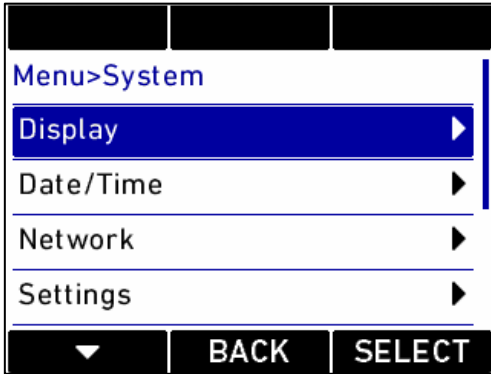


Fig. 9: System Menu

# USER

Pressing the USER button opens the *User* screen, providing quick links to important functions/settings. Pressing the USER button a second time will switch to a configuration screen, where each button can be assigned to one of the pre-defined functions.

On delivery the UMC-4 comes with factory-programmed functions on each user button. To change them, enter the configuration screen by pressing the USER button twice. Select the button from the list, and assign the desired function. Proceed in a similar way for all user buttons you wish to reconfigure.

USER assignable functions include:

- None
- Select Lens
- Show Lens Data
- Calibrate Motors
- Set Display
- Show Timecode
- Jam Timecode
- Focus Tracking
- Show Network
- Radio On/Off
- Record Metadata
- Level Sensor

USER 1	USER 2	USER 3
Show Lens Data	Select Lens	Calibrate all Motors
Press USER to edit		
Show Timecode	Jam Timecode	Level Sensor
USER 4	USER 5	USER 6

Fig. 10: User Screen

## Web Interface

The UMC-4 includes an embedded web server that can be accessed through a web browser using Apple's Bonjour® protocol.

To access the UMC-4 web interface, connect the UMC-4 to a computer with a standard Ethernet cable. Open the web browser on the computer. Enter address `umc4-####.local`, with `####` being the UMC-4 serial number.

The web interface displays the current lens data, as well as the current motor, radio and timecode status. Further functions will become available with subsequent software updates.

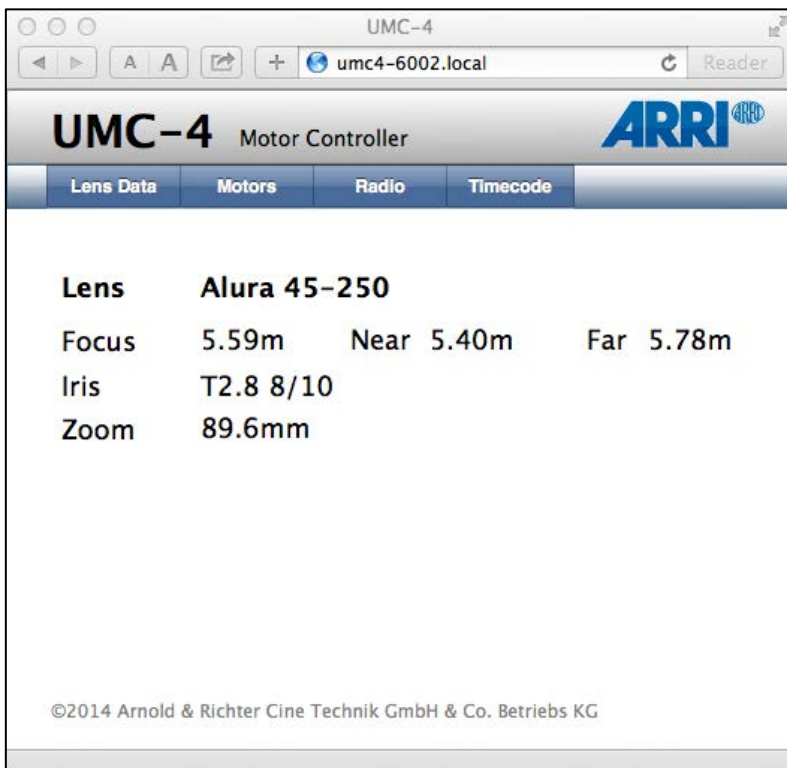


Fig. 11: UMC-4 Web Interface

## VNC Viewer

The UMC-4 includes a VNC® server that can be accessed through a VNC Viewer. The UMC-4 screen can be remotely displayed and settings can be remotely changed through the VNC Viewer.

There are many VNC clients for virtually all operating systems that can be used with the UMC-4. As an example, the VNC Viewer can be downloaded from <https://www.realvnc.com/download/viewer/>. Please follow the installation instructions from the RealVNC website.

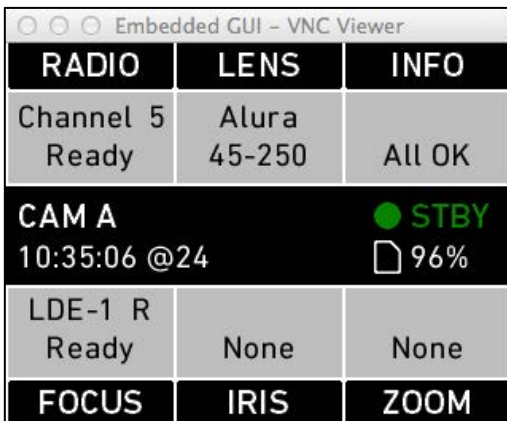
To access the UMC-4 VNC server, connect the UMC-4 to a computer with a standard Ethernet cable. Open the VNC Viewer on the computer. Enter address `umc4-####.local`, with `####` being the UMC-4 serial number. Set Encryption to “Let VNC Server choose”. Press the CONNECT button in the VNC Viewer to connect with the UMC-4. The VNC Viewer will display the UMC-4 screen.

Press M to enter the *Menu*.

Press U to enter the *User* screen.

Press H to return to the *Home* screen.

Use the cursor of the VNC viewer to push the virtual soft buttons or use the up/down, left/right and ENTER keys on your computer keyboard.



Embedded GUI - VNC Viewer		
RADIO	LENS	INFO
Channel 5 Ready	Alura 45-250	All OK
CAM A 10:35:06 @24		● STBY ☐ 96%
LDE-1 R Ready	None	None
FOCUS	IRIS	ZOOM

Fig. 12: VNC Viewer



## Metadata

The UMC-4 records a metadata file when the camera is recording a clip as long as the UMC-4 receives a tally signal from the camera.



---

Make sure to insert a write-enabled SD card with enough free capacity into the UMC-4. Set the UMC-4 to automatic recording mode (*Menu>Metadata>Recording Mode>Auto*) to trigger metadata recording from the camera.

---

The metadata is recorded in a character-separated values (CSV) file to SD card. The CSV values are separated by tab stops. The file name contains the UMC-4 serial number and the date and time of clip generation (e.g. UMC4-06001\_201420140822T192628.csv).

The following metadata is being recorded:

Name	Description	Example
Index	Sequential number	1
Master TC	Timecode	10:08:56:23
Camera Index	Camera index	A
Lens	Lens being used	AZ45-250_6045
Lens Distance Unit	Lens scale	Feet
Lens Focus Distance	Focus distance (in 1/1000 m/ft)	14.358
Lens Focal Length	Focal length (in 1/1000 mm)	50.000
Lens Iris	T-stop	T2.8+7/10
Lens Linear Iris	Linear iris value	3725
RawEncoderFocus RawMotor	Encoder value of focus motor	11251
RawEncoderFocal RawMotor	Encoder value of zoom motor	9436

<b>Name</b>	<b>Description</b>	<b>Example</b>
RawEncoderIris RawMotor	Encoder value of iris motor	4027
EncoderLimFocusMo torMin	Minimum encoder limit of focus motor	0
EncoderLimFocusMo torMax	Maximum encoder limit of focus motor	21122
EncoderLimFocalMot orMin	Minimum encoder limit of zoom motor	0
EncoderLimFocalMot orMax	Maximum encoder limit of zoom motor	21122
EncoderLimIrisMotor Min	Minimum encoder limit of iris motor	0
EncoderLimIrisMotor Max	Maximum encoder limit of iris motor	4585
UMC-4 Tilt	Tilt angle of UMC-4 (degree)	0.1
UMC-4 Roll	Roll angle of UMC-4 (degree)	0.1

# Appendix

## Antenna Connector



The radio connection is established via the antenna connected to the antenna connector. Do not leave the connector open during operation or transport. The radio module inside could be damaged by electrostatic discharge via the open connector. We recommend using the originally supplied antenna only.

## Cables and Accessories

The following accessories are compatible with the UMC-4:

K2.0001967	L-Bracket (supplied with UMC-4)
K2.0001758	V-Plate
K2.0002007	Outdoor Antenna (straight) for UMC-4 Motor Controller (supplied with UMC-4)
K2.0001637	Cable UMC-4 RS IN to RS
K2.0002668	Cable UMC-4 RS IN to D-Tap
K2.0002672	Cable UMC-4 RS IN to PSC (additional PSC cable required)
K2.0002674	Cable UMC-4 RS IN to open end
K2.0005951	Cable UMC-4 to ALEXA
K2.0001604	Cable UMC-4 to AMIRA (REC start/stop and tally with AMIRA SUP 1.1 onwards)
K2.0002919	Cable UMC-4 to LANC (additional RS IN cable required)
K2.65205.0	Cable UMC-3/4 to Sony F35/PSC (additional PSC cable required)
K2.0000321	Cable UMC-3/4 to Sony F55/PSC (additional PSC cable required)
K2.0002620	Cable UMC-4 to F55 (additional RS IN cable required)
K2.0002656	Cable UMC-4 to F65 (additional RS IN cable required)
K2.65186.0	Cable UMC-3/4 to RED ONE/PSC (additional PSC cable required)

K2.0002855	Cable UMC-4 to EPIC (additional RS IN cable required)
K2.65235.0	Cable UMC-3/4 to Video-RS/PSC (additional PSC cable required)
K2.65012.0	Cable UMC-3/4 to Cooke/i (supported with UMC-4 SUP 1.1)
K2.65063.0	Cable UMC-3/4 to Cine Tape Measure (coiled)
K2.0003252	Cable TC IN/OUT (Ambient)
K2.0003254	Cable TC OUT BNC (Ambient)
K2.0003253	Cable TC IN BNC (Ambient)
K2.0003255	Cable TC OUT for EPIC (Ambient)
K2.0002043	UMC-4 connector module to Fujifilm focus/zoom demands FUJ-1
K2.0002042	UMC-4 connector module to Canon focus/zoom demands CAN-1
K2.0002046	UMC-4 connector module with two serial connectors (supplied with UMC-4)

### **Compatible Products**

The UMC-4 supports the following products:

- Wireless Compact Unit WCU-4
- Single Axis Unit SXU-1
- Zoom Main Unit ZMU-3A
- Wireless Zoom Extension WZE-3
- Wireless Compact Unit WCU-3
- Wireless Main Unit WMU-3
- Wireless Focus Unit WFU-3

- Wireless Zoom Unit WZU-3
- Controlled Lens Motor CLM-2
- Controlled Lens Motor CLM-3
- Controlled Lens Motor CLM-4
- Lens Data Encoder LDE-1
- Ultrasonic Distance Measure UDM-1

Note: Use only one lens motor per lens axis.

Note: Up to three hand units can be connected to one UMC-4 in parallel to form a radio network.

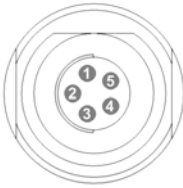
### Connector Pinouts

#### Serial



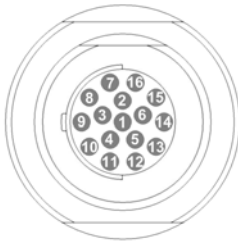
1	GND	Ground
2	+12V	12V output, max 200mA
3	TxD/Tx-	RS232/RS485 – RS422
4	RxD/Rx+	RS232/RS485 – RS422
5	Tx+	RS422 line
6	Rx-	RS422 line

## LCS



1	GND	Ground
2	n.c.	
3	CAN-L	CAN bus
4	CAN-H	CAN bus
5	+V-BAT	Battery supply output

## CAM



1	GND	Ground
2	+V-BAT	9.5 V to 34 V DC IN
3	CAM-TYPE	Camera type sense, analog input
4	Rx-	RS422 line
5	RUN-SW1	Opto switch1 connects to pin 13 @REC (max. 100 mA/50 V)
6	Tx+	RS422 line
7	CAN-L	CAN bus
8	n.c.	
9	TALLY	Tally, analog input, active high (default value: 1.25 V transition level)

10	D-CAM TALLY	Tally, digital input, active low,
11	DAC-CAM	REC analog output, active high (default value @REC: 3.3 V)
12	R/S	ARRI R/S
13	RUN-SW2	Opto switch 2 connects to pin 5 @REC (max. 100 mA/50 V)
14	RxD/Rx+	RS232/RS485 – RS422 together with pins 4, 6, 15
15	TxD/Tx-	RS232/RS485 – RS422 with pins 4, 6, 14
16	CAN-H	CAN bus

### FOCUS/IRIS/ZOOM



1	GND	Ground
2	MTYPE-A	Motor type sense
3	MTYPE-B	Motor type sense
4	MTYPE-C	Motor type sense
5	+5V	Encoder supply
6	Encoder-A	Encoder input A
7	Encoder-B	Encoder input B
8	n.c.	
9	n.c.	
10	n.c.	
11	Motor +	Motor drive output
12	Motor –	Motor drive output

## RS IN



1	GND	Ground
2	+V-BAT	9.5 V to 34 V DC IN
3	R/S	ARRI R/S

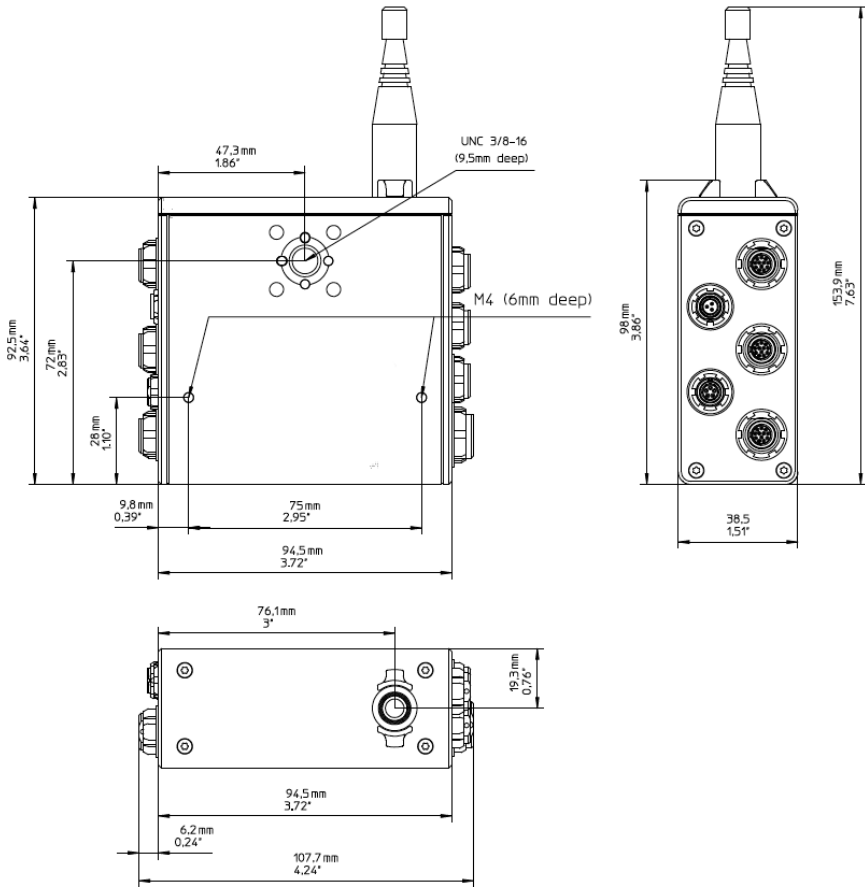
## TC



1	GND	Ground
2	LTC-IN	Timecode input
3	n.c.	
4	n.c.	
5	LTC-OUT	Timecode output



## Dimensions and Weight



Weight (including antenna): 428 g

## Electrical Data

Supply Voltage:	9.5 V to 34 V DC (full motor speed)
Current Consumption:	135 mA@12 V (radio on/ready) 70 mA@24 V (radio on/ready)
Operating Temperature:	-20 to +50 °C (-4 to +122 °F)

## Radio System

The UMC-4 contains a radio unit that enables wireless lens control and lens data communication with a white coded radio module. A white ring at the base of the antenna mount point identifies it. It offers 8 channels to choose from:

Channel	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

White radio and legacy yellow radio cannot be mixed in the same radio network of camera and hand units. It is possible to use both systems in parallel within different radio networks.

## Troubleshooting

Problem	Symptom	Remedy
Software update failed	During the update, the status LED ceases to blink (is solid green), or it blinks with a constant duty cycle and the unit does not re-start by itself.	Restart the UMC-4 manually by pressing the POWER button for 6 seconds or more, until the LED goes off; wait 3 seconds and restart the unit. If it still doesn't start, contact ARRI Service.
UMC-4 does not power up	The UMC-4 does not boot up after pressing the POWER button.	The internal lithium battery might be empty. Press the power button for 3-5 seconds to power up the UMC-4. Have the internal battery replaced by ARRI Service.

## ARRI Service Contacts

### Munich, Germany

Arnold & Richter Cine Technik

+49 89 3809 2121

service@arri.de

Business hours:

Mo. - Fr. 9:00 - 17:00 (CET)

### London, Great Britain

ARRI CT Limited

+44 1895 457 051

service@arri-ct.com

Business hours:

Mo. - Thu. 9:00 - 17:30 (GMT)

Fr. 9:00 - 17:00 (GMT)

### Milan, Italy

ARRI Italia S.r.l.

+39 (02)262 271 75

info@arri.it

Business hours:

Mo. - Fr. 9:00 - 18:00 (CET)

### Burbank, USA

ARRI Inc. West Coast

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service@arri.com

Business hours:

Mo. - Fr. 8:15 - 17:00 (PST)

### New York, USA

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Mo. - Fr. 8:00 - 17:30 (EST)

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+1 416 255 3335

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+852 2537 4266

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Mo. - Fr. 10:00 - 18:30 (HKT)

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service@arrichina.com

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Mo. - Fr. 9:00 - 18:00 (CST)

### Sydney, Australia

ARRI Australia Pty Ltd

+61 2 9855 4305

service@arri.com.au

Business hours:

Mo. - Fr. 8:00 - 18:00 (AEST)

## **International Declarations and Certifications**

### EC Declaration of Conformity

The product **Universal Motor Controller UMC-4** conforms with the specifications of the following European directives:

- Directive 2014/30/EU of the European Parliament and the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility
- Directive 1999/5/EC of the European Parliament and the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity
- Directive 2011/65/EU of the European Parliament and the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The compliance with the requirements of the European Directives was proved by the application of the following harmonized standards:

- EN 55022; EN 55103-1; EN 55103-2; EN 301 489-1; EN 301 489-17; EN 62479; EN 60950-1; DIN EN 50581



FCC 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.

Contains Transceiver module FCC-ID: Y7N-EMIP100

Industry Canada Compliance Statement

Complies with the Canadian ICES-003 Class A specifications.

Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

This device complies with RSS 210 of Industry Canada. This Class A device meets all the requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Contains Transceiver Module IC-ID: 9482A-EMIP100



Please check local regulations for disposal of batteries. The battery should never be placed in municipal waste. Use a battery disposal facility if available.

