cPRO, cPRO PLUS & cPRO ONE
User Guide

v6.0 | January, 2025

Software Release v6.0

Imprint

Copyright

For further assistance

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This USER GUIDE applies to the following product:
K2.0037381 cPRO PLUS hand unit, K2.0016602 cPRO hand unit, K2.0033607 cPRO ONE hand unit with Software Release v6.0

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Release Date: 02.01.2025

Disclaimer

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

The cmotion cPRO, cPRO PLUS and cPRO ONE hand unit are only available to commercial customers. By utilization, the customer agrees that the cPRO, cPRO PLUS and cPRO ONE hand unit or other components of the system are deployed for commercial use only. Otherwise the customer must contact cmotion before utilization.

While cmotion endeavors to enhance the quality, reliability and safety of their products, customers agree and acknowledge that the possibility of defects thereof cannot be eliminated entirely.

To minimize the risk of damage to property or injury (including death) to persons arising from defects in the products, customers must incorporate sufficient safety measures in their work with the system and heed the stated canonic use.

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1. For your safety

Before use, please ensure that all users comprehensively read, understand, and follow the instructions in this document.

Risk levels and alert symbols:

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

⚠ Danger!
DANGER indicates an imminent hazardous situation which, if not avoided, will result in death or serious injury.

⚠ Warning!
WARNING indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.

⚠ CAUTION!
CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

NOTICE
NOTICE explains practices not related to physical injury. No safety alert symbol appears with this signal word.

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

Vital precautions:

⚠Danger!

Risk of electric shock and fire!

Short-circuits may result in serious damage to equipment, injury or death.

Before use, read and follow all valid instructions.

Use solely and exclusively as described in the instructions.

Never open. Never insert objects unless instructed to do so. E.g. battery, USB.

For operation, always use a power source as indicated in the instructions.

Always unplug the cable by gripping the plug, not the cable.

Never try to repair. All repair work should be done by a qualified cmotion Service Center.

Never remove or deactivate any safety equipment (incl. warning stickers or screws marked with paint).

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

⚠Danger!

Risk of fire!

Short-circuits and back currents to power supplies/batteries may result in serious damage to equipment, injury or death.

Always use original ARRI/cmotion LBUS cables to external power sources (D-Tap, XLR)!

ARRI/cmotion LBUS cables to external power sources provide a protection circuit to prevent back currents to power supplies/batteries.

2. Audience and intended use

NOTICE
The product is solely and exclusively available for commercial customers and shall be used by skilled personnel only. Every user should be trained according to cmotion guidelines. Use the product only for the purpose described in this document. Always follow the valid instructions and system requirements for all equipment involved.

Note: The cPRO, cPRO PLUS and cPRO ONE hand unit are solely and exclusively for use on professional camera setups.

3. Scope of delivery and warranty

NOTICE
Product and packaging contain recyclable materials. Always store, ship, and dispose of according to local regulations. cmotion is not liable for consequences from inadequate storage, shipment or disposal.

Delivery:

On delivery, please check that the package and content are intact. Never accept a damaged or incomplete delivery. A complete delivery includes:

- cPRO, cPRO PLUS or cPRO ONE hand unit with antenna
- Plain white focus ring for cPRO hand unit
- *Plain white iris strip for cPRO hand unit
- ctruss - connection point for cstrap
- User manual download card
- Original packaging

*cPRO, cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

Warranty:

For scope of warranty, please ask your local cmotion Service Partner. cmotion is not liable for consequences from inadequate shipment, improper use or damage through third-party products.

4. Introduction

cPRO PLUS hand unit

cPRO hand unit

cPRO ONE hand unit

The cPRO / cPRO PLUS hand unit is a 3-4 axis wireless hand-held control device for the cPRO lens control system. The cPRO ONE is a 1-2 axis wireless hand-held control device. All 3 have the red-coded cmotion radio module and share the same user interface, functions and features.

With their user friendly and intuitive interface, the cPRO / cPRO PLUS and cPRO ONE hand units are lightweight and set new standards in both design and ergonomics.

The focus knob offers an ergonomic grip with a fingertip concave mold and mechanical hard stops.

9 user buttons on the cPRO PLUS and 6 user buttons on the cPRO and cPRO ONE provide quick access to cPRO's extensive features. Illuminated key elements (focus marker ring, iris slider strip and buttons) offer controllable ambient lighting for bright or dark environments.

The capacitive touch display shows live lens and camera information.

The asymmetrical design and comfort grip keeps the hand unit balanced in your hand. Several well positioned mounting points provide options for third party accessories including quick release mounts, monitors, etc.

Up to three cPRO / cPRO PLUS or cPRO ONE hand units can connect to a cPRO motor / cPRO camin wirelessly for split focus, iris and zoom operation. Real-time lens data is available when used with the cPRO motor / cPRO camin.

Using the LBUS interface, the cPRO / cPRO PLUS or cPRO ONE hand unit can be hard-wired with up to four additional cforce motors and other ARRI / cmotion control units including the pan-bar / steady zoom, ARRI LCUBE-1, LCUBE-2, ARRI Master Grips or cfinder III.

Main features:

- Ergonomic and balanced design
- Extensive software features for creative FIZ control
- Supports lens data with cPRO motor / cPRO camin
- Touch display for menu navigation and settings
- Intuitive thumb wheel for menu navigation, settings and 4th axis control
- Illuminated pre-marked focus rings and iris strips with LED status feedback
- Illuminated, user assignable buttons
- 3 additional user assignable buttons for cPRO PLUS only
- Vibrating function
- USB for external power source, updates and transfer of lens files and user settings
- Mounting options for accessories like cstrap, monitor bracket or v-lock plate
- Adjustable mechanical hard stops
- Panic button for mechanical hard stop override
- Integrated cmotion red radio module
- Daisy-chain compatible via LBUS for hard-wired operation
- Lightweight (less than 900g (approx 31 oz) incl. battery and antenna)

4.1. LBUS connector

LBUS is a bus standard designed to allow multiple lens motors and control devices to communicate with each other. Up to four cforce-type motors can be chain-linked in a row. Each cforce motor has two identical, bi-directional LBUS interfaces providing power and control signals to the motor. For hard-wired operation the cPRO / cPRO PLUS or cPRO ONE hand unit can be connected to the daisy-chain through its LBUS interface using any LBUS to LBUS cable.

4.2. CAM interface

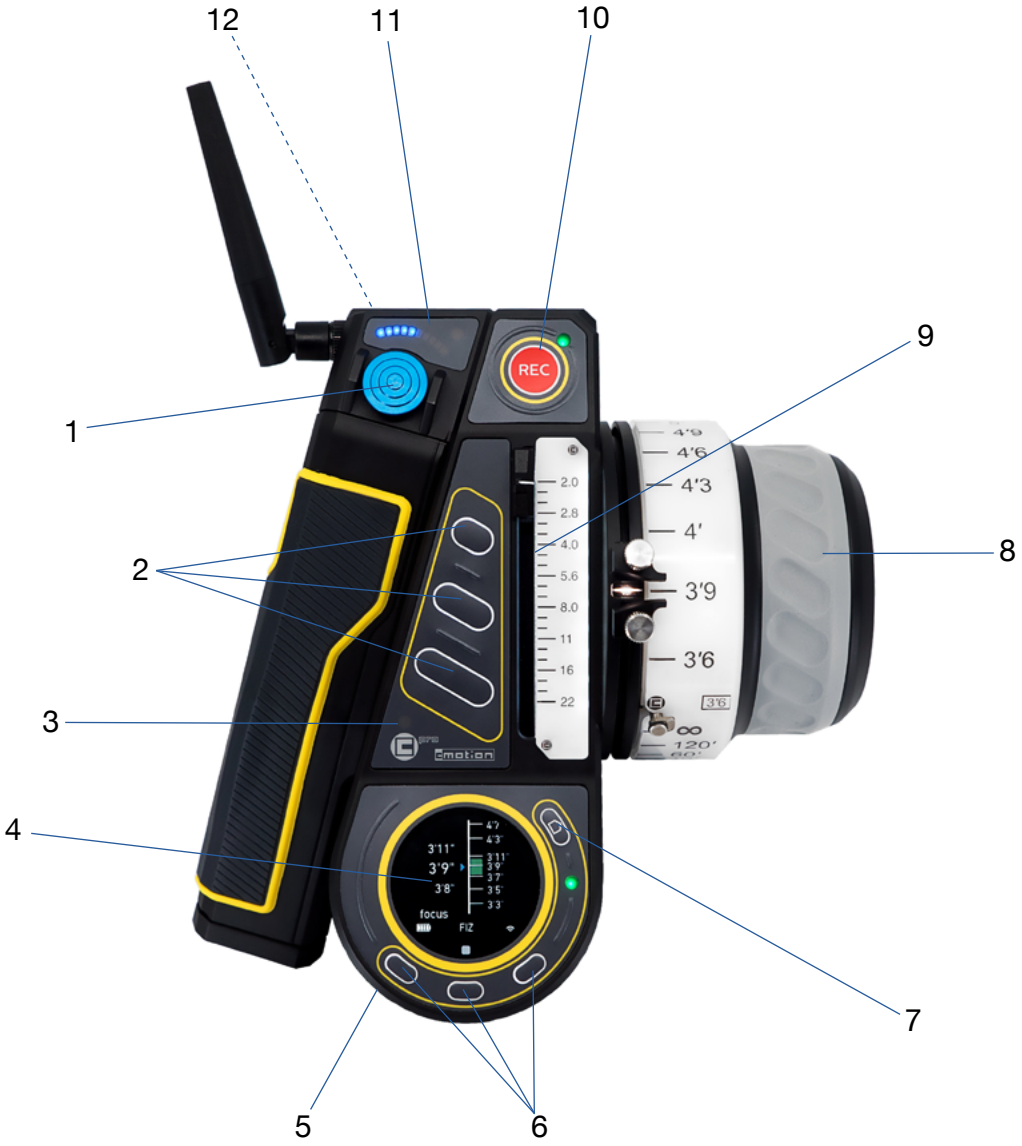
The cPRO / cPRO PLUS and cPRO ONE hand units are equipped with an LBUS connector but do not have integrated CAM connectors. However, the CAM interface on the cPRO motor / cPRO camin is also a fully functional LBUS connector. As such, it allows multiple lens motors and control devices to communicate with each other through K2.0015760 Cable CAM (7p) - LBUS. Using this cable the cPRO / cPRO PLUS or cPRO ONE hand unit can also be connected to the daisy-chain through its LBUS interface for hard-wired operation.

In addition, the CAM interface on the cPRO motor / cPRO camin offers a versitile interface for camera control. There are several camera interface cables available which, depending on the camera, offer start-stop control with feedback, camera status, tally and even camera control. (License required to control camera settings).

If a camera is detected in the LBUS daisy-chain, camera data and camera feedback will be displayed on the cPRO / cPRO PLUS or cPRO ONE hand unit.

5. cPRO hand unit hardware layout

5.1. Hardware layout overview

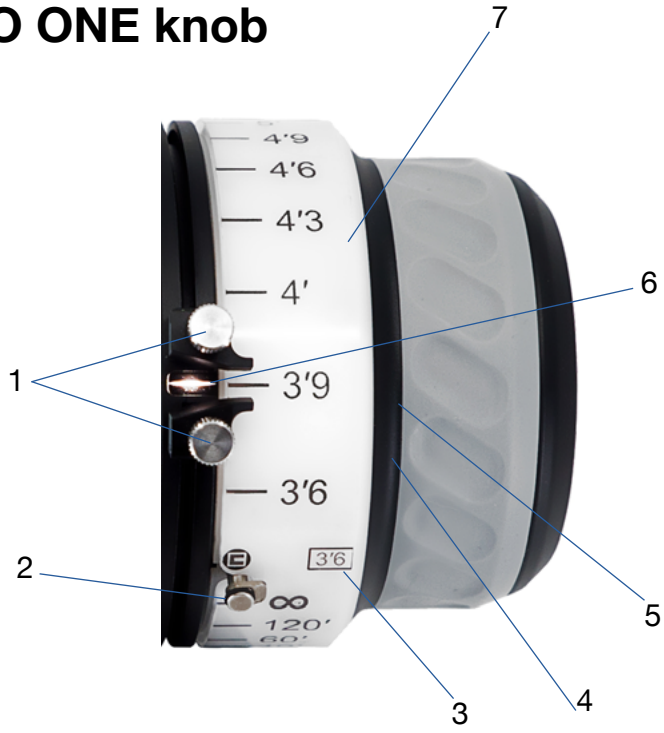


1	*Joystick
2	User buttons
3	Light sensor
4	Touch display
5	Thumb wheel
6	Menu buttons
7	HOME button
8	Knob
9	*Slider
10	REC button
11	*Joystick indicator display
12	Back button

* cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

5.2. Control interface

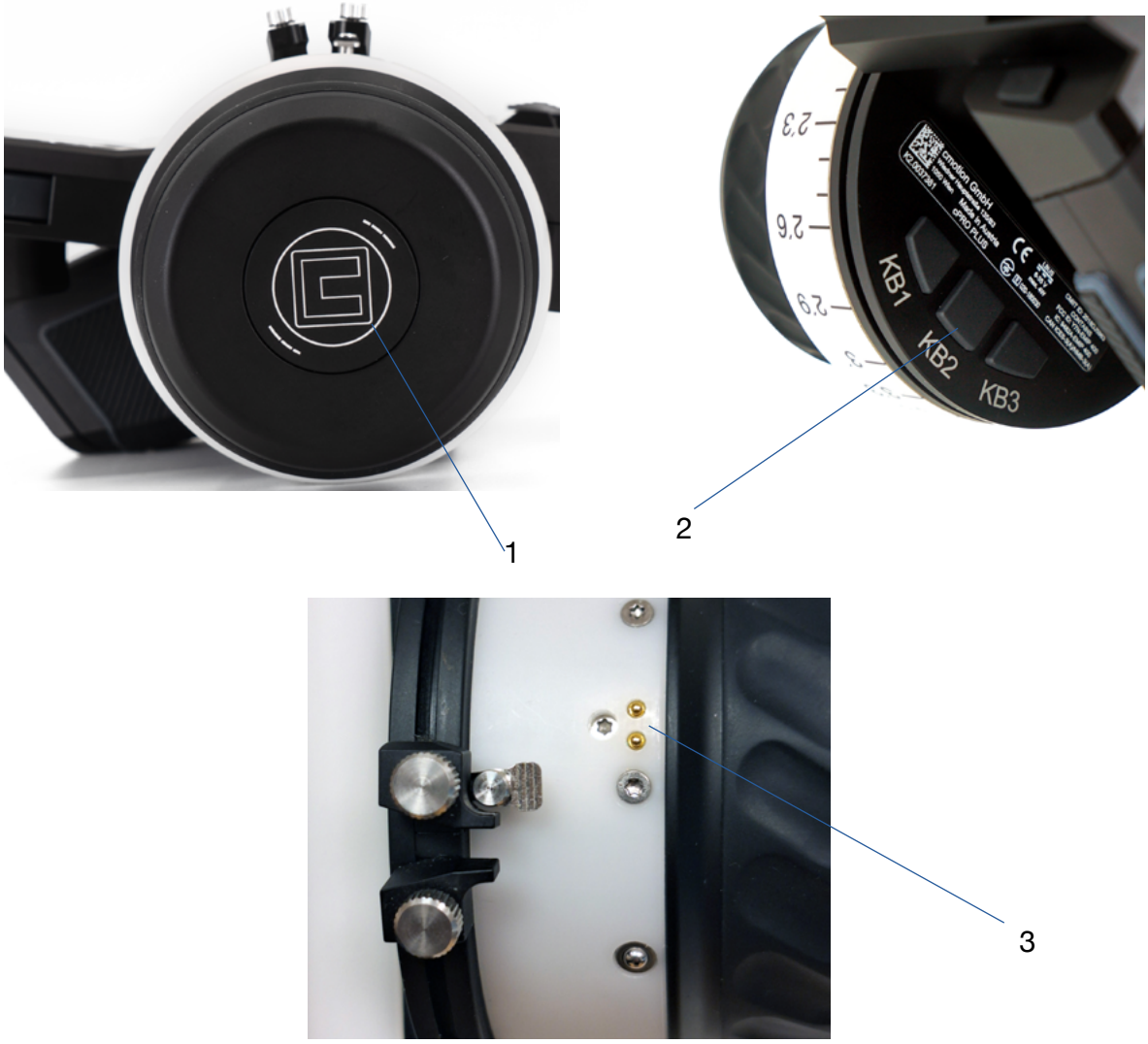
5.2.1. cPRO / cPRO ONE knob



1	Mechanical hard stops
2	Panic button
3	Pre-marked focus ring
4	Fingertip concave mold
5	Anti-slip grip
6	Datum line
7	Knob illumination / status LEDs

The knob is a control interface with an absolute position encoder. Turn the knob clockwise or counter-clockwise to control the assigend axis. As default the knob is assigned to focus.

5.2.2. cPRO PLUS advanced knob



1	Knob torque adjustment
2	User buttons (KB1/KB2/KB3)
3	cPRO PLUS smart pins

In addition to the cPRO / cPRO ONE knob features, the cPRO PLUS offers an advanced focus knob, providing variable torque adjustment, smart pins for automatic smart ring detection and 3 additional user buttons.

5.2.2.1. Mechanical hard stops

The cPRO knob has two mechanical hard stops which can be adjusted freely around the knob barrel. The hard stops allow you to move the knob between two focus positions precisely.

In oder to adjust your long focus distance

- match the desired long focus distance position to the datum line of the knob
- open the thumbscrew on the upper hard stop and slide the hard stop around the knob barrel until it hits the panic button.
- lock the hard stop position by turning the thumbscrew clockwise

In oder to adjust your close focus distance

- match the desired close focus distance position to the datum line of the knob
- open the thumbscrew on the lower hard stop and slide the hard stop around the knob barrel until it hits the panic button.
- lock the hard stop position by turning the thumbscrew clockwise

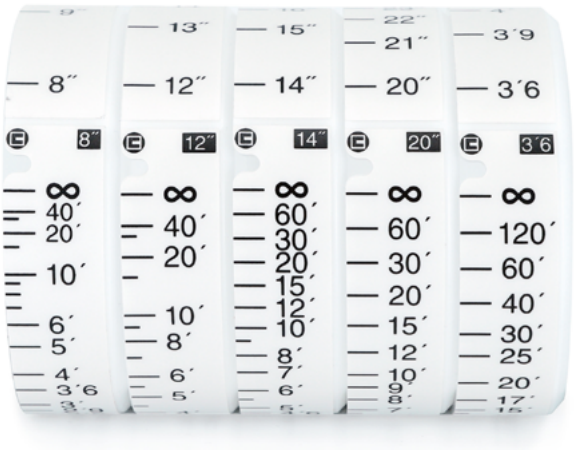
5.2.2.2. Panic button

The cPRO panic button is a unique feature of the cPRO / cPRO PLUS and cPRO ONE hand unit. It allows you to override the mechanical hard stops without adjusting the predefined focus range. E.g. when shooting the slate outside of the predefined focus range, or the actor misses their mark.

In order to override the mechanical hard stops temporarily, simply press the panic button and rotate the knob so it passes under the hard stop.

In order to disable the mechanical hard stops, press and turn the panic button clockwise or counter-clockwise 90°. To re-enable the mechanical hard stops, press and turn the panic button back to its home position.

5.2.2.3. Pre-marked focus rings



K2.0019834 cPRO pre-marked focus ring imperial set

K2.0019835 cPRO pre-marked focus ring metric set

In order to save time marking your focus rings for each lens, the cPRO / cPRO PLUS and cPRO ONE hand units are compatible with a wide range of pre-marked focus rings, smart focus rings and smart iris rings.

Each focus ring is engraved with a scale from infinity to a specific close focus value and can be used with a wide range of lenses from wide angle to telelphoto. For more information please refer to section “6.2.3.2.1.4. Pre-marked rings” on page 49 in this manual.

5.2.2.4. Datum line

The datum line is the reference mark on the knob. It illuminates with the knob scale illumination. Its brightness can be controlled in the “Knob brightness” menu.

5.2.2.5. Knob illumination and status LEDs

The knob scale can be illuminated individually through the “Knob brightness” menu. The status LEDs for the knob are built into the scale illumination, which gives you direct feedback of the status for the knob axis.

LED status	Meaning
off	no axis assigned to knob / knob illumination off
solid white	motor ready, no warnings /knob illumination on
green/yellow flashing	calibration request
yellow flashing	motor calibration
solid yellow	calibration time out
solid red	knob locked / no motor control / AF
red flashing	no motor connected

5.2.2.6. Knob torque adjustment

(cPRO PLUS hand unit feature only, not available for cPRO or cPRO ONE hand unit)

The knob torque adjustment is a unique feature of the cPRO PLUS advanced knob only.

In order to adjust the knob friction, press and hold the mechanical adjustment button and turn the knob clockwise to increase the friction. Press and hold the button and turn the knob counter-clockwise to reduce the knob friction. Release the adjustment button when finished.

5.2.2.7. Knob user buttons

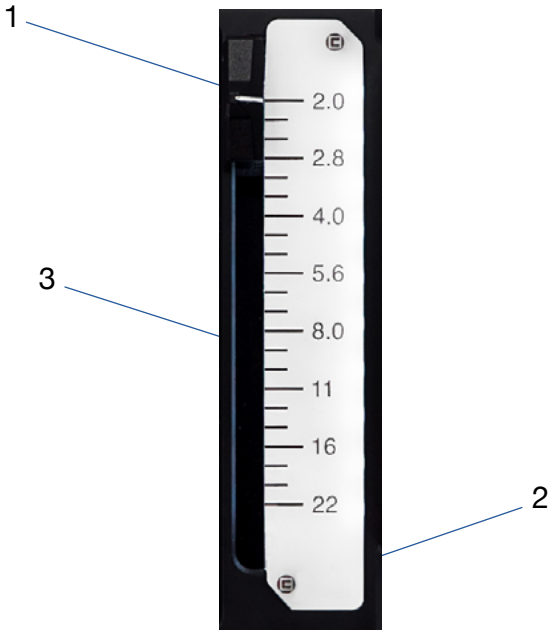
(cPRO PLUS hand unit feature only, not available for cPRO or cPRO ONE hand unit)

The knob user buttons are a unique feature of the cPRO PLUS advanced knob only.

The knob buttons; KB1, KB2 and KB3 are user assignable buttons and behave like any other user button on the cPRO / cPRO PLUS or cPRO ONE hand unit. But, they do not illuminate. For further information on how to assign user buttons and the available functions, please refer to section “6.2.3.8. BUTTONS” on page 98 in this manual.

5.2.3. Slider

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)



1 Slider
2 Pre-marked iris strip
3 Slider illumination / status LEDs

The slider is a control interface with an absolute position encoder. Move the slider up or down to control the assigned axis. As default, the slider is assigned to iris.

5.2.3.1. Pre-marked iris strips

In order to save time marking your iris strips for each lens, the cPRO / cPRO PLUS hand unit offers three pre-marked strips. Each strip is engraved with a scale from one of three wide open iris values to T22 or close. For more information refer to section “6.2.3.2.2.3. Pre-marked strips” on page 52 in this manual.

5.2.3.2. Slider illumination and status LEDs

The slider scale can be illuminated individually through the “Slider brightness” menu. The status LEDs for the slider are incorporated in the scale illumination and provide direct feedback for the slider axis.

LED status	Meaning
off	no axis assigned to slider / slider illumination off
solid white	motor ready, no warnings /slider illumination on
green/yellow flashing	calibration request
yellow flashing	motor calibration
solid yellow	calibration time out
solid red	slider locked / no motor control / AF
red flashing	no motor connected

5.2.4. Joystick

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)

1 Joystick
2 Position indicator display
3 Joystick status LED

The joystick is a control interface with a relative position encoder. Press the joystick up or down to control the assigned axis. The joystick´s touch sensitivity and the axis speed can be adjusted individually in the “Joystick menu” (please refer to section “6.2.3.2.3. Joystick” on page 53 in this manual). As default, the joystick is assigned to zoom.

5.2.4.1. Position indicator display

The position indicator display consits of 10 blue single LEDs. It indicates the relative position of the assigned axis in %. If the display is off, the motor is at one end stop of the lens (= < 10%). If the display is fully illuminated the motor is at the other end stop of the lens 100%. The joystick position indicator display can be illuminated individually through the “Joystick brightness” menu. As default, the joystick is assigned to zoom.

5.2.4.2. Joystick status LED

The status LED for the joystick is a seperate LED above the position indicator display. This gives you direct feedback of the status of the joystick axis.

LED status	Meaning
off / position indicator display off	no axis assigned to joystick / joystick illumination off
off / position indicator display on (if joystick brightness is not set to 0%)	motor ready, no warnings
green/yellow flashing	calibration request
yellow flashing	motor calibration
solid yellow	calibration time out
solid red	joystick locked / no motor control / AF
red flashing	no motor connected

5.2.5. Thumb wheel

1 Thumb wheel

The thumb wheel is a unique control interface of the cPRO / cPRO PLUS and cPRO ONE hand unit with a relative position encoder. It allows you to navigate through all the menu pages comfortably even when wearing gloves. It is even possible to assign the thumb wheel as a 4th axis controller.

NAVIGATION (default, can be adjusted in CONTROLS / Thumb wheel / Menu direction)	Thumb wheel gesture	Function
in main screens	scroll clockwise / scroll counter-clockwise	scroll through horizontal menu and display screens
if thumb wheel is assigned to a motor / in main screens	press and hold MB2 and scroll clockwise / scroll counter-clockwise	scroll through horizontal menu and display screens
in adjustment menu	scroll clockwise	navigate up
	scroll counter-clockwise	navigate down

5.2.6. Buttons / camera status LED

With the exception of the REC button, the HOME button and menu button 2 (MB2), all buttons on the cPRO / cPRO PLUS and cPRO ONE hand unit can be assigned individually. And, all buttons except the back button (BB1) and cPRO PLUS knob buttons (KB1, KB2 and KB3) illuminate once assigned to a user function.

User button functions:

Off / Knob limits set / Slider limits set* / Joystick limits set* / Focus calibration / Iris calibration / Zoom calibration / Calibration all / ZAP* / Joystick speed up* / Joystick speed down* / Autofocus press / Autofocus toggle / Autofocus pinpoint / Autofocus catch / System unit / Steath mode all / Laser pointer / Camera rec / Lock knob / Lock slider* / Lock joystick* / Lock thumb wheel / Filter increase** / Filter decrease** / Cinefade set** / Load lens / Load pre-marked ring / Load pre-marked strip* / Camera Button 1-6 / Marker focus / Marker iris* / Marker zoom* / Marker distance / Target A, B, C, M***

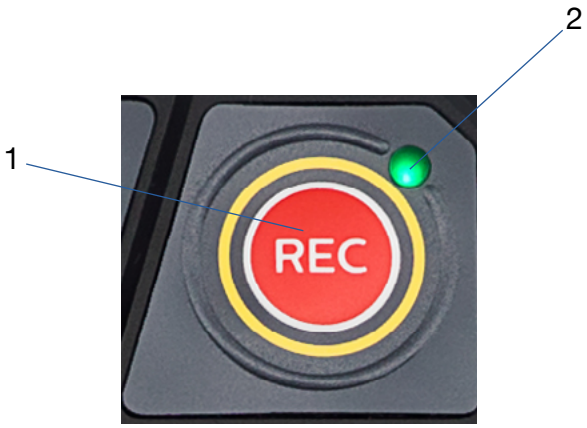
* cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

** available with cmotion Cinefade VariND only

*** available with cPRO RANGE license only

While navigating the cPRO menu, all buttons with a function will be illuminated.

5.2.6.1. REC button (Tail-slate mode) and camera status LED



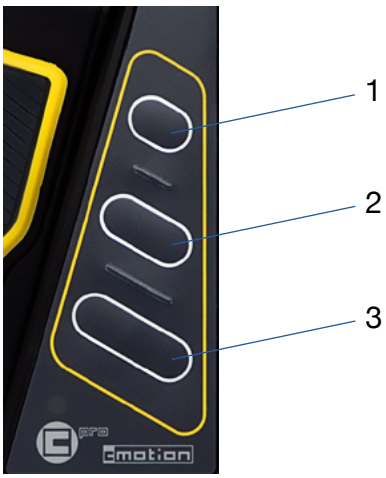
1 REC button
2 Camera status LED

The REC button is assigned to “Camera REC” only and cannot be changed. However, the “Camera REC” function can be assigned to any user assignable button.

The camera status LED is next to the REC button and gives direct feedback of the camera status.

LED status	Meaning
off	no camera interface is available
solid green	camera interface is available / camera ready
solid red	camera is recording
red / green flashing	camera is in idle mode (camera not ready)
red flashing slow	remaining record time is less than five minutes
red flashing fast	remaining record time is less than one minute

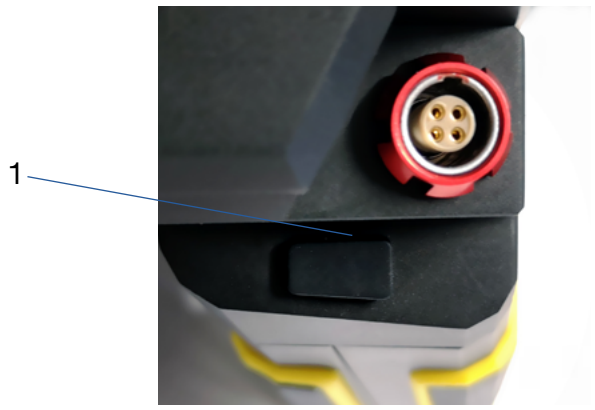
5.2.6.2. User buttons



1 User button 1 (UB1)
2 User button 2 (UB2)
3 User button 3 (UB3)

All user buttons (UB1/UB2/UB3) in the center of the cPRO / cPRO PLUS and cPRO ONE hand unit can be assigned individually. Once assigned to a user function, each assigned button will illuminate individually unless keypad brightness is set at 0.

5.2.6.3. Back button

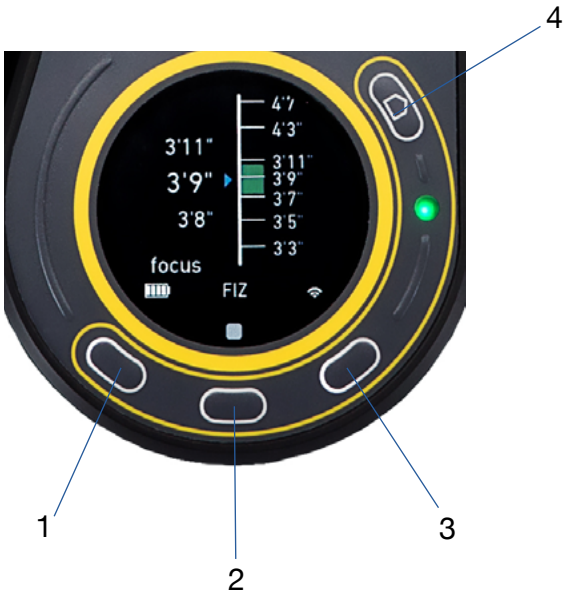


1 Back button (BB1)

The back button is located underneath the LBUS connector on the cPRO / cPRO PLUS and cPRO ONE hand units. It is not illuminated but can be assigned individually to any user function.

While navigating in the cPRO menu or creating a lens file, the back button is assigned to “select”.

5.2.6.4. Menu buttons



1 Menu button 1 (MB1)
2 Menu button 2 (MB2)
3 Menu button 3 (MB3)
4 HOME Button

3 menu buttons are located around the touch screen. And, with the exception of MB2, can be assigned to any user function while displaying one of the main screens. When entering the adjustment menu the menu buttons will change their behaviour and show their function on the touch display.

5.2.6.4.1. MB2 (QUICK NAV)

Menu button 2 (MB2) is permanently assigned to allow quick navigation between main screens with multiple pages, and from specific main screens directly into the related adjustment menu. MB2 is illuminated permanently as long as the keypad brightness is not set at 0 and the hand unit is not in sleep mode.

5.2.6.4.2. Quick navigation between main screens

Some of the main screens consist of multiple pages. In order to navigate vertically within a main screen or menu, press menu button 2 (MB2) repeatedly. As an alternative, you can also swipe the touch screen up or down.

If the thumb wheel is assigned to control a motor, press and hold MB2 and move the thumb wheel to navigate between the main screens. As an alternative, you can also swipe the touch screen left or right.

For an overview of which main screens consist of multiple pages, please refer to section “6.1. GUI main screen overview” on page 27 in this manual.

5.2.6.4.3. Quick navigation main screens to adjustment menu

In order to use the quick navigation to enter related adjustment menus from the main screens, press and hold menu button 2 (MB2). As an alternative, you can also tap and hold the touch display.

5.2.6.5. HOME button

The HOME button has various functions and is illuminated permanently as long as the keypad brightness is not set at 0 and the hand unit is not in sleep mode.

NAVIGATION	HOME button	Function
cPRO / cPRO PLUS / cPRO ONE hand unit is off	press short	turn on the cPRO / cPRO PLUS / cPRO ONE hand unit
cPRO / cPRO PLUS / cPRO ONE hand unit is on	press long (3 seconds)	turn off the cPRO / cPRO PLUS / cPRO ONE hand unit
from main screens	press short twice	enter the adjustment menu
from adjustment menu	press short	return to the main screen

5.2.6.6. System status LED

1 System status LED

The sytem status LED indicates the status of the cPRO / cPRO PLUS / cPRO ONE hand unit.

LED status	Meaning
solid green	radio turned on and device connected wireless / radio off and device connected through the LBUS port (hard-wired)

LED status	Meaning
solid red	initialising state / hardware error
red / green flashing	radio turned on and device not connected wireless / radio turned off and device not connected through the LBUS port (hard-wired)
red flashing	battery low / no free RF channel available

5.2.7. Touch screen

1 Capacitive touch display

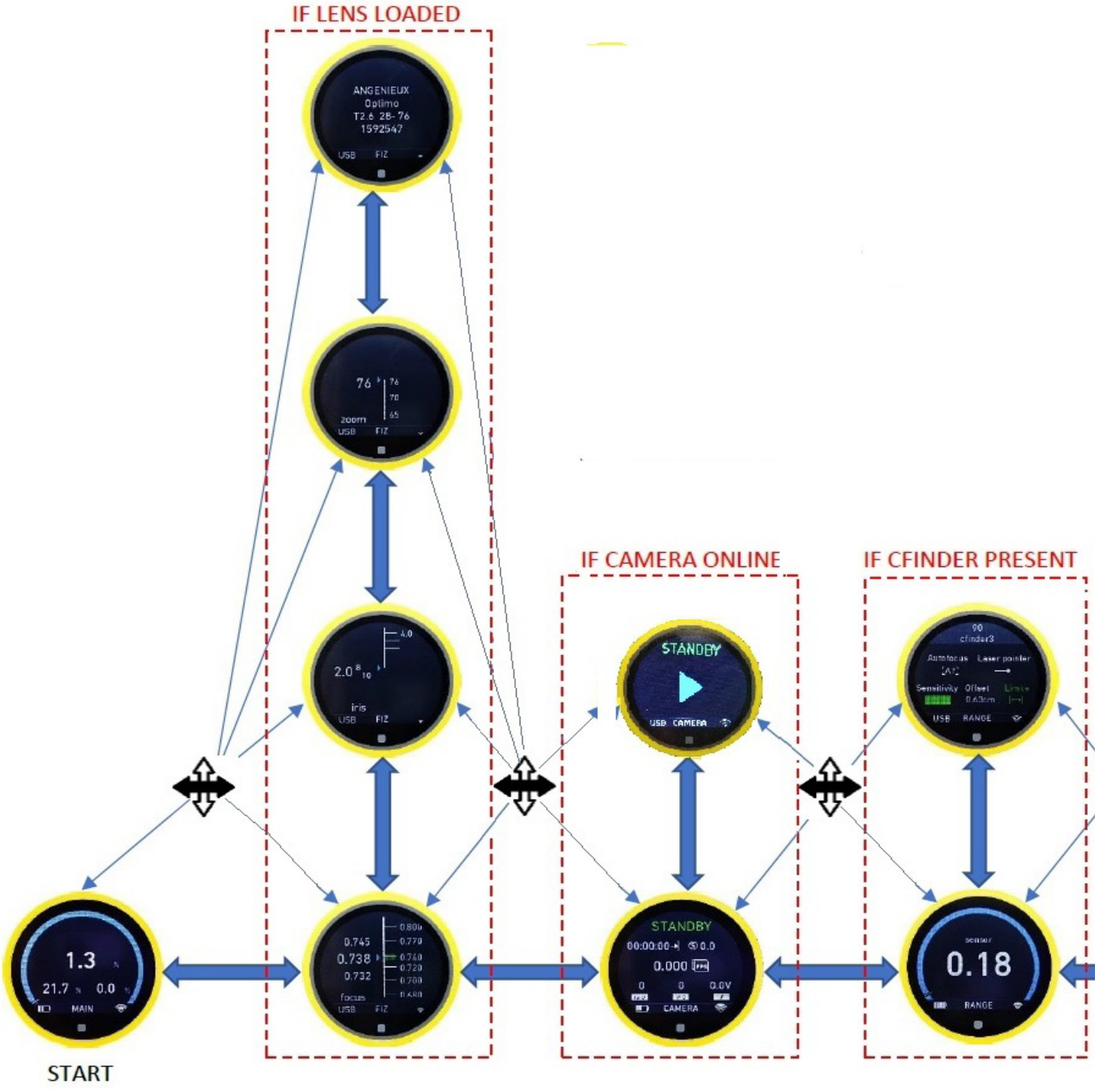
The cPRO / cPRO PLUS and cPRO ONE hand units feature a multicolor 1.22” QVGA capacitive TFT touch display.

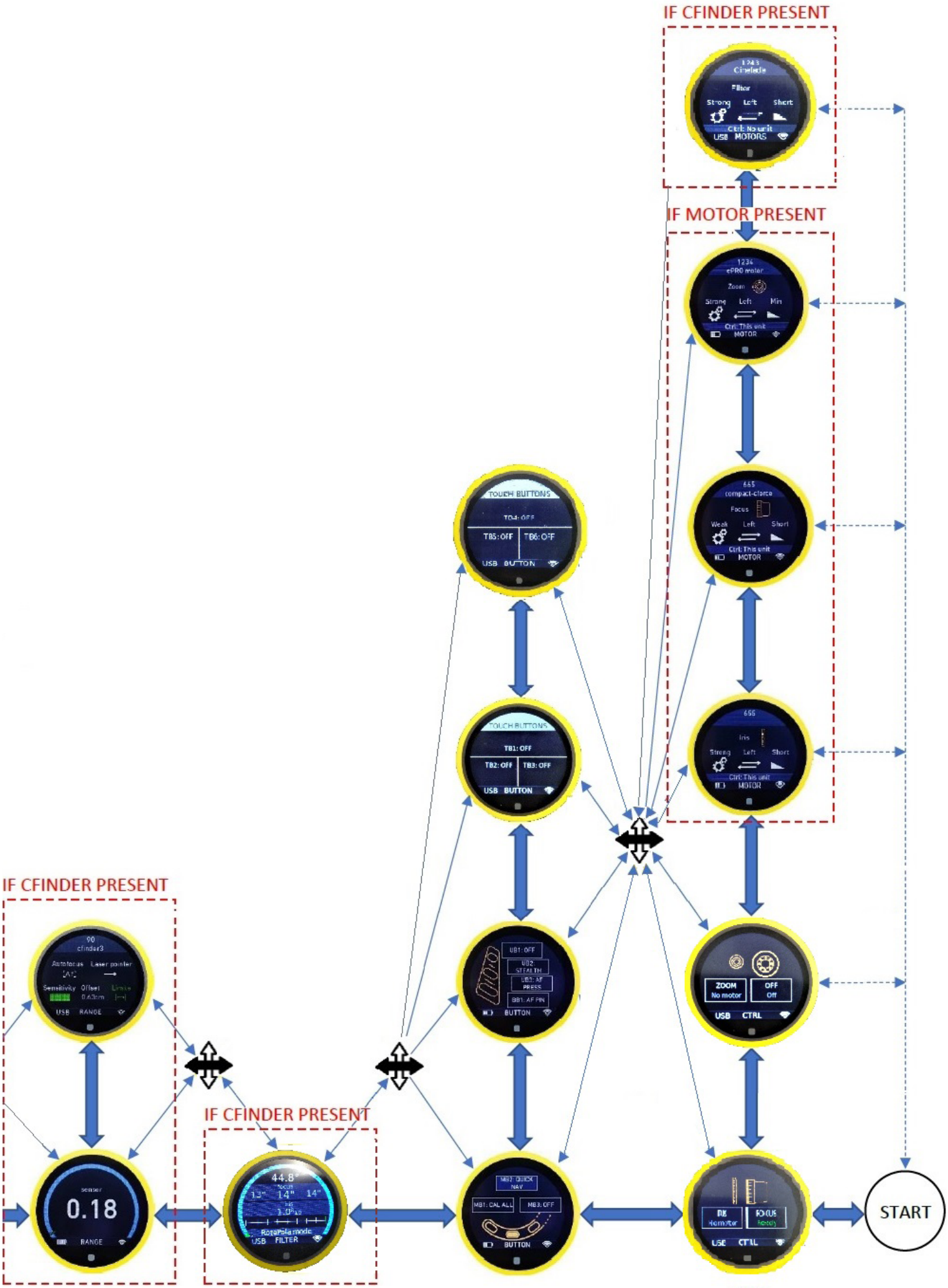
NAVIGATION	Touch screen gesture	Function
in main screens	swipe left / swipe right	switch between the main screens horizontally
	swipe up / swipe down	switch between the main screens vertically
	tap short twice	enter the adjustment menu
	tap and hold	enter related adjustment menu
in adjustment menu	swipe up	navigate down
	swipe down	navigate up
	swipe left / tap short	enter sub menu (select)
	swipe right	leave sub menu (back)

6. cPRO / cPRO PLUS / cPRO ONE hand unit software layout

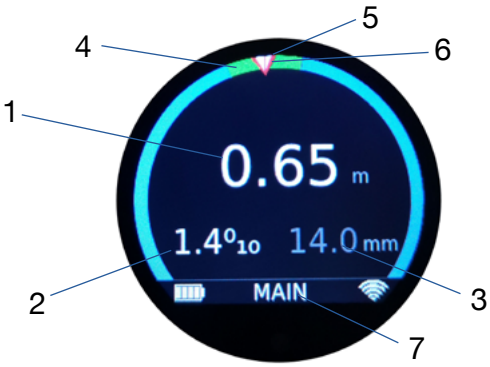
6.1. GUI main screen overview

The cPRO / cPRO PLUS and cPRO ONE hand units feature a user interface to configure the system. The touch sensitive display shows menu and status information and can be used to navigate through the main screens and the adjustment menu. As an alternative, the thumb wheel and the menu buttons can be used to navigate and to change settings as well. E.g. if wearing gloves.




IF CFINDER PRESENT
IF MOTOR PRESENT
IF CFINDER PRESENT
IF CFINDER PRESENT
START

6.1.1. MAIN screen



MAIN screen if lens file loaded

MAIN screen if no lens file loaded

1	Focus information (value/percentage)
2	Iris information (value/percentage)
3	Zoom information (value/percentage)
4	Depth of field range
5	Actual focus position (white)
6	Actual knob position (red)
7	Status bar (with battery status and RF signal strength)

The MAIN screen displays focus, iris and zoom information on a simple GUI. If a lens file is loaded, it will display the actual focus, iris and zoom values with depth of field displayed as a green bar. Without an active lens file, the motor position will be displayed as percentage of the calibration range.

The status bar is displayed on every page. It provides information including battery status, wireless signal strength (or cable mode) and if a lock is active on one or more interface.

If a rangefinder is attached to the LBUS daisy-chain, and the measured distance is within the depth of field (DOF), the focus value will change from white to green.

1	Measured rangefinder distance
2	Actual focus position (white)
3.	Actual knob position (red)
4	Depth of field range

When autofocus is activated, the actual focus position will move from the actual knob position and match the measured rangefinder distance. The visualization of the actual knob position allows the knob to be aligned to the measured distance for a seamless switch back to manual focus when autofocus is deactivated. cPRO offers numerous autofocus trigger functions. Please also refer to section “6.2.3.8.2. User button functions” on page 101 in this manual.

6.1.2. FIZ main screen

The FIZ screen is only enabled if a lens file is loaded. It displays detailed focus information including a focus scale with depth of field (DOF), a full iris and zoom scale and information about the loaded lens file.

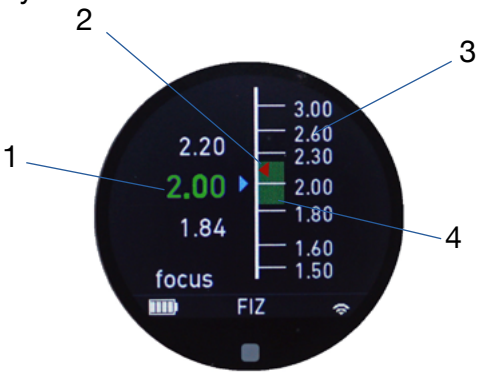
Note: The lens adjustment menu can be reached from all FIZ main screens quickly by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

6.1.2.1. Focus main screen

1 Actual focus position (value)
2 Focus scale
3 DOF far limit (value)
4 DOF close limit (value)
5 DOF range

The focus main screen displays an animated depiction of the focus scale with depth of field (DOF) displayed grafically and numerically.

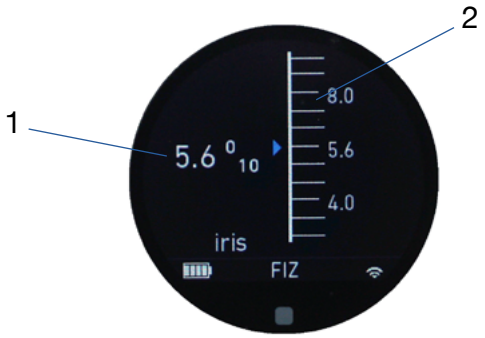
1 Actual focus position (value)
2 Measured rangefinder distance
3 Focus scale
4 DOF range



Note: If a rangefinder is attached to the LBUS daisy-chain, and the measured rangefinder distance is within depth of field (DOF), the focus value will turn green. Otherwise it illuminates white.

6.1.2.2. Iris main screen

1 Actual iris position (value)
2 Iris scale



The iris main screen displays a full iris scale grafically and numerically. T-stops are displayed in 1/10 increments.

6.1.2.3. Zoom main screen

1 Actual zoom position (value)
2 Zoom scale

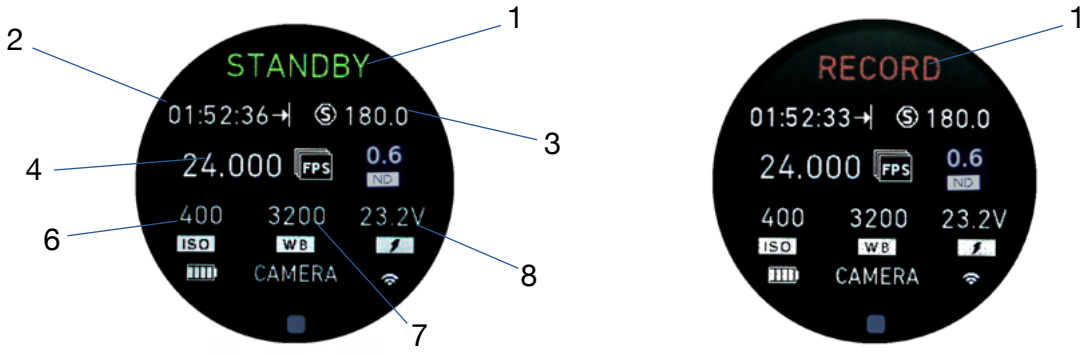
The zoom main screen displays a full zoom scale grafically and numerically.

6.1.2.4. Lens information main screen

1 Brand
2 Lens name
3 T-stop / zoom range
4 Serial number
5 Metric/Imperial
6 Favorite

The lens information main screen displays all the relevant information about the loaded lens file, including brand, model, T-stop, zoom range, serial number. Also whether the lens file has been created in imperial or metric scale and if it is added to the lens favorites list.

6.1.3. Camera main screen



1	Camera record information
2	Remaining record time
3	Shutter speed or angle
4	Frames per second (FPS)
5	ND Filter (where available)
6	ISO
7	White balance
8	Camera battery status

The camera information main screen will be available automatically as soon as a camera is detected in the daisy-chain. The camera needs to be connected to the CAM interface of the cPRO motor or the cPRO camin. Camera status information can be displayed for the most popular cameras including ARRI, RED, SONY, BLACKMAGIC and CANON. Depending on the camera brand and model, numerous functions including start-stop, record feedback, camera status, tally and camera settings control are available (License required to control camera settings). For further information, please refer to section “6.2.3.6. CAMERA” on page 87 in this manual.

6.1.4. Rangefinder main screens

The rangefinder main screens are enabled automatically when a rangefinder is detected in the LBUS daisy-chain and a lens file is loaded. The rangefinder main screens consist of a rangefinder overview and a rangefinder settings screen.

Note: The rangefinder adjustment menu can be accessed from both rangefinder main screens quickly by tapping and holding the touch display or by pressing and holding the menu button 2 (MB2).

6.1.4.1. Rangefinder overview screen

1 Measured rangefinder distance (value)
2 Measured rangefinder distance (position)
3 Actual focus position (white)
4 Actual knob position (red)
5 Target direction indicator
6 DOF range
7 Rangefinder sensor warning

The rangefinder overview screen displays the rangefinder information grafically and numerically.

The target direction will be indicated visually in relation to the actual knob position to allow quick orientation and a precise focus pull towards the measured target.

When autofocus is activated, the actual focus position will move from the actual knob position and match the measured rangefinder distance. The visualization of the actual knob position allows the knob to be aligned to the measured distance for a seamless switch back to manual focus when autofocus is deactivated. cPRO offers numerous autofocus trigger functions. Please also refer to section “6.2.3.8.2. User button functions” on page 101 in this manual.

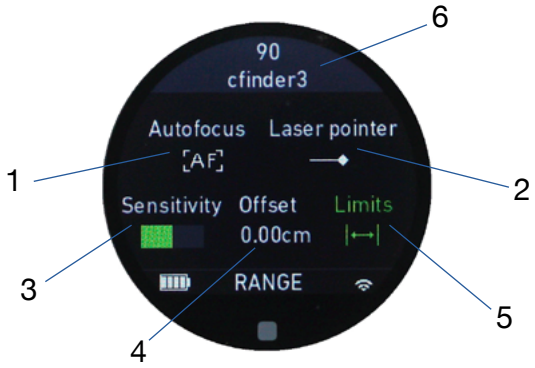
The numeric rangefinder distance value will turn green if the measured rangefinder distance is within depth of field.

Note: When using cmotion’s cfinder III, the rangefinder’s sensor warning will be displayed if a target is not detected. (Please refer to the cfinder III user guide)

1 Measured rangefinder distance (value)
2 Measured rangefinder distance (relative position)

If no lens file is loaded, only the measured rangefinder value and its realtive position to the calibration range will be displayed.

6.1.4.2. Rangefinder settings screen



1 Autofocus (on/off)
2 Laser pointer (on/off)
3 Sensitivity settings
4 Offset (value)
5 Rangefinder limits (on/off)
6 LBUS device ID (serial number/name)

Autofocus: The autofocus icon will turn green if autofocus is on. If autofocus is off, it illuminates white.

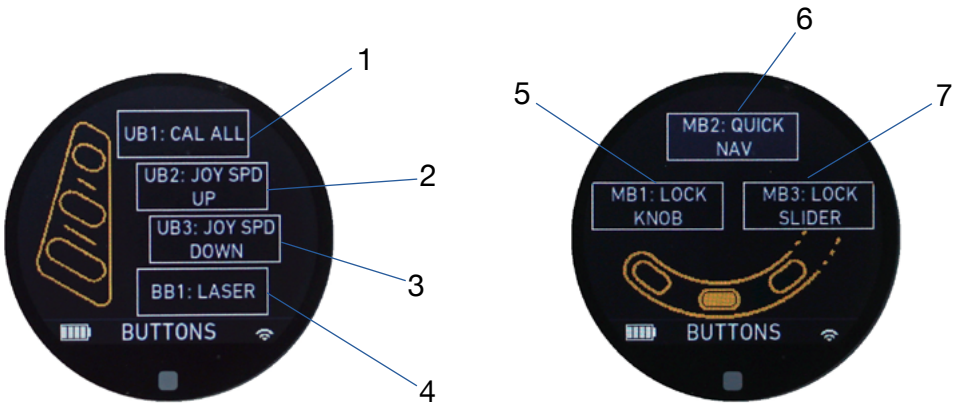
Laser pointer: The laser pointer icon will turn green if the laser pointer is on. If the laser pointer is off, it illuminates white.

Sensitivity: Shows the sensitivity settings grafically.

Offset: The offset icon will turn green if an offset is set to a value other than 0, and will display the offset value numerically.

Limits: The limits icon will turn green if a rangefinder limit other than “limit max” = infinity or “limit min” = 0 is set. Otherwise, the icon will illuminate white.

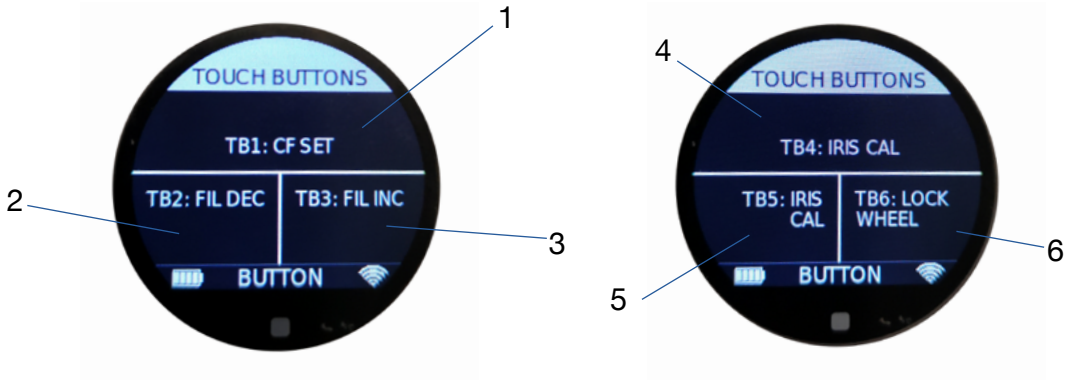
6.1.5. Buttons main screens



1	User button 1 / UB1 (function)
2	User button 2 / UB2 (function)
3	User button 3 / UB3 (function)
4	Back button 1 / BB1 (function)
5	Menu button 1 / MB1 (function)
6	Menu button 2 / MB2 (QUICK NAV))
7	Menu button 3 / MB3 (function)

The buttons main screens display the functions assigned to each user button.

Note: The buttons adjustment menu can be accessed quickly from both buttons main screens by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

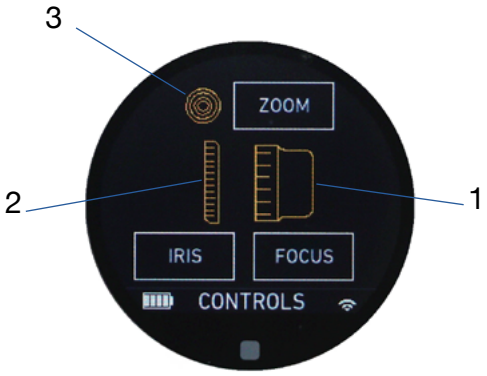


1	Touch button 1 / TB1 (function)
2	Touch button 2 / TB2 (function)
3	Touch button 3 / TB3 (function)
4	Touch button 4 / TB4 (function)
5	Touch button 5 / TB5 (function)
6	Touch button 6 / TB6 (function))

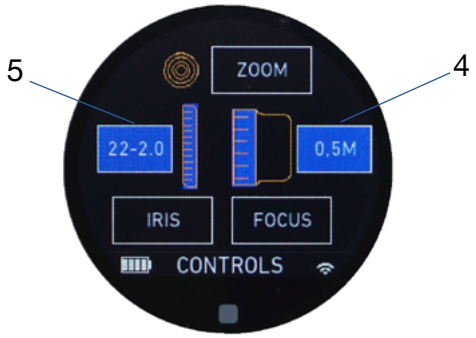
The touch buttons main screens display each functions assigned to each touch button. Depending on the user function assigned to the touch button, the touch button functions can be triggerd by tapping or tapping and holding the corresponding icon on the touch display.

Note: The buttons adjustment menu can be accessed quickly from both buttons main screens by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

6.1.6. Controls main screen



Controls main screen



Controls main screen with loaded pre-marked focus ring / iris strip

1	Knob (assigned axis)
2	Slider (assigned axis)
3	Joystick (assigned axis)
4	Pre-marked focus ring loaded (type)
5	Pre-marked iris strip loaded (type)

The controls main screen displays information about the control interfaces; knob, slider and joystick and their assigned axis; focus, iris and zoom. It also shows information about loaded pre-marked focus rings and / or pre-marked iris strips.

Note: The controls adjustment menu can be accessed quickly from both controls main screens by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

6.1.7. Motors main screens

1	Axis (Focus/Iris/Zoom/Aux)
2	Torque (Min/Weak/Strong/Max)
3	Direction (Left/Right)
4	Ramp (Min/Short/Long/Max)
5	Device in control (this unit / name, serial number)
6	LBUS device ID (serial number/name)

The motors main screens display information for up to 4 daisy-chained cforce / cPRO motors.

Axis: Displays information about the motor assigment to focus, iris, zoom or Aux.

Note: The axis menu only changes the assignment of the motor, not the assignemnt of the control interface.

Torque: Displays information about the motor strength (Min/Weak/Strong/Max).

Direction: Displays information about the motor being mounted on the left or on the right side of the camera.

Note: The direction is defined from the operators point of view, from behind the camera.

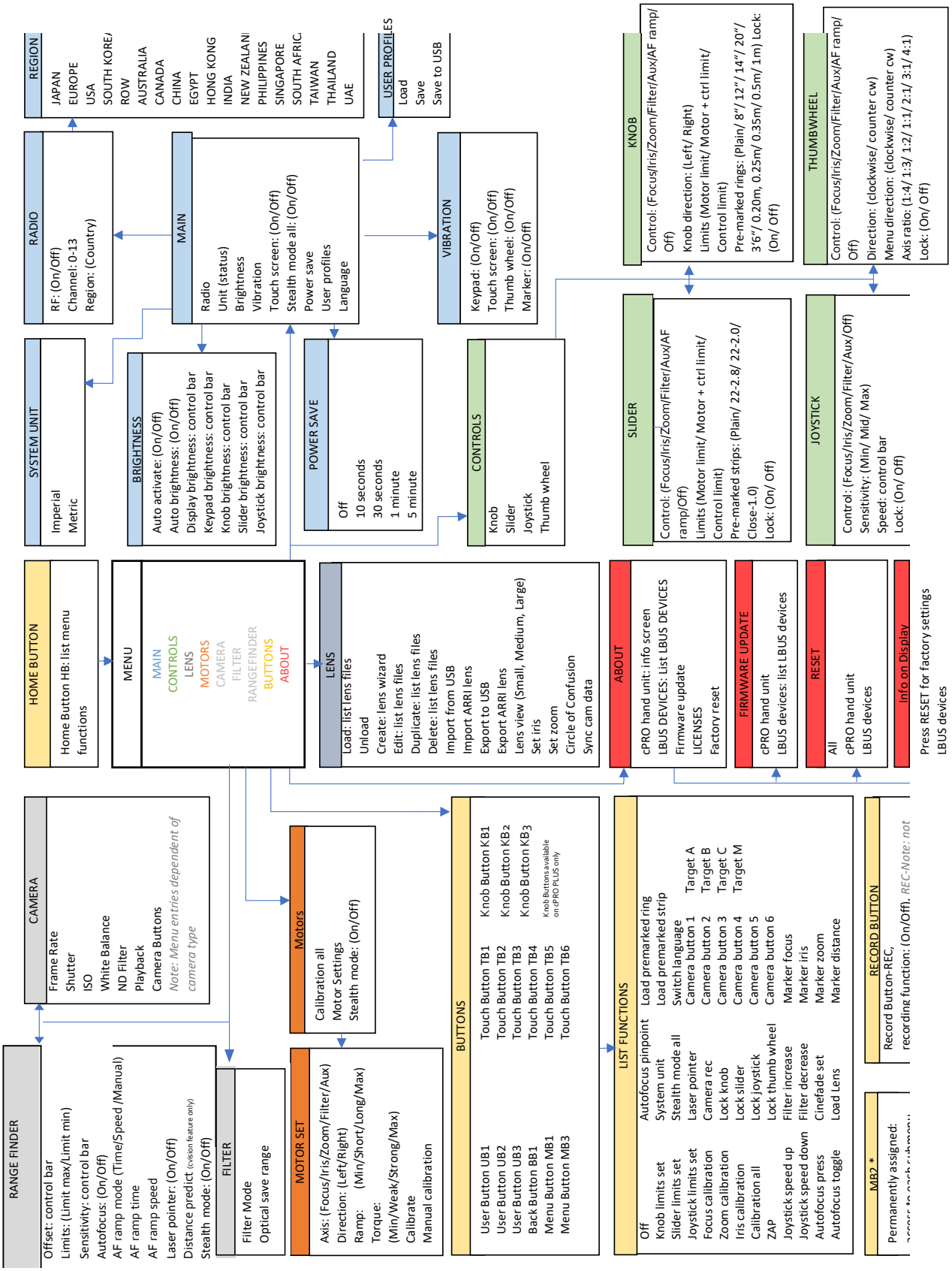
Ramp: Displays information about the start and stop acceleration of the motor in relation to the controller. (Min/Short/Long/Max) The greater the ramp, the smoother the motor will speed-up and slow-down.

Ctrl: Displays information about the controlling device. If multiple hand units are used and the highlighted motor is being controlled by a controller other than the one you are viewing the menu on, “this hand unit” Ctrl will display the name and serial number of the hand unit which is controlling that motor.

Note: The motors adjustment menu can be accessed quickly from all motors main screens by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

6.2. Adjustment menu

6.2.1. Adjustment menu overview



6.2.2. Adjustment menu navigation

There are multiple ways to enter and navigate through the adjustment menu depending on your preferences. If the touch screen is disabled or you are wearing gloves, all menu pages can be accessed and settings changed using the thumb wheel and menu buttons.

NAVIGATION	HOME button	Touch screen	Thumb wheel	Buttons
enter the adjustment menu	press short twice	tap short twice		
enter related adjustment menu		tap and hold		press and hold MB2 (QUICK NAV)
leave the adjustment menu	press short	swipe right (until leave)		back (until leave)
navigate down		swipe up	turn counter-clockwise	
navigate up		swipe down	turn clockwise	
enter sub menu (select)		swipe left		select
leave sub menu (back)		swipe right		back
increase values		swipe up	turn counter-clockwise	
decrease values		swipe down	turn clockwise	

In the following text, every single sub menu will be explained with its corresponding function. Some of the sub menus show the set status in their text, others do not.

6.2.3. Menu

The menu consists of the following sub menus:

MAIN
CONTROLS
LENS
MOTORS*
RANGEFINDER**
FILTER***
CAMERA****
BUTTONS
ABOUT

* available if a cforce motor is connected to the LBUS daisy chain only

** available if a rangefinder is connected to the LBUS daisy chain only

*** available if cmotion Cinefade VariND is connected to the LBUS daisy chain only

**** available only when a compatible camera is connected through the cPRO motor's / camin's CAM interface.
Camera control requires the corresponding license for each camera

6.2.3.1. MAIN

The main menu includes all hand unit related settings which can be adjusted in the corresponding sub menus. These include:

Radio
Unit (status)
Brightness
Vibration
Touch screen (status)
Thumb wheel (status)
Stealth mode all
Power save
User profiles
Language

6.2.3.1.1. Radio

The radio menu consits of the following RF related settings:

RF (status)
Channel (status)
Region (status)

6.2.3.1.1.1. RF

The RF menu allows you to turn the wireless radio on or off.

Note: If the cPRO / cPRO PLUS or cPRO ONE hand unit is connected hard-wired to the cPRO motor or cPRO camin via the daisy-chain, the system will detect an LBUS loop and will turn the radio off automatically (LBUS loop detection). As soon as the cPRO / cPRO PLUS / cPRO ONE hand unit is disconnected from the LBUS daisy-chain, the radio will be turned on and return to it's previous settings automatically.

6.2.3.1.1.2. Channel

The channel menu allows you to select one of the 14 radio channels from 0-13.

Note: In order to establish a wireless connection between the cPRO / cPRO PLUS or cPRO ONE hand unit and the cPRO motor / cPRO camin, both devices need to be set to the same RF channel. (How to select the RF channel on the cPRO motor / cPRO camin, please refer to corresponding user guide)

6.2.3.1.1.3. Region

The region menu allows you to change the RF settings according to legal regulations of the country / region, you are operating in. Changing the region settings on the cPRO / cPRO PLUS / cPRO ONE hand unit will automatically change the region settings on the connected cPRO motor / cPRO camin if a wireless connection is established. The corresponding country code will illuminate on the cPRO motor´s / cPRO camin´s display.

Note: Make sure that you select the proper area you are operating the device in. All available region settings comply with Part 15 of the FCC rules.

NOTICE
It may not be legal to operate the cPRO / cPRO PLUS / cPRO ONE hand unit in a country/ region other than the country/region selected in the region menu. Select ROW (Rest of world) or use the device in hard-wired mode if you are unsure of the correct region setting.

Region Setting	Country code
Australia	AU
Canada	CA
China	CN
Egypt	EG
Europe	EU
Hong Kong	HK
India	IN
Japan	JP
New Zealand	NZ
Philippines	PH
Singapore	SG
South Africa	ZA
South Korea	KR
Taiwan	TW
Thailand	TH
UAE (United Arab Emirates)	AE
USA	US
ROW (Rest of world)	WORLD

6.2.3.1.2. Unit

The unit menu allows you to change the system unit to imperial or metric.

Note: Changing the system unit from the cPRO / cPRO PLUS / cPRO ONE hand unit will change the unit settings on all connected LBUS devices exept cameras connected through the CAM connector.

6.2.3.1.3. Brightness

The brightness menu allows you to individually adjust the brightness level on several main components of the cPRO / cPRO PLUS and cPRO ONE hand unit. It also includes functions including auto brightness and auto activate.

The brightness menu consits of the following functions:

Auto activate (status)
Auto brightness (status)
Display brightness
Keypad brightness
Knob brightness
Slider brightness*
Joystick brightness*
Status LED brightness

* cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

6.2.3.1.3.1. Auto activate

The auto activate function can be turned on or off. If turned on, the cPRO / cPRO PLUS / cPRO ONE hand unit´s illumination will turn off if the light sensor is exposed to a light source. If it gets darker, the illumination will switch on to the pre-defined brightness settings again (e.g if you are shooting outside and you have to enter a dark building). If turned off, the previous brightness settings will be activated.

6.2.3.1.3.2. Auto brightness

The auto brightness function can be turned on or off. If turned on, the cPRO / cPRO PLUS / cPRO ONE hand unit´s illumination will adjust dynamically to produce the best contrast for the environmental lighting. If turned off, the previous brightness settings will be activated.

6.2.3.1.3.3. Display brightness

The display menu allows you to adjust the brightness of the touch display individually. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.3.4. Keypad brightness

The keypad brightness menu allows you to adjust the brightness of the illuminated buttons collectively. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.3.5. Knob brightness

The knob brightness menu allows you to adjust the brightness of the focus ring illumination individually. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.3.6. Slider brightness

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)

The slider brightness menu allows you to adjust the brightness of the slider strip illumination individually. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.3.7. Joystick brightness

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)

The joystick brightness menu allows you to adjust the brightness of the position indicator display illumination individually. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.3.8. Status LED brightness

The Status LED brightness menu allows you to adjust the brightness of the system status LED underneath the HOME button, the camera status LED next to the REC button and the joystick status LED next to the zoom indicator display individually. Use the thumb wheel to turn the brightness up or down. Press select to confirm your brightness settings.

6.2.3.1.4. Vibration

The vibration menu consits of the following functions:

Keypad (status)
Touch screen (status)
Thumb wheel (status)
Marker (status)

6.2.3.1.4.1. Keypad

The keypad menu allows you to turn the tactile vibration feedback for all buttons on or off.

6.2.3.1.4.2. Touch screen

The touch screen menu allows you to turn the tactile vibration feedback for the touch display on or off.

6.2.3.1.4.3. Thumb wheel

The thumb wheel menu allows you to turn the tactile vibration feedback for the thumb wheel on or off.

6.2.3.1.4.4. Marker

The marker menu allows you to turn the tactile vibration feedback for the focus / iris / zoom, distance or auxiliary marker on or off. For further information on how to use focus / iris /zoom, distance or auxiliary marker, please refer to section “6.2.3.8.2. User button functions” on page 101 in this manual.

6.2.3.1.5. Touch screen

The touch screen menu allows you to turn the touch screen on (unlock) or off (lock). A small red lock with the letter “D” for Display will be displayed in the status bar on all main screens each time you press the locked touch screen.

Note: The touch screen will be locked for all main screen navigation only. Within the adjustement menu, the touch screen will be unlocked automatically to allow smooth navigation. In order to enter the adjustment menu, if the touch screen is locked, press the home button twice.

6.2.3.1.6. Stealth mode all

The stealth mode all menu allows you to turn the stealth mode on or off for all connected LBUS devices. If stealth mode is on, the illumination on all connected LBUS devices will turn off. (i.e. if the camera angle is critical because of camera reflection in the picture).

6.2.3.1.7. Power save

The power save feature allows you to set a (10 second, 30 second, 1 minute or 5 minute) timer. The cPRO hand unit will then switch to power save mode after the determined period of inactivity. While in power save mode, the display and all illuminated buttons and controllers will be dimmed or turned off. The HOME button will however pulse to indicate the hand unit is in power save mode. Even during power save mode, the RF connection to the cPRO motor / cPRO camin remains active. The internal gyro allows you to deactivate the power save mode and return to full control immediately by simply picking up the hand unit, turning a control, or pressing any of the buttons. Power save mode can save up to 50% of the battery life compared to when the hand unit is fully illuminated. To deactivate power save mode, simply set power save to off.

6.2.3.1.8. User profiles

The user profile menu allows you to save and load user settings to and from the hand unit´s internal memory or a USB drive. The menu consists of:

Load
Save
Save to USB

A user profile is a snapshot of all the settings active on the cPRO hand unit at the time the profile is created. This includes the active lens file, pre-marked rings, pre-marked iris strip and button assignment.

The cPRO hand unit can save up to 5 user profiles within its internal memory. However, additional profiles can be saved to and loaded from a USB when connected to the hand unit.

Note: User profiles will be deleted from the internal memory when performing a factory reset. It is therefore recommended to save user profiles to a USB before performing this process.

6.2.3.1.8.1. Load

To load a user profile from either the cPRO hand unit´s internal memory or a USB drive, go to “Load”, select the user profile you want to load, and confirm by pressing “load” (MB2).

User profiles stored on a USB drive will be listed below “<-- USB profiles -->”.

After confirming your chosen user profile (pressing MB2 “load”) the cPRO hand unit will automatically restart.

6.2.3.1.8.2. Save

In order to save a user profile to the cPRO hand unit´s internal memory, go to “Save” and select one of the 5 slots using the thumb wheel. If you want to overwrite an existing slot, press MB2 “save”. A pop up menu will ask you to confirm “Do you really want to overwrite existing profile?”. Press MB3 “save” if you do want to overwrite the existing user profile, or press MB1 “back” if you want to select a different slot.

Empty slots are marked by <no name>. Both empty slots and existing user profiles can be named by pressing MB3 “name”. To create a profile name, scroll through the alphanumeric characters using the thumb wheel or touch screen. A minimum of two characters are required to save a user profile’s name.

Once the desired letter (or number) is highlighted in blue, press “select” (MB2) to set that character. As an alternative, you can also tap the touch screen to confirm your selection.

UB1 allows you to change between UPER CASE, lower case and numbers.

UB2 allows you to delete the last set character.

UB3 allows you to select a previous set character. Once a character is highlighted in blue, you can change it by using the thumb wheel or touch screen. To delete it, simply press UB2.

Note: You can use a maximum of 18 characters to name a user profile.

Once you have created a name for your user profile, press “save” (MB3).

6.2.3.1.8.3. Save to USB

To save a user profile to a USB drive, insert the USB drive into to the cPRO hand unit’s USB port and select “Save to USB” in the menu. Now, you can create and save a new profile.

In order to create a new user profile, select “<new profile>” and press “name” (MB3). To name the user profile, scroll through the alphanumeric characters using the thumb wheel or touch screen. A minimum of two characters are required to create and save a user profile.

Once the desired letter (or number) is highlighted in blue, press “select” (MB2) to set the character. As an alternative, you can also tap the touch screen to confirm your selection.

UB1 allows you to change between UPER CASE, lower case and numbers.

UB2 allows you to delete the last set character.

UB3 allows you to select a previous set character. Once a character is highlighted in blue, you can change it by using the thumb wheel or touch screen. To delete it, simply press UB2.

Note: You can use a maximum of 18 characters to name a user profile.

Once you have completed the name of the user profile, press “save” (MB3) to save the user profile.

NOTICE
If you want to transfer a user profile from a USB drive to the hand unit, go to “Load”, select the user profile from the USB drive list below “<-- USB profiles -->” then confirm and load by pressing MB2 “load”. The cPRO hand unit will restart automatically to load the selected user profile. Then, go to “Save” and select one of the 5 slots available in the cPRO hand unit’s internal memory. To save the user profile, press “save” (MB2). Please also refer to section “6.2.3.1.8.1. Load” on page 45“ and section “6.2.3.1.8.2. Save” on page 45“ in this manual. If you want to transfer an existing user profile from the hand unit to a USB drive, first load the corresponding user profile from the hand unit´s internal memory and then save it to the USB drive by selecting “save to USB”. Please also refer to section “6.2.3.1.8.1. Load” on page 45“ and section “6.2.3.1.8.3. Save to USB” on page 46 in this manual.

6.2.3.1.9. Language

The language menu allows you to change the user interface between English and Chinese.

6.2.3.2. CONTROLS

The controls menu contains all settings related to the main controls: knob, slider, joystick and thumb wheel.

Knob
Slider
Joystick
Thumb wheel

6.2.3.2.1. Knob

The knob menu contains all settings related to the knob control interface and consists of:

Control (status)
Knob direction (status)
Knob limits (status)
Pre-marked rings
Lock (status)

6.2.3.2.1.1. Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter / Aux / AF ramp / v-Iris / v-Zoom / Off) to the knob.

Control	Description
Focus	Controls the motor assigend to Focus.
Iris	Controls the motor assigend to Iris.
Zoom	Controls the motor assigend to Zoom.
Filter	Controls the cmotion Cinefade VariND in Rotapola mode and in VariND mode.
Aux	Controls the motor assigend to Aux.
AF ramp	Allows manual transition between two rangefinder targets. Please refer to section “6.2.3.7.5. AF Ramp mode*” on page 94 in this manual.
v-Iris	Allows you to set an iris value dynamically for proper depth of field calculation when an iris motor is not being used.
v-Zoom	Allows you to set a zoom value dynamically for proper depth of field calculation when a zoom motor is not being used.
OFF	Does not allow control of any axis and turns the marker ring illumination and knob status LEDs off.

6.2.3.2.1.2. Knob direction

The knob direction menu allows you to change the knob direction from left to right. Left means that infinity is on the end stop turning the knob clockwise. Right means that infinity is on the end stop turning the knob counter-clockwise.

Note: Knob direction can be adjusted with individually marked focus rings only. With pre-marked focus rings the knob direction is always left / counter-clockwise.

6.2.3.2.1.3. Knob limits

The knob limits menu allows you to set three different limit modes.

Motor limits
Motor + control limits
Control limits

Motor limits: This function spreads a predefined rotation of the assigned motor to the full rotation of the knob. E.g. for macro shots or precice, shallow focus pulls where you want to have more resolution for a certain range of the lens.

Motor + control limits: This function limits the travel of the knob and the travel of the focus motor. Basically, this function allows you to set electronic hard stops at two predefined focus marks.

Control limits: This function limits the travel of the knob at two predefined marks while maintaining the full rotation of the lens. E.g. for long but quick focus pulls.

Setup: Select the desired limit function in the knob limits menu. Assign a user button to “Knob limits set”. Move the knob to the first focus mark. Press and hold the user button assigned to “Knob limits set” and move the knob to the second focus mark. Release the user button at the second focus mark. The selected limit function will be applied automatically. In order to deactivate the limit function and to return to regular knob control, press the user button assigned to “Knob limits set” again. A pop up menu indicates the status of the limit functions being activated or deactivated.

Note: If you change the limit mode while a limit is active, the limits will be deactivated automatically. You will then need to set a new limit range.

Note: Pre-marked focus rings do not work with knob limits. .
Also, individually marked focus rings will not match the scales while these limit functions are activated.

6.2.3.2.1.4. Pre-marked rings

The pre-marked rings menu allows you to choose between regular pre-marked focus rings, smart focus rings and smart iris rings.

Each focus ring is engraved with a scale from infinity to one of the following close focus values. Pre-marked focus rings can be used with a wide range of lenses from wide angle to telelphoto and save time marking a focus marker ring for each lens.

Pre-marked focus rings are available in imperial or metric scales:

8”	0,20m
12”	0,25m
14”	0,35m
20”	0,5m
3´6	1m

Smart focus rings are available in imperial or metric scales in both standard or reverse orientation:

9”	0,20m
1´	0,25m
1´3	0,30m
1´8	0,35m
2´	0,50m
2´6	0,75m
3´6	1,00m
5´	1,50m
6´6	2,00m
10´	3,00m

Standard smart focus rings are marked with an “S” infront of their wide open value.
Reversed smart focus rings are marked with an “R” infront of their wide open value.

Smart iris rings are available in the following T-stop ranges:

T1.0-T22
T1.4-T22
T2.0-T22
T2.8-T22
T1.0-Close

All above listed smart focus rings and smart iris rings can be selected manually on any cPRO, cPRO ONE and cPRO PLUS hand unit.

When using a cPRO PLUS hand unit, all smart rings can be detected through the smart pins and loaded automatically if “AUTO” is selected in the pre-marked rings menu.

Select “Plain” in the pre-marked rings menu if a plain marker ring is being used.

Left hander smart focus rings are not supported.

Note: Before pre-marked focus or iris rings can be used, a lens file needs to be created using the cPRO / cPRO PLUS / cPRO ONE hand unit´s internal ‘create lens’ feature or a cworld.

In order to use a pre-marked focus or iris ring, please proceed as follows:

- Calibrate the lens
- Load the corresponding lens file from the cPRO / cPRO PLUS / cPRO ONE hand unit or cworld
- Choose the right pre-marked focus or iris ring to match the close focus or wide open iris value of your lens
- Enter the pre-marked rings menu and select the appropriate marker ring from the list or select “AUTO” if using a cPRO PLUS hand unit
- Select “Plain” if using an individually marked plain marker ring

6.2.3.2.1.5. Lock

The lock menu allows you to lock the knob (e.g. if shooting with a locked off camera).

A small red lock with the letter “K” for knob will be displayed in the status bar on all main screens each time you turn the knob. The knob illumination will start flashing red, indicating that the knob is locked and motor control is not available.

6.2.3.2.2. Slider

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)

The slider menu contains all settings related to the slider control interface and consists of:

Control (status)
Slider limits (status)
Pre-marked strips
Lock (status)

6.2.3.2.2.1. Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter / Aux / AF ramp / v-Iris / v-Zoom / Off) to the slider.

Control	Description
Focus	Controls the motor assigend to Focus.
Iris	Controls the motor assigend to Iris.
Zoom	Controls the motor assigend to Zoom.
Filter	Controls the cmotion Cinefade VariND in Rotapola mode and in VariND mode.
Aux	Controls the motor assigend to Aux.
AF ramp	Allows manual transition between two rangefinder targets. Please refer to section “6.2.3.7.5. AF Ramp mode*” on page 94 in this manual.
v-Iris	Allows you to set an iris value dynamically for proper depth of field calculation when an iris motor is not being used.
v-Zoom	Allows you to set a zoom value dynamically for proper depth of field calculation when a zoom motor is not being used.
OFF	Does not allow control of any axis and turns the slider strip illumination and slider status LEDs off.

6.2.3.2.2.2. Slider limits

The slider limits menu allows you to set three different limit modes.

Motor limits
Motor + control limits
Control limits

Motor limits: This function spreads a predefined rotation of the assigned motor to the full virticle movement of the slider. E.g. for precise iris racks, where you want to have more resolution for a certain range of the iris.

Motor + control limits: This function limits the travel of the slider and the travel of the iris motor. Basically, this function allows you to set electronic hard stops at two predefined iris marks.

Control limits: This function limits the travel of the slider at two predefined marks while maintaining the full rotation of the lens. E.g. for quick iris racks.

Setup: Select the desired limit function in the slider limits menu. Assign a user button to “Slider limits set”. Move the slider to the first iris mark. Press and hold the user button assigned to “Slider limits set” and move the slider to the second iris mark. Release the user button at the second iris mark. The selected limit function will be applied automatically. In order to deactivate the limit function and to return to regular slider control, press the user button assigned to “Slider limits set” again. A pop up menu indicates the status of the limit functions being activated or deactivated.

Note: If you change the limit mode while a limit is active, the limits will be deactivated automatically. You will then need to set a new limit range.

Note: Pre-marked iris strips do not work with slider limits.
Also, individually marked iris strips will not match the scales while these limit functions are activated.

6.2.3.2.2.3. Pre-marked strips

The pre-marked strips menu allows you to select one of three pre-marked iris strips. Each strip is engraved with a scale from one of three open iris values to T22 or close. Pre-marked iris strips can be used with a wide range of lenses and save time marking an iris strip for each lens.

Pre-marked iris strips are available with the following T-stop scales:

T1.0 - close
T2.0 - 22
T2.8 - 22

Note: Before pre-marked iris strips can be used, a lens file needs to be created using the cPRO hand unit´s internal ‘create lens’ feature or a cworld.

In order to use a pre-marked iris strips please proceed as follows:

- Calibrate the lens motors
- Load the corresponding lens file from the cPRO hand unit or cworld

- Choose the right pre-marked iris strip to match the open iris value of your lens
- Enter the pre-marked strips menu and select the appropriate marker strip from the list
- Select “Plain” if using an individually marked plain marker strip

6.2.3.2.2.4. Lock

The lock menu allows you to lock the slider (e.g. if shooting with a locked off camera).

A small red lock will the letter “S” for slider will be displayed in the status bar on all main screens each time you move the slider. The slider illumination will start flashing red, indicating that the slider is locked and no motor control is possible.

6.2.3.2.3. Joystick

(cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit)

The joystick menu contains all settings related to the joystick control interface and consists of:

Control (status)
Sensitivity
Speed
Lock (status)

6.2.3.2.3.1. Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter / Aux / v-Iris / v-Zoom / Off) to the joystick.

Control	Description
Focus	Controls the motor assigend to Focus.
Iris	Controls the motor assigend to Iris.
Zoom	Controls the motor assigend to Zoom.
Filter	Controls the cmotion Cinefade VariND in Rotapo-la mode and in VariND mode.
Aux	Controls the motor assigend to Aux.
AF ramp	Allows manual transition between two rangefind-er targets. Please refer to section “6.2.3.7.5. AF Ramp mode*” on page 94 in this manual.

Control	Description
v-Iris	Allows you to set an iris value dynamically for proper depth of field calculation when an iris motor is not being used.
v-Zoom	Allows you to set a zoom value dynamically for proper depth of field calculation when a zoom motor is not being used.
OFF	Does not allow control of any axis and turns the zoom indicator display and joystick status LEDs off.

6.2.3.2.3.2. Sensitivity

The sensitivity menu allows you to adjust the touch sensitivity of the micro-force joystick to Min, Mid or Max. At Min, the joystick needs more preasure to react. At Max, the joystick will respond to a lighter touch.

6.2.3.2.3.3. Speed

The speed menu allows you to adjust the motor speed of the joystick´s assigned axis. Use the thumb wheel to increase or decrease the motor speed. Press select to confirm your speed settings.

6.2.3.2.3.4. Lock

The lock menu allows you to lock the joystick (e.g. if shooting with a locked off camera).

A small red lock will the letter “J” for joystick will be displayed in the status bar on all main screens each time you touch the joystick. The status LED of the joystick will start flashing red, indicating that the joystick is locked and no motor control is possible.

6.2.3.2.4. Thumb wheel

The thumb wheel menu contains all settings related to the thumb wheel control interface and consists of:

Control (status)
Motor direction
Menu direction
Axis ratio (status)
Lock (status)

6.2.3.2.4.1. Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter / Aux / AF ramp / v-Iris / v-Zoom / Off) to the thumb wheel.

Control	Description
Focus	Controls the motor assigend to Focus.
Iris	Controls the motor assigend to Iris.
Zoom	Controls the motor assigend to Zoom.
Filter	Controls the cmotion Cinefade VariND in Rotapola mode and in VariND mode.
Aux	Controls the motor assigend to Aux.
AF ramp	Allows manual transition between two rangefinder targets. Please refer to section “6.2.3.7.5. AF Ramp mode*” on page 94 in this manual.
v-Iris	Allows you to set an iris value dynamically for proper depth of field calculation when an iris motor is not being used.
v-Zoom	Allows you to set a zoom value dynamically for proper depth of field calculation when a zoom motor is not being used.
OFF	Does not allow control of any axis. The thumb wheel can be used for navigation between the main screens.

Note: If the thumb wheel is assigned to control a motor, press and hold MB2 and move the thumb wheel to navigate between the main screens. As an alternative, you can also swipe the touch screen left or right.

6.2.3.2.4.2. Motor direction

The motor direction menu allows you to assign the thumb wheel to control an assigned motor to clockwise or counter-clockwise. This feature allows you to set your motor control preferences independent of the thumb wheel control in the menu navigation (please also refer to “6.2.3.2.4.3. Menu direction” on page 55 in this manual).

6.2.3.2.4.3. Menu direction

The menu direction allows you to assign the direction of the thumb wheel to clockwise or counter-clockwise.

Using the clockwise setting you navigate up in the adjustment menu if moving the thumb wheel clockwise. Using the counter-clockwise setting you navigate up in the adjustment menu if moving the thumb wheel counter-clockwise.

6.2.3.2.4.4. Axis ratio

The axis ratio menu allows you to set the translation ratio of the thumb wheel to the controlling axis. The WHEEL : AXIS ratio can be changed to 1:4, 1:3, 1:2, 1:1, 2:1, 3:1, 4:1.

E.g.:

1:1 means that one full rotation on the thumb wheel moves the controling axis from one end-stop to the other (full rotation of the lens)

1:2 means that a half rotation on the thumb wheel move the controling axis from one end-stop to the other (full rotation of the lens)

2:1 means that two full rotation on the thumb wheel move the controling axis from one end-stop to the other (full rotation of the lens)

6.2.3.2.4.5. Lock

The lock menu allows you to lock the thumb wheel. This is helpful to avoid accidental changes to the main page or settings. Also, if the thumb wheel is assigned to control any axis on a locked off camera.

A small red lock will be the letter “T” for thumb wheel will be displayed in the status bar on all main screens each time you turn the thumb wheel. If the thumb wheel is assigned to any controlling axis, the corresponding lens data will illuminate red, indicating that the thumb wheel is locked and no motor control is possible.

Note: The thumb wheel will be locked for main screen navigation only. Within the adjustment menu, the thumb wheel will be unlocked automatically to allow smooth navigation. In order to enter the adjustment menu, if the touch screen is also locked, press the home button twice.

NOTICE
If the thumb wheel is locked and the touch screen is off at the same time, a navigation through the main screens is not possible anymore. In order to enter the adjustment menu, press the home button twice and unlock the control interfaces if needed.

6.2.3.3. LENS

The lens menu contains all settings related to lens files and lens file handling and consists of:

Load
Unload
Save
Create
Edit
Duplicate
Delete
Import from USB
Import ARRI lens
Export to USB
Export ARRI lens
Lens View
DIT mode
Set iris
Set zoom
Circle of confusion
Sync cam data (status)

Note: A lens file must be loaded on the hand unit to view and use cPRO's advanced features. These include, lens data, pre-marked rings and sliders, and autofocus. Lens data can be created on the cPRO / cPRO PLUS or cPRO ONE hand unit using the internal create lens wizard or cworld. It is also possible to download and upload archive lens files (.cml) via the USB port.

6.2.3.3.1. Load

The load menu allows you to load a lens file from the list of lens files stored in the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory. Up to 30 lens files can be stored internally.

If you select a lens file form the dynamic list by pressing select (MB2) or by taping short on the touch screen, the lens file will be loaded without further confirmation required.

MB3 allows you to select or deselect your favorite lens files. Favorite lens files will be highlighted in yellow.

UB1 allows you to switch between your "favorites" list and the full list of lenses saved

on your hand unit. If you leave the menu from the favorites list using the “back” function (MB1), or the HOME button, you will be redirected to the favorites list when reentering the load lens menu directly, or through the user button function “load lens”. This allows you to quickly load a new lens file from your favorites list.

UB2 allows you to change the display order of your lens files using the following categories:

- **custom text,** this will display all of your lenses in reference to the name which was assigned to them when each lens file was created.
- **focal length or zoom range,** this will display your lenses in reference to the focal length or zoom range which was assigned to them when each lens fiie was created.
- **T-stop,** this will display your lenses in reference to the T-stop which was assigned to them when each lens file was created.

UB3 allows you to activate and deactivate advanced lens information. This will display information about your lens file including manufacturer, serial number, weather the file was created from a duplicate file, whether it was created as a metric or imperial lens, and whether it is selected as one of your “favorites”. While viewing advanced lens information, you can use the thumb wheel to scroll through the lens files.

Note: When 2 or 3 cPRO / cPRO PLUS or cPRO ONE hand units are connected within the same wireless network and a new lens file is loaded on 1 unit, this new lens file will be shared temporarily and displayed on all connected hand units automatically. However, because this lens file is only shared temporarily, it will not be available on the other hand unit/s once a lens is loaded from their own internal lens database. To save the temporary lens file permanently on the 2nd / 3rd cPRO / cPRO PLUS or cPRO ONE hand unit, go to the LENS menu (of the hand unit you want to save the lens to) and select “Save”.The lens file will now be saved in the internal memory.

6.2.3.3.2. Unload

The unload menu allows you to unload an active lens file. Selecting unload will unload the lens file without further confirmation required.

Note: If there is no lens loaded on the hand unit, advanced cPRO features will be disabled and the main screen will only display a percentage of the motors calibrated range.

6.2.3.3.3. Save

When 2 or 3 cPRO / cPRO PLUS or cPRO ONE hand units are connected within the same wireless network and a new lens file is loaded on 1 unit, this new lens file will be shared temporarily and displayed on all connected hand units automatically. However, because this lens file is only shared temporarily, it will not be available on the other hand unit/s once a lens is loaded from their own internal lens database. To save the lens file to the corresponding hand unit/s permanently, use the save option in the lens menu. This will save the transferred lens file to their internal memory automatically.

6.2.3.3.4. Create

The Create menu allows you to create a lens file using the cPRO / cPRO PLUS or cPRO ONE hand unit's internal lens wizard. To create a new lens file, follow the procedure below.

Note: While creating a new lens file, it is possible to exit the lens wizard using the back function (MB1) or the HOME button at any stage without loosing recently entered data.

NOTICE
Please make sure the motor is correctly assigned to the right or left side of the camera. Please refer to section "6.2.3.4.2.3. Direction" on page 81 in this manual.

Once you re-enter the lens wizard, you can select whether you want to create a new lens or continue with the lens from the previous session. Press "clear" (MB3) if you want to delete all data from the previous session and start creating a new lens. Press "next" (MB2) if you want to keep the data from the previous session and continue creating data for that lens. Press "back" (MB1) to return to the previous menu page.

6.2.3.3.4.1. Motor calibration

Please ensure ALL motors are fully calibrated. If they are already, you can press "skip" (MB2).

If you are not sure press “cal” (MB3) to start motor calibration. Once the motors have been calibrated properly, press “next” (MB2).

⚠CAUTION!

Risk of injury! Do not touch the motor gear while motor is moving!

This device is not intended for use by children. Keep body parts out of the motion path.

Disconnect the plug if the device is not used for a longer period of time.

IEC 60417-6056 (2011-05) for other moving parts

6.2.3.3.4.2. Select manufacturer

Select the name of the lens manufacturer from the list of brands. Scroll through the list using the thumb wheel or swipe up or down using the touch screen.

Select “CUSTOM” to enter the name of a lens manufacturer that is not listed.

Confirm your selection by pressing “next” (MB3) or swipe left on the touch screen.

6.2.3.3.4.3. Set lens name

To create the lens name, scroll through the alphabetic characters using the thumb wheel or swipe up or down on the touch screen. A minimum of two characters are required to create and save a lens name.

Once the desired letter is highlighted in blue, press “select” (MB2) to set the character. As an alternative, you can also tap the touch screen to confirm your selection.

UB1 allows you to change between UPER CASE, lower case and numbers.

UB2 allows you to delete the last set character.

UB3 allows you to select a previous set character. Once it is highlighted in blue, you can change it using the thumb wheel or touch screen or delete it by pressing UB2.

Note: You can use a maximum of 18 characters to create a lens name.

Once you have completed the lens name, press “next” (MB3) to continue or swipe left on the touch screen.

6.2.3.3.4.4. Set serial number

To help identify individual lens files, please enter the unique lens serial number. A minimum of two characters are required to set and save a serial number.

Note: You are allowed to enter a maximum of 16 characters.

Confirm your selection by pressing “next” (MB3) or swipe left on the touch screen.

6.2.3.3.4.5. Focus imperial / metric selection

Lenses are usually engraved with either a metric or imperial focus scale. Please select here if you want to create a metric scale or an imperial scale.

Note: In the following example, a metric scale is being created. However, please follow the same procedure for creating an imperial scale.

Confirm your selection by pressing “next” (MB3) or swipe left on the touch screen.

6.2.3.3.4.6. Scale calibration

The scale calibration menu allows you to select which scale you want to create. I.e. Focus, Iris or Zoom. Initially, all scales will be illuminated in red and the “save” function (MB2) will be grayed out. The scales will only illuminate green after assigning at least one value for the iris and zoom scale and at least two values for the focus scale. It is only possible to save the lens file when each axis (with an assigned motor) is green.

Note: If you do not have a motor connected and assigned to iris and zoom, you must enter at least one value for each corresponding scale. Please enter the open iris value for the iris scale and the focal length of your prime lens in the zoom scale.

Press UB1 if you want to map your lens scales using only the knob controller. This is not only more precise but can also save time when creating a new lens file. When knob only is set to “on” the focus, iris and zoom axis will be assigned to the knob as soon as you enter the corresponding scale. This is confirmed by pressing “next” (MB3). Set knob only to “off” if you want to use the assigned controllers to map each lens axis.

6.2.3.3.4.7. Focus scale

In general, you can start creating the focus scale from either direction. In this example however, the lens is being created from infinity to close focus.

Move the control interface assigned to focus (knob as default) until the datum line on your lens matches infinity.

Use the thumb wheel to scroll clockwise or counter-clockwise until you see “inf” in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once “inf” is highlighted in the blue input box, press “set” (MB2) and the infinity mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Move the control interface assigned to focus (knob as default) to the next line and value on your lens.

If you move the lens from the last set value in one direction (in this case down, towards close focus), the lens wizard will predict the next value.

If the predicted value is not a value marked on your lens, use the thumb wheel to scroll clockwise or counter-clockwise until you see the desired value in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once the desired value is highlighted in the blue input box, press “set” (MB2) and the value mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Continue this procedure until you have set all important values on your lens.

Note: It is not necessary to assign every single lens value because the cPRO system will predict missing values automatically. However, to achieve the best matching lens data, it is recommended to input and assign as many values as possible using this procedure.

If a lens value is not displayed in the predicted list, press UB3 to change the resolution of the input box. This allows you to enter any value. The text “UB3:resolution” will illuminate green while the high resolution remains active. Press UB3 again to return to the original resolution.

As long as a value is highlighted in yellow, you can delete it by pressing UB2. Press and hold UB2 to delete all set values. You can also reposition a mark while it is highlighted in yellow by moving the lens to the new position and pressing “set” (MB2), tapping the touch screen or pressing the back button (BB1).

UB1 allows you to set lines (without a value) in order to create a perfect animated depiction of your lens. Lines can either be added between values or added separately after all the values have been created.

6.2.3.3.4.8. Iris scale

In general, you can start creating the iris scale from either open or closed.

Note: If you are not using an iris motor, please enter the wide open iris value of your lens.

Move the control interface assigned to iris (slider as default) until the datum line on your lens matches the desired T-stop value.

Use the thumb wheel to scroll clockwise or counter-clockwise until you see the corresponding numeric value in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once the desired value is highlighted in the blue input box, press “set” (MB2) and the value mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Move the control interface to the next line and value on your lens.

If you move the lens from the last set value in one direction, the lens wizard will predict the next value.

If the predicted value is not a value marked on your lens, use the thumb wheel to scroll clockwise or counter-clockwise until you see the desired value in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once the desired value is highlighted in the blue input box, press “set” (MB2) and the value mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Continue this procedure until you have set all important values on your lens.

Note: It is not necessary to assign every single lens value because the cPRO system will predict missing values automatically. However, to achieve the best matching lens data, it is recommended to input and assign as many values as possible using this procedure.

If a lens value is not displayed in the predicted list, press UB3 to change the resolution of the input box. This allows you to enter any value. The text “UB3:resolution” will illuminate green while the high resolution remains active. Press UB3 again to return to the original resolution.

Note: Only activate the resolution function (UB3) when creating an open iris value for example T1.3, T1.5 or T1.9. This allows you to input an engraved value (known as a floating point value) that is not a full T-stop. Floating point values are calculated and although only slightly divergent, using a floating point instead of a full T-stop may result in different data when displaying DOF or synchronizing with Cinefade VariND. For all full T-stop values, please ensure the resolution function (UB3) is set to off.

T-stop	1.0	1.4	2	2.8	4	5.6	8	11	16	22	32
Floating point value	1,00	1,41	2,00	2,83	4,00	5,66	8,00	11,31	16,00	22,63	32,00

As long as a value is highlighted in yellow, you can delete it by pressing UB2. Press and hold UB2 to delete all set values. You can also reposition a mark while it is highlighted in yellow by moving the lens to the new position and pressing “set” (MB2), tapping the touch screen or pressing the back button (BB1).

UB1 allows you to set lines (without a value) in order to create a perfect animated depiction of your lens. Lines can either be added between values or added separately after all the values have been created.

6.2.3.3.4.9. Zoom scale

In general, you can start creating the zoom scale from either the long end or wide end of the lens.

Note: If you are using a prime lens, please enter the focal length.

Move the control interface assigned to zoom (joystick as default) until the datum line on your lens matches the desired focal length.

Use the thumb wheel to scroll clockwise or counter-clockwise until you see the corresponding numeric value in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once the desired value is highlighted in the blue input box, press “set” (MB2) and the value mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Move the control interface to the next value on your lens.

If you move the lens from the last set value in one direction, the lens wizard will predict the next value.

If the predicted value is not a value marked on your lens, use the thumb wheel to scroll clockwise or counter-clockwise until you see the desired value in the blue input box. As an alternative, you can also swipe the touch screen up or down.

Once the desired value is highlighted in the blue input box, press “set” (MB2) and the value mark will be set on the grafical scale bar. As an alternative, you can also tap the touch screen to confirm your selection or press the back button (BB1).

Continue this procedure until you have set all important values on your lens.

Note: It is not necessary to assign every single lens value because the cPRO system will predict missing values automatically. However, to achieve the best matching lens data, it is recommended to input and assign as many values as possible using this procedure

If a lens value is not displayed in the predicted list, press UB3 to change the resolution of the input box. This allows you to enter any value. The text “UB3:resolution” will illuminate green while the high resolution remains active. Press UB3 again to return to the original resolution.

As long as a value is highlighted in yellow, you can delete it by pressing UB2. Press and hold UB2 to delete all set values. You can also reposition a mark while it is highlighted in yellow by moving the lens to the new position and pressing “set” (MB2), tapping the touch screen or pressing the back button (BB1).

UB1 allows you to set lines (without a value) in order to create a perfect animated depiction of your lens. Lines can either be added between values or added separately after all the values have been created.

6.2.3.3.4.10. Save

As soon as at least one value is set per scale (2 for focus), the “save” icon will illuminate white. Press MB2 to save the lens file to the internal memory of the cPRO / cPRO PLUS or cPRO ONE hand unit. With the present firmware release, up to 30 lens files can be saved.

Please close the lens wizard by pressing “next” (MB3) and return to the main menu.

6.2.3.3.5. Edit

The edit menu allows you to edit existing lens files on the cPRO / cPRO PLUS or cPRO ONE hand unit using the lens wizard.

Note: If you are editing a lens file and you leave the lens wizard by pressing the back function (MB1) or the HOME button, changes will not be saved. The following warning message will be displayed.

You can then confirm whether you do want to leave the lens wizard by pressing “abort” (MB3), or return to the lens wizard by pressing “back” (MB1).

The “edit lens” feature follows the exact same procedure as the “create lens” function with the exeption, that you have to select the lens file you want to edit from the dynamic list. Please also refer to section “6.2.3.3.4. Create” on page 59 in this manual.

In order to find the right lens file quickly, UB2 allows you to sort your lens files by:

- **custom text**, the name which was assigned to each lens file when it was created.
- **focal length or zoom range**, the focal length or zoom range which was assigned to each lens file when it was created.
- **T-stop**, the open T-stop which was assigned to each lens file when it was created.

UB3 allows you to activate and deactivate advanced lens information. This will display information about your lens file including manufacturer, serial number, weather the file was created from a duplicate file, whether it was created as a metric or imperial lens, and whether it is selected as one of your “favorites”. While viewing advanced lens information, you can use the thumb wheel to scroll through the lens files.

Press “next” (MB3) to select the lens file you want to edit. Press “back” (MB1) if you want to return to the previous page.

If the lens file you have selected does not match the motor calibration range, or e.g. you select a prime lens and you have 3 motors connected, or a zoom lens with only one motor connected, a warning message will appear. Press “next” (MB3) to continue, or press “back” (MB1) to select a different lens file.

6.2.3.3.6. Duplicate

The duplicate function allows you to create lens files for a set of lenses quickly and efficiently. Simply duplicate your chosen lens file and then “edit” it to match the new lens. In “edit” mode, you can rename the lens, input any missing lens scales, and even shift focus positions if required. This can help save time compared with creating each lens file from scratch. Please also refer to section “6.2.3.3.5. Edit” on page 68 in this manual.

NOTICE
The dublicate lens function does not dublicate the serial number of the initial lens file to maintain integrity of the lens file system. Instead of the serial number, the dublicated lens file shows „COPY“ in the serial number field. You can enter the new serial number during the edit lens process.

In order to find the duplicate lens file easily, go to the lens list and press UB3 to activate the advanced lens information. Then, use the thumb wheel to scroll through the lens list. The duplicate lens file will show “COPY” instead of the serial number from the original lens. Once you have found the correct lens file, press UB3 to return to the lens list again.

UB2 allows you to sort your lens files by

- **custom text**, the name which was assigned to each lens file when it was created.
- **focal length or zoom range**, the focal length or zoom range which was assigned to each lens file when it was created.
- **T-stop**, the open T-stop which was assigned to each lens file when it was created.

6.2.3.3.7. Delete

The delete menu allows you to delete an individual lens file or multiple lens files from the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory.

To find the right lens file quickly, UB2 allows you to sort your lens files by:

- **custom text**, the name which was assigned to each lens file when it was created.
- **focal length or zoom range**, the focal length or zoom range which was assigned to each lens file when it was created.
- **T-stop**, the open T-stop which was assigned to each lens file when it was created.

UB3 allows you to activate and deactivate advanced lens information. This will display information about your lens file including manufacturer, serial number, weather the file was created from a duplicate file, whether it was created as a metric or imperial lens, and whether it is selected as one of your "favorites". While viewing advanced lens information, you can use the thumb wheel to scroll through the lens files.

Press select (MB2) and the selected lens file will turn green. You can select or unselect multiple lens files one after another or select and unselect all. To delete the lens files, simply press "delete" (MB3). A popup menu will ask you to confirm again to delete the highlighted lens files. If you press delete, the highlighted lens files will be deleted and cannot be recovered. If you want to choose different lens files to delete, simply press "back" (MB1) or swipe right to return to the lens file list.

Note: You cannot use the delete menu on the cPRO hand unit to delete lens files from a USB drive. To delete any lens files from your USB, please use a computer.

6.2.3.3.8. Import from USB

The import from USB menu allows you to import lens files (.cml) from an archive to the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory.

Note: In order to import lens files (.cml), a USB stick formated in ExFAT or FAT32 loaded with the appropriate lens files needs to be inserted in the USB slot on the back side of the cPRO / cPRO PLUS or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

To identify the correct lens file quickly and easily, UB3 allows you to activate and deactivate the advanced lens information. When active, this will display additional information about the lens file.

Note: When selecting a lens files to import from USB, it is not possible to scroll through the list of lenses while the advanced lens information is active. Press UB3 to deactivate advanced information and return to the lens list again.

A selected lens file from the dynamic list (MB2) will turn green. You can select or unselect multiple lens files one after another or select and unselect all. Press import (MB3) in order to import the selected lens files. The lens files will be imported without further confirmation required.

Note: In order to prevent lens files which have the same name to be overwritten, only lens files which are not yet stored on the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory will be imported.

6.2.3.3.9. Import ARRI lens

The import ARRI lens menu allows you to import lens files (.tap) created with an ARRI WCU-4 or downloaded from an archive site and save to a cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory.

Note: In order to import lens files (.tap), a USB stick formated in ExFAT or FAT32 loaded with the appropriate lens files needs to be inserted in the USB slot on the back side of the cPRO / cPRO PLUS or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically. The "Import ARRI lens" feature requires a DATA license key. Please also refer to section "6.2.3.9.4. Licenses" on page 108 in this manual.

Note: It is NOT possible to sort lens files or display advanced lens information when using the Import ARRI lens menu.

A selected lens file from the dynamic list (MB2) will turn green. You can select or unselect multiple lens files one after another or select and unselect all. Press import (MB3) in order to import the selected lens files. The lens files will be imported without further confirmation required.

Note: In order to prevent lens files which have the same name to be overwritten, only lens files which are not yet stored on the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory will be imported.

6.2.3.3.10. Export to USB

The export to USB menu allows you to export lens files (.cml) from the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory.

Note: In order to export lens files (.cml), a USB stick formated in ExFAT or FAT32 needs to be inserted in the USB slot on the back side of the cPRO / cPRO PLUS or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

To help find the correct lens file quickly, UB2 allows you to change the display order of your lens files using the following categories:

- **custom text**, the name which was assigned to each lens file when it was created.
- **focal length or zoom range**, the focal length or zoom range which was assigned to each lens file when it was created.
- **T-stop**, the open T-stop which was assigned to each lens file when it was created.

UB3 allows you to activate and deactivate advanced lens information. This will display information about your lens file including manufacturer, serial number, weather the file was created from a duplicate file, whether it was created as a metric or imperial lens, and whether it is selected as one of your "favorites". While viewing advanced lens information, you can use the thumb wheel to scroll through the lens files.

Press select (MB2) and the selected lens file will turn green. You can select or unselect multiple lens files one after another or select and unselect all. Press export in order to export the selected lens files. The lens files will be exported without further confirmation required.

Note: If a lens file with the same name already exist on the USB drive, a counter will be added to the lens file name, e.g. (1).

6.2.3.3.11. Export ARRI lens

The export ARRI lens menu allows you to export lens files .cml from the cPRO / cPRO PLUS or cPRO ONE hand unit's internal memory as .tap - files for use with ARRI WCU-4.

Note: In order to export lens files (.tap), a USB stick formated in ExFAT or FAT32 needs to be inserted in the USB slot on the back side of the cPRO / cPRO PLUS or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically. The "Export ARRI lens" feature requires a DATA license key. Please also refer to section "6.2.3.9.4. Licenses" on page 108 in this manual.

To help find the correct lens file quickly, UB2 allows you to change the display order of your lens files using the following categories:

- **custom text**, the name which was assigned to each lens file when it was created.
- **focal length or zoom range**, the focal length or zoom range which was assigned to each lens file when it was created.
- **T-stop**, the open T-stop which was assigned to each lens file when it was created.

UB3 allows you to activate and deactivate advanced lens information. This will display information about your lens file including manufacturer, serial number, weather the file was created from a duplicate file, whether it was created as a metric or imperial lens, and whether it is selected as one of your "favorites". While viewing advanced lens information, you can use the thumb wheel to scroll through the lens files.

Press select (MB2) and the selected lens file will turn green. You can select or unselect multiple lens files one after another or select and unselect all. Press export in order to export the selected lens files. The lens files will be exported without further confirmation required.

Note: If a lens file with the same name already exist on the USB drive, a counter will be added to the lens file name, e.g. (1).

6.2.3.3.12. Lens view

The lens view menu allows you to change the size of the FIZ scales for the GUI in the main screens to small medium or large.

small medium large

6.2.3.3.13. DIT mode

The DIT mode menu allows you to replace the GUI of the iris scales with relevant information for a DIT. This includes a large iris value, lens file information and the set ND value on the camera and/or the Cinefade VariND.

Turn DIT mode “ON” in order to display DIT relevant information instead of the iris scale. Turn DIT mode “OFF” in order to display the dynamic iris scale.

6.2.3.3.14. Set iris

The set iris menu allows you to enter a fixed iris value if motor is not assigned to the iris scale. This allow a valid depth of field (DOF) to be calculated with the variable data that is available.

Note: A lens file needs to be loaded. Set iris uses a fixed iris value when the axis is not motorized. This value needs to be changed each time the iris is changed on the lens.

6.2.3.3.15. Set zoom

The set zoom menu allows you to enter a fixed zoom value if motor is not assigned to the zoom scale. This allow a valid depth of field (DOF) to be calculated with the variable data that is available.

Note: A lens file needs to be loaded. Set zoom uses a fixed zoom value when the axis is not motorized. This value needs to be changed each time the zoom is changed on the lens.

6.2.3.3.16. Circle of confusion

The circle of confusion menu allows you to enter a value depending on your cameras sensor size and image format to calculate an accurate depth of field based on variable lens data.

Note: A lens file needs to be loaded. This value needs to be set before shooting with a new camera. For the correct circle of confusion value for your camera, please refer to the camera manual or contact the camera manufacturer.

6.2.3.3.17. Sync cam data

The Sync cam data feature allows you to:

1. Upload ARRI LDS and Cooke /i data from a corresponding lens to your cPRO / cPRO PLUS / cPRO ONE hand unit automatically (compatible with ARRI cameras only).

2. Feed FIZ metadata for any lens from the cPRO LCS to selected cameras (compatible with ARRI ALEXA MINI / MINI LF, ALEXA 35, ALEXA 265, ARRI Amira, all RED cameras and SONY VENICE-1, VENICE-2).

Turn sync cam data “on” if you want to load lens data from ARRI cameras automatically, or if you want to feed FIZ metadata to a compatible camera. If you do not want to use this feature, ensure sync cam data is set to “off”.

Note: The sync camera data feature requires a DATA license key. Please also refer to section “6.2.3.9.4. Licenses” on page 108 in this manual.

6.2.3.3.17.1. Load lens data from ARRI cameras

Compatibility overview:

Feature / Lens Data System	LDS	Cooke /i data	FF	LDA/LDM LDA= Lens Data Archive LDM= Lens Data Mount	ENG
Display of FIZ data	x (full scales)	x (values only)	-	x (full scales)	x (values only)
Autofocus*	x	-	-	x	-
Use pre-marked rings / strips	x	-	-	x	-
Use data for Cinefade VariND	x	-	-	x	-

x = can be used / displayed

- = CANNOT be used / displayed

*accuracy of internal lens encoders determines precision when Autofocus is active.

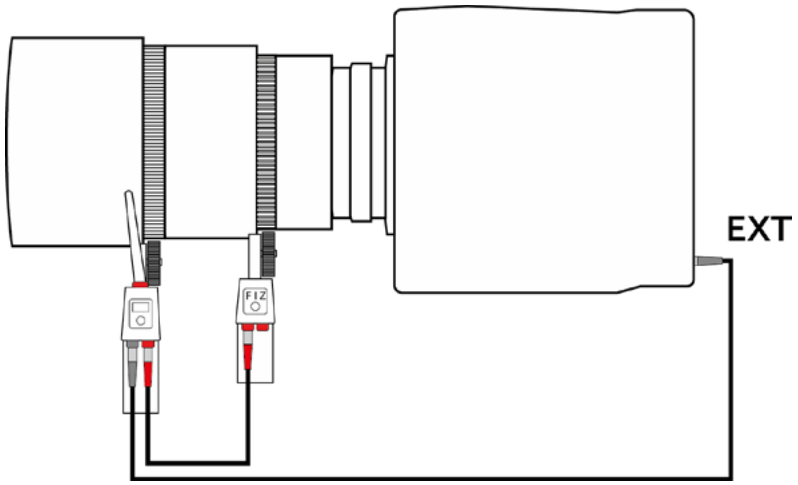
When Sync cam data is turned “on” and an ARRI LDS or Cooke /i data compatible lens is mounted on a compatible ARRI camera, the lens data will be transfered to the cPRO / cPRO PLUS / cPRO ONE hand unit automatically. But, loading a lens file from the cPRO / cPRO PLUS / cPRO ONE hand unit´s internal memory (or an attached USB drive) will replace the lens file transferred from the camera.

Note: The lens data from the ARRI LDS or Cooke /i data lens will be reloaded automatically each time the cPRO motor is initialized. For example, after rebooting the camera, rebooting the cPRO motor / camin or disconnecting and reconnecting the cPRO motor / camin to the camera.

NOTICE
Due to the different interpolation methods between ARRI and cmotion systems, the interpolated lens values between set scale values may vary. Consequently, the display of lens data on the cPRO / cPRO PLUS / cPRO ONE hand unit and the ARRI camera may vary. However, because lens manufacturers do not give any specification for lens values outside of their engraved value lines, there is no right or wrong method.

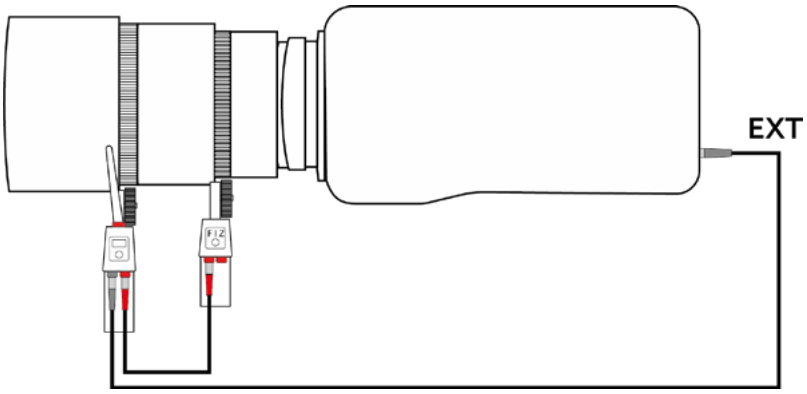
Set-up overview:

ARRI ALEXA MINI / MINI LF:



Cable required: [K2.0015756] Cable CAM (7p) - EXT (6p)

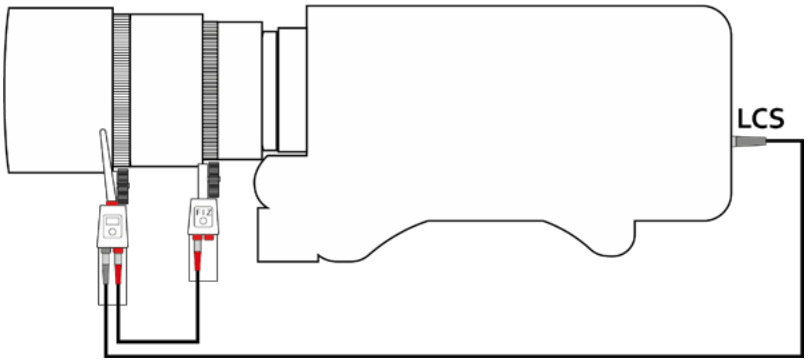
ARRI Amira:



Cable required: [K2.0015756] Cable CAM (7p) - EXT (6p)

Note: ARRI Amira cameras do not support LDA/LDM.

All ARRI ALEXA PLUS / ALEXA LF:



Cable required: [C0EXE-K07] Cable CAM (7p) - LCS (5p)

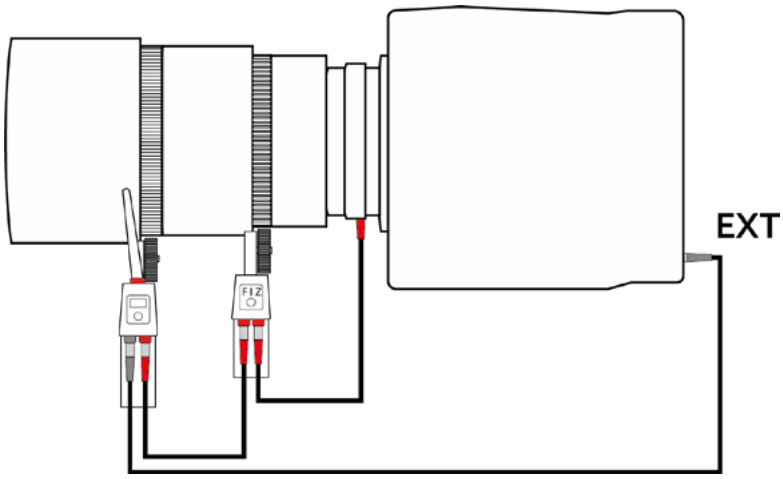
6.2.3.3.17.2. Feed metadata to selected cameras

Feeding FIZ metadata from the cPRO LCS to the camera is possible for ARRI ALEXA MINI / Mini LF / ALEXA 35 / ALEXA 265 and AMIRA, for all RED cameras and for SONY VENICE-1 / VENICE-2.

The metadata feed will start automatically as soon as at least one cPRO / cPRO PLUS or cPRO ONE hand unit with a valid DATA license key is detected in the network and sync cam is set to “on”. The data feed will stop once the hand unit with the valid DATA license key is turned off.

Set-up overview:

ARRI ALEXA MINI / MINI LF:



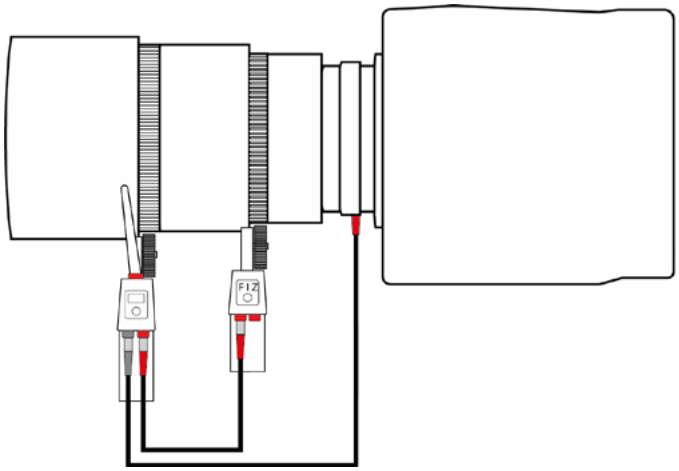
Cables required: [K2.0015756] Cable CAM (7p) - EXT (6p) (camera control)
LBUS cable to loop into the LBUS lens mount (data feed)
e.g. [K2.0006750] cable LCB-4

Power splitter cable recommended: [K2.0023823] Cable LBUS Star (0.2m/8in)
[C0JE-K79] Cable LBUS Star-2 (0.4m/16in)

Note: LBUS Star is a splitter cable that can be positioned anywhere within the LBUS daisy chain to supply extra power from an additional power source.

NOTICE
Concerning ALEXA MINI cameras, to ensure lens metadata is recorded correctly, the motor direction (for ALL motors) must be assigned to LEFT in the camera menu; (Electronic Control System (ECS) / LBUS lens motor configuration). The motor teeth count for each axis must also be set to auto, or entered manually. Motor “ramp” will be reset to SHORT when the cPRO motor is initialized. For example, after rebooting the camera, rebooting the cPRO motor / camin or disconnecting and reconnecting the cPRO motor / camin to the camera.

ARRI ALEXA 35 / ALEXA 265 / Mini LF (with SUP 7.3 or higher)



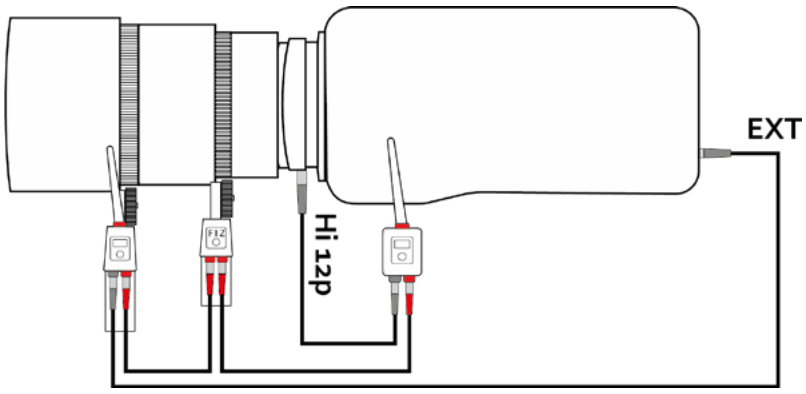
Cables required: [K2.0015760] Cable CAM (7p) - LBUS (camera control + data feed)

For ALEXA 35 / ALEXA 265 and MINI LF (with SUP 7.3 or higher) [K2.0015760] Cable CAM (7p) - LBUS can be used to supoprt camera control and data feed.

For ALEXA 35 / ALEXA 265 the LBUS port on the camera can be used alternatively to the LBUS port on the LBUS mount.

NOTICE
With ARRI ALEXA 35 / ALEXA 265 and MINI LF (with SUP 7.3 or higher), the motor direction (for ALL motors) can be assigned to LEFT or RIGHT (depending where the motors are mounted). The motor direction can be set on the cPRO hand unit or the camera and will be synchronized between the two. The motor teeth count for each axis must be set to “auto”, or entered manually. Motor “ramp” will be reset to SHORT when the cPRO motor is initialized. For example, after rebooting the camera, rebooting the cPRO motor / camin or disconnecting and reconnecting the cPRO motor / camin to the camera.

ARRI Amira:

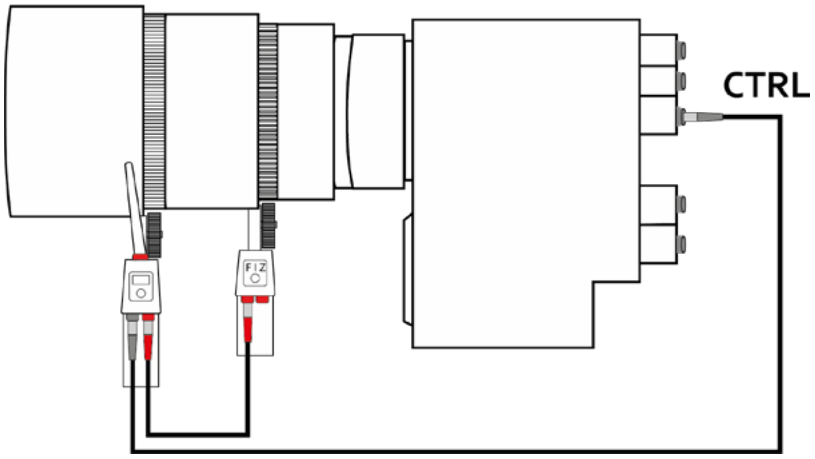


Note: This set-up will require 2x cPRO motor, 2x cPRO camin, or a combination of both if camera control is also being used.

Cables required:	[K2.0015756] Cable CAM (7p) - EXT (6p) (camera control) [K2.0015759] Cable CAM (7p) - ENG (12p) (data feed)
Power splitter cable recommended:	[K2.0023823] Cable LBUS Star (0.2m/8in) [C0JE-K79] Cable LBUS Star-2 (0.4m/16in)

Note: LBUS Star is a splitter cable that can be positioned anywhere within the LBUS daisy chain to supply extra power from an additional power source.

All RED cameras (optional breakout box required):

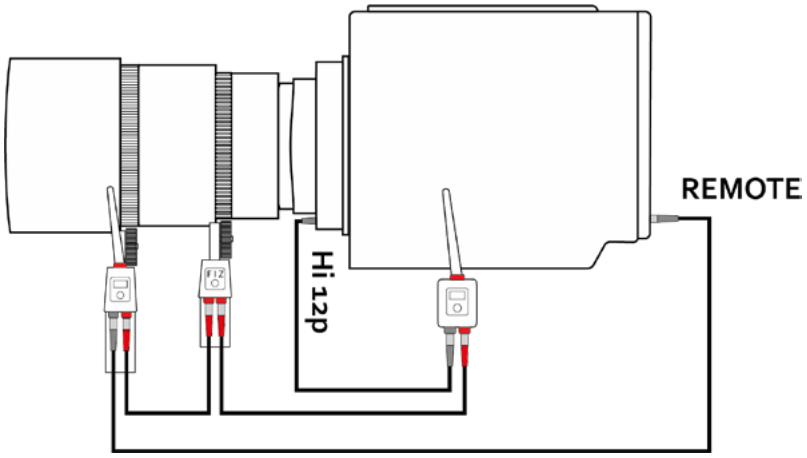


Cable required:	[K2.0015758] Cable CAM (7p) - RED CTRL/D-Tap (camera control + data feed)
Alternative cable for RED DSMC3:	[C0XE-K27] Cable CAM (7p) - RED EXT (9p) / D-Tap (camera control + data feed)

NOTICE
In order to allow metadata feed from the cPRO LCS to a RED camera, • for DSMC1 and DSMC2 cameras, the REDLINK Command Protocol needs to be enabled under Menu/Settings/Setup/Communication/Serial -> select “REDLINK Command Protocol” in the drop down menu. • for RED DSMC3 cameras the baud rate needs to be set to 460800 under Menu/Communication/Connections/Serial/Baud Rate)

NOTICE
For RED DSMC-1, DSMC-2 cameras, the FIZ metadata from the cPRO LCS will be written into the custom memory of the RED Digital Cinema .R3D RAW files. This data can then be extracted from the .R3D RAW files using a command line application by entering “REDline --i [filename.R3D] --printMeta 6” and confirmed by pressing ENTER. For RED DSMC-3 cameras, the FIZ metadata including Lens Name, Brand, ID, Near Focus and Far Focus will be written into the clip metadata of the RED Digital Cinema .R3D RAW files and is available in REDCINE-X PRO.

SONY VENICE-1 / VENICE-2:



Note: This set-up will require 2x cPRO motor, 2x cPRO camin, or a combination of both if camera control is also being used.

Cables required:	[C0XE-K08] Cable CAM (7p) - Sony Remote (8p) / D-Tap (camera control) [K2.0015759] Cable CAM (7p) - ENG (12p) (data feed)

6.2.3.4. MOTORS

The motors menu contains all settings related to motor functions. These consist of:

Calibration all
Motor settings
Stealth mode

6.2.3.4.1. Calibration all

The calibration all menu allows you to calibrate all motors at once. Selecting calibration all will calibrate all connected motors without further confirmation required.

NOTICE
The lens motors must be recalibrated under the following conditions: - When a motor is detached from the lens - After changing motors - After changing lenses - After a change in a motor position while powered down

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

⚠ CAUTION!
   **Risk of injury!** Do not touch the motor gear while motor is moving! This device is not intended for use by children. Keep body parts out of the motion path. Disconnect the plug if the device is not used for a longer period of time. IEC 60417-6056 (2011-05) for other moving parts

6.2.3.4.2. Motor settings

The motor settings menu contains all settings related to motor behaviour. Once you have entered the motor settings menu, please select the motor you want to adjust from the dynamic motor list.

Each motor menu consists of:

Axis (status)
Direction (status)
Ramp (status)
Torque (status)
Calibrate
Manual calibration

6.2.3.4.2.1. Axis

The axis menu allows you to change the motor assigment to Focus, Iris, Zoom or Aux.

Note: The axis menu changes the motor assignment not the assignemnt of the control interface. With cforce motors you can change the motor assignment on the motor itself by pressing the FIZ button. In order to change the motor assignement for a cPRO motor, please refer to the cPRO motor user guide.

NOTICE
“Aux” stands for auxiliary and allows you to assign any cforce motor connected within the cPRO network for auxiliary / 4th axis control. Aux can only be assigned to a cforce motor through the cPRO hand unit. This is not possible through the FIZ selection button on the back of each motor. Once assigned to Aux, the motor will remain Aux, even when power-cycled. However, the motor axis can be reassigned through the cPRO hand unit again. Pressing the FIZ button on the cforce motor will disable the Aux setting and only allow you to select Focus Iris or Zoom.

6.2.3.4.2.2. Torque

The torque menu allows you to adjust the strength of the motor to min, weak, strong and max.

Note: Increasing the motor torque drains more power from the system and can place stress on the lens. Only increase the torque as much as necessary to achieve reactive and fluent lens control.

6.2.3.4.2.3. Direction

The direction menu allows you to set the side of the camera which the lens motor is mounted to either left or right.

Note: The direction is defined from the operators point of view, from behind the camera.

6.2.3.4.2.4. Ramp

The ramp menu allows you to adjust the start and stop acceleration of the motor to min, short, long and max. This allows for both smooth speed-up and slow-down curves.

NOTICE
The motor settings menu can be reached from all motors main screens quickly by tapping and holding the touch display or by pressing and holding menu button 2 (MB2).

6.2.3.4.2.5. Calibrate

The calibrate menu allows you to calibrate each motor axis individually. Selecting calibrate will calibrate the corresponding lens motor without confirmation required.

NOTICE
The lens motors must be recalibrated under the following conditions: - When a motor is detached from the lens - After changing motors - After changing lenses - After a change in a motor position while powered down

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

⚠CAUTION!
   **Risk of injury!** Do not touch the motor gear while motor is moving! This device is not intended for use by children. Keep body parts out of the motion path. Disconnect the plug if the device is not used for a longer period of time. IEC 60417-6056 (2011-05) for other moving parts

6.2.3.4.2.6. Manual calibration

The manual calibration menu allows you to create a digital calibration range through any connected motor for lenses without mechanical end stops.

Enter the manual calibration wizard.

1. Move the motor to the LOWEST value e.g. lowest T-stop, focal length or close focus distance by using the user buttons UB1, UB2 and UB3. Alternatively, you can use the touch and preasure sensitive joystick which allows more intuitive control of the motor. During the manual calibration process, the motor axis you are calibrating, will be assigned to the joystick automatically.

UB1: Moves the motor clockwise. You can press UB1 up to five times to increase the speed of the motor's clockwise rotation. Press UB3 up to five times to reduce the speed of the motor's clockwise rotation.

UB2: Stops the motor at any time.

UB3: Moves the motor counter clockwise. You can press UB3 up to five times to increase the speed of the motor's counter clockwise rotation. Press UB1 up to five times to reduce the speed of the motor's counter clockwise rotation.

Press set (MB3) once you have reached the desired position.

2. Move the to the HIGHEST value e.g. highest T-stop, focal length or infinity by using the user buttons UB1, UB2 and UB3. Alternatively, you can use the touch and preasure sensitive joystick which allows more intuitive control of the motor. During the manual calibration process, the motor axis you are calibrating, will be assigned to the joystick automatically.

Please follow the UB1, UB2 and UB3 instructions as explained in step 1.

Press set (MB3) once you have reached the desired position.

The motor is now calibrated and, if assigned to the knob or slider, will match the rotation or slider scale of the corresponding controller.

NOTICE
The lens motors must be recalibrated under the following conditions: - When a motor is detached from the lens - After changing motors - After changing lenses - After a change in a motor position while powered down

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

⚠CAUTION!
   **Risk of injury!** Do not touch the motor gear while motor is moving! This device is not intended for use by children. Keep body parts out of the motion path. Disconnect the plug if the device is not used for a longer period of time. IEC 60417-6056 (2011-05) for other moving parts

6.2.3.4.3. Stealth mode

The stealth mode menu can activate and deactivate the cPRO's stealth mode. When stealth mode is on, the illumination of all LBUS connected cforce motors will be turned off (e.g. if the camera angle is critical because of camera reflection in the picture).

6.2.3.5. FILTER (for Cinefade VariND only)

The cmotion Cinefade VariND consists of a motorised rotating polariser and a static polariser which together form a variable ND filter. The filter menu is only visible when a cmotion Cinefade VariND filter is detected in the LBUS daisy chain. The filter menu contains all settings related to the use of a cmotion Cinefade VariND filter.

These consists of:

Filter Mode
Optical safe range

NOTICE
For detailed instructions on how to use the cmotion Cinefade VariND, please refer to the cmotion Cinefade VariND user guide.

6.2.3.5.1. Filter Mode

The filter mode menu allows you to select between the different operation modes of the Cinefade filter. These are:

VariND mode
RotaPola mode
Cinefade mode

NOTICE
A cPRO lens control system is required for remote variable ND control, remote variable polariser control and the variable depth of field effect (Cinefade).

6.2.3.5.1.1. VariND mode

In VariND mode, the filter can be used either standalone or controlled remotely through a cPRO / cPRO PLUS or cPRO ONE hand unit. In standalone mode, the integrated buttons allow precise control over the ND gradient between ND0.4 and ND2.8. This helps save time and effort when compared with changing traditional ND filters. In wireless mode, the cPRO / cPRO PLUS or cPRO ONE hand unit can be used to achieve smooth dynamic INT to EXT transitions as well as fast, precise exposure changes whenever the camera is inaccessible.

6.2.3.5.1.2. RotaPola mode

In RotaPola mode, the filter can be rotated by 180° either standalone or controlled remotely through a cPRO / cPRO PLUS or cPRO ONE hand unit. In standalone mode, the integrated buttons allow precise control over the rotation of the filter to eliminate polarisation issues including reflections and glare. In wireless mode, the cPRO / cPRO PLUS or cPRO ONE hand unit can be used creatively to achieve dynamic polarisation changes on surfaces such as car bodywork and glass.

6.2.3.5.1.3. Cinefade mode

The Cinefade mode allows to vary depth of field in film to gradually transition between a sharp and a blurry background at constant exposure. To achieve this effect, the cmotion Cinefade VariND filter has to be paired with an LBUS compatible iris motor. Through the cPRO / cPRO PLUS or cPRO ONE hand unit, depth of field can be changed dynamically (up to 5 T-stops within optical safe range) while maintaining a constant exposure.

6.2.3.5.2. Optical safe range

The optical safe range menu allows you to turn the optical safe range ON or OFF. With optical safe range turned ON, the system displays recommended limits for the VariND filter in Cinefade mode and limits the filter to ND1.9 in VariND mode. When optical safe range is turned OFF, the Cinefade mode and the VariND mode allow a wider range for the Cinefade effect and a VariND upto ND2.7. But, optical imperfections, such as a slight colour cast and cross pattern may become visible in the image.

6.2.3.6. CAMERA

The camera menu is only visible when an ARRI, RED or SONY camera is connected to the cPRO motor's / camin's CAM interface. Depending on the camera make and model, camera specific settings can be changed.*

These consists of:

Frame Rate
Shutter
ISO
White Balance
ND Filter
Playback
Camera Buttons
Camera User Setup

Please refer to the chart below for a detailed overview of available control features.

Control Features* (BILDER TAUSCHEN)

	ARRI Alexa 35 / 265 / Alexa Mini LF (with SUP 7.3 or higher)	ARRI Alexa Mini / Mini LF / AMIRA	ARRI Alexa without PLUS Module	ARRI Alexa with PLUS Module	RED DSMC-1 / DSMC-2 / DSMC-3	SONY VENICE-1 / VENICE-2 regular camera mode	SONY VENICE-1 / VENICE-2 RCP Mode	SONY PMW F5/F55
Cable	[K2.0015760] Cable CAM (7p) - LBUS (4p)	[K2.0015756] Cable CAM (7p) - EXT (6p)	[K2.0015755] Cable CAM (7p) - EXT (16p)	[K2.0034580] Cable CAM (7p) - LCS (Fi 5p)	[K2.0015758] Cable CAM (7p) - RED CTRL/D-Tap	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)
Frame Rate (including custom FPS)	✓	✓	✓	✓	✓	✓	✓	✓
Shutter Speed (including custom Shutter)	✓	✓	✓	✓	✓	-	✓	✓
ISO	✓	✓	✓	✓	✓	-	✓	✓
White Balance (including custom WB, Tint / Color Correction)	✓	✓	✓	✓	✓	-	✓	✓
ND Filter	✓**	✓	-	-	✓***	✓	✓	✓
Playback	✓	✓	-	-	✓	x (no clip list handling)	x (no clip list handling)	x (no clip list handling
Playback (Next/Previous)	✓	✓	-	-	✓	✓	✓	✓
Playback (FFW/JOG)	✓	✓	-	-	✓	✓	✓	✓
Camera User Buttons	6 (Hand Unit User Buttons)	6 (WCU-4 User Buttons / Hand Unit User Buttons)	up to 6 (WCU-4 User Buttons) depending on camera SUP	up to 6 (WCU-4 User Buttons depending on camera SUP	4 Camera User Buttons (Touch buttons 1-4)	-	-	-

Display Features*

	ARRI Alexa 35 / ARRI Alexa Mini LF (with SUP 7.3 or higher)	ARRI Alexa Mini / Mini LF / AMIRA	ARRI Alexa without PLUS Module	ARRI Alexa with PLUS Module	RED DSMC-1 / DSMC-2 / DSMC-3	SONY VENICE-1 / VENICE-2 regular camera mode	SONY VENICE-1 / VENICE-2 RCP Mode	SONY PMW F5/F55
Cable	[K2.0015760] Cable CAM (7p) - LBUS (4p)	[K2.0015756] Cable CAM (7p) - EXT (6p)	[K2.0015755] Cable CAM (7p) - EXT (16p)	[K2.0034580] Cable CAM (7p) - LCS (Fi 5p)	[K2.0015758] Cable CAM (7p) - RED CTRL/D-Tap	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)	[K2.0047268] Cable CAM (7p) - Sony Remote (Hi 8p)
Remaining Playtime	✓	✓	✓	✓	✓	-	-	-
Clip name	✓	✓	✓	✓	✓	-	-	-
Clip list handling	✓	✓	✓	✓	✓	-	-	-
TrackInfo	✓	✓	✓	✓	✓	-	-	-
Playback position	✓	✓	✓	✓	✓	-	-	-

* license key required

** not available for ARRI ALEXA 265

*** only avaliable with RED V-Raptor XL / RED V-RAPTOR RF to PL w/ Electronic ND Filter Adapter

✓= can be controlled / displayed

- = can NOT be controled / displayed

NOTICE

ARRI and RED cameras allow custom lists for frame rate, shutter, ISO and white balance.

Only values listed on the camera can be selected in the corresponding cPRO camera menu. If a value is not available, it must be added to the custom list on the camera first. For detailed instructions on how to add values to a camera settings list, please refer to the camera's user manual.

NOTICE

For RED DSMC-1 and DSMC-2 cameras, the REDLINK Command Protocol needs to be enabled under Settings/ Setup/Communication/Serial. Select REDLINK Command Protocol in the drop down menu to allow the cPRO / cPRO PLUS / cPRO ONE hand unit to control camera settings. (RED camera control license required).

NOTICE

For RED DSMC-3 cameras, the baud rate of the serial protocol needs to be set to 460800 baud, under Menu/Communication/Connections/Serial/Baud Rate**.** Select 460800 in the drop down menu to allow the cPRO / cPRO PLUS / cPRO ONE hand unit to control camera settings. (RED camera control license required).

NOTICE

SONY VENICE-1 / VENICE-2 cameras allow advanced remote control features including shutter speed, ISO and white balance in RCP mode only.

Enable RCP MODE on the camera:

- Press and hold the menu button and select Technical/System Configuration/RM/ RCP Paint Control and select ON. Please confirm with „execute".
- Camera will reboot
- Please change the FPS setting from fixed to variable in order to remote control the FPS through the cPRO hand unit.

Note: In RCP mode, ISO, shutter speed and white balance cannot be adjusted on the camera.

Disable RCP MODE / enable regular camera mode:

- Press and hold the menu button and select Technical/System Configuration/RM/ RCP Paint Control and select OFF. Please confirm with „execute".
- Camera will reboot

For more detailed information, please refer to the camera's user manual.

NOTICE

For SONY VENICE-1 / VENICE-2, the user button function "camera button 1" is assigned to "ND increase" and user button function "camera button 2" is assigned to "ND decrease" as default. This allows you to change ND values on the cPRO hand unit, without entering the ND menu.

Note: All camera settings can be accessed easily from the camera main screen by tap and holding the touch screen or by press and holding MB2.

6.2.3.6.1. Frame Rate

The frame rate menu allows you to change FPS depending on camera specific capabilities. Frame rate can also be set as custom values from the cPRO / cPRO ONE / cPRO PLUS hand unit within camera specifications. For further information, please refer to the corresponding camera manual.

6.2.3.6.2. Shutter

The shutter menu allows you to change shutter speed or shutter angle depending on camera specific capabilities. Shutter speed / angle can also be set as custom values from the cPRO / cPRO ONE / cPRO PLUS hand unit within camera specifications. For further information, please refer to the corresponding camera manual.

New shutter settings will be activated while scrolling through the selection as a preview. Press “set/select” (MB2) to activate the selected setting permanently on the camera, press “back” (MB1) to leave the selection menu and to return to the previously set shutter.

Depending on the camera settings, shutter speed or shutter angle will be displayed on the cPRO / cPRO PLUS / cPRO ONE hand unit.

6.2.3.6.3. ISO

The ISO menu allows you to change the light sensitivity depending on camera specific capabilities. For further information, please refer to the corresponding camera manual.

6.2.3.6.4. White Balance

The white balance menu allows you to change the color temperature depending on camera specific capabilities. White Balance, including Tint / Color Correction can also be set as custom values from the cPRO / cPRO ONE / cPRO PLUS hand unit within camera specifications. For further information, please refer to the corresponding camera manual.

New White Balance and Tint/Color Correction settings will be activated while scrolling through the selection as a perview. Press “set/select” (MB2) to activate the selected setting permanently on the camera, press “back” (MB1) to leave the selection menu and to return the previously set White Balance and Tint/Color Correction.

6.2.3.6.5. ND Filter

The ND filter menu allows you to change internal camera ND filters depending on camera specific capabilities. For further information, please refer to the corresponding camera manual.

For SONY VENICE-1 / VENICE-2, the user button function “camera button 1” is assigned to “ND increase” and user button function “camera button 2” is assigned to “ND decrease” as default. This allows you to change ND values on the cPRO hand unit, without entering the ND menu.

6.2.3.6.6. Playback

The playback menu allows you to playback clips from the camera, depending on camera specific capabilities. For further information, please refer to the corresponding camera manual.

cPRO allows you to replay the last clip or to select a clip from the cameras clip list, depending on camera specific capabilities.

In order to playback the last recorded clip, simply tap the PLAY icon on the playback screen or press and hold MB2. The clip list will open the last recorded clip and the camera will immediately switch to playback mode. Press the select button (MB2) again in order to confirm the clip and to enter the playback wizard. Or, use the thumb wheel to select another clip.

Note: If you enter the playback menu through the menu structure, the last replayed clip will be selected automatically. When using this workflow, the camera will not switch to playback mode immediately, but will wait until a clip is selected by pressing the select button (MB2).

Note: Press UB3 while in the dynamic clip list to show detailed clip information. Press UB3 again to return to the dynamic clip list.

While in the playback wizard, the user buttons 1-3, the menu buttons 2 and 3, the touch screen, and the thumb wheel can be used to navigate through the clips and the clip list on the camera.

Function	Buttons	Touch screen	Thumb wheel
PLAYBACK / PAUSE	MB2 “play”	tap PLAY icon	
FAST FORWARD (4x/8x/16x)	(multi-) press UB3	tap FAST FORWARD icon	scroll counter clock-wise
FAST REVERSE (4x/8x/16x)	(multi-) press UB2	tap FAST REVERSE icon	scroll clockwise
NEXT CLIP	MB3 “next”	tap NEXT CLIP icon	
PREVIOUS CLIP	UB1	tap PREVIOUS CLIP icon	
leave PLAYBACK WIZARD)	MB1 “back”		

6.2.3.6.7. Camera Buttons

The camera buttons menu shows you which camera function is assigned to the camera user button 1-6 (from top to bottom).

You can assign a cPRO user button to camera button 1-6 in order to trigger the camera user button from the hand unit.

Alternatively, you can select the camera function in the camera buttons menu using the thumb wheel and trigger it directly from the menu by pressing MB3 “execute”.

NOTICE
For ARRI cameras the “WCU-4 User Buttons” 1-6 or “Hand Unit User Buttons” 1-6 (on ALEXA MINI LF / ALEXA 35/ ALEXA 265) can be triggered through the cPRO hand unit. For RED cameras the touch buttons 1-4 can be triggered through the cPRO hand unit. For further information on how to assign camera features to a camera user button and which camera features are available, please refer to the corresponding camera manual.

For further information on how to assign a cPRO user button , please refer to section “6.2.3.8. BUTTONS” on page 98 in this manual).

6.2.3.6.8. Camera User Setup

ARRI cameras allow you to save and load a profile of the current camera settings (Parameter Blocks) on the camera and/or a USB memory stick. Once created, the user profiles (.STP-files) can be selected and loaded from the cPRO hand unit.

User setups can be used to ensure that cameras on multi camera shoots have matching settings or to transfer a show’s setup onto daily cameras, to ensure they carry the same shooting specifications.

6.2.3.7. RANGEFINDER

The rangefinder menu contains all settings related to the use of rangefinders. This consists of:

Offset
Limits
Sensitivity
Autofocus (status)
AF ramp mode*
AF ramp time*
AF ramp speed*
Laser pointer
Distance predict**
Stealth mode

* RANGE license key required

** available with cmotion cvision focus assist only

6.2.3.7.1. Offset

The offset menu allows you to input an offset measurement between the rangefinder's sensor and the camera's sensor.

How to preceed:

Measure the distance from the datum line of the rangefinder to the sensor plane of your camera and enter the measured distance into the offset menu using the thumb wheel. Confirm by pressing select.

Note: If the rangefinder is mounted in front of the camera´s sensor plane, enter a positive value. If the rangefinder is mounted behind the camera´s sensor plane enter a negative value.

6.2.3.7.2. Limits

The limit menu allows you to define your range of interest. If in AF mode, autofocus will only be active within this range.

How to preceed:

limit max:
- use the thumb wheel to enter a far distance limit
- press next in order to switch to the next digits or to limit min
- press select in order to confirm your settings

Note: If in AF mode, focus will not be adjusted for measurements beyond limit max.

limit min:
- use the thumb wheel to enter a close distance limit
- press next in order to switch to the next digits or to limit max
- press select in order to confirm your settings

Note: If in AF mode, focus will not be adjusted for measurements below limit min.

Note: The limits icon in the rangefinder main screen will turn green if a rangefinder limit other than limit max = inf and limit min = 0 is set, otherwise the icon illuminates white.

6.2.3.7.3. Sensitivity

The invisible laser used in cfinder III makes 300 measurements every second. To make this rapid distance information more suitable for both viewing and motorised lens control, cfinder III calculates an average distance that is then displayed on the screen and used to control the focus motor when autofocus is active.

Sensitivity allows you to increase or decrease the rate at which the ‚average' value is calculated. By increasing sensitivity, cfinder III will display an increased number of distance values per second and adjust the motor position accordingly (= faster / snap reaction).

By decreasing sensitivity, cfinder III will display fewer distance values per second and adjust the motor position accordingly (= slower / smoother reaction).

Note: To track a fast moving target, increase sensitivity for a faster motor response. To track a slow moving or fixed target, reduce sensitivity for a smoother motor response.

Note: Sensitivity is available with cmotion cfinder III or with other rangefinders via ARRI LCUB-1 only.

6.2.3.7.4. Autofocus

Autofocus will seamlessly match distance measurement data from the rangefinder with lens data from the cPRO / cPRO PLUS or cPRO ONE hand unit to control the focus scale of the lens automatically.

If autofocus “on“ is selected within the autofocus menu, focus will continue to adjust automatically until turned off again.

Autofocus can be activated through a cPRO / cPRO PLUS or cPRO ONE hand unit user function as well. This supports various autofocus trigger options including autofocus press, autofocus toggle, and autofocus pinpoint. (For further information, please refer to section “6.2.3.8. BUTTONS” on page 98 in this manual)

Note: In order to use autofocus with a cPRO / cPRO PLUS or cPRO ONE hand unit, a lens file needs to be loaded, a lens motor needs to be connected, engaged with the lens and assigned to focus. (For further information on how to create lens data, please refer to section “6.2.3.3. LENS” on page 57 in this manual or to the cworld user guide.)

6.2.3.7.5. AF Ramp mode*

The AF Ramp mode menu contains all settings related to autofocus ramp functions. These consist of:

Off
Time mode
Speed mode
Manual mode

In order to use AF ramps, a user button needs to be assigned to Target A, B, C or M (M stands for manual focus controller). In order to assign a user button function to Target A, B, C or M, please refer to section “6.2.3.8. BUTTONS” on page 98 in this manual.

AF Ramp modes allow you to execute an automatic or manual focus pull between the knob position and an AF target. Or, between two AF targets.

* RANGE license key required

6.2.3.7.5.1. Off

When the AF ramp mode is set to Off, autofocus will shift to the next target using the motor’s maximum speed. As soon as a user button assigned to Target A, B, C or M is being pressed, the focus will shift without a ramp effect.

6.2.3.7.5.2. Time mode

When the AF ramp mode is assigned to Time mode, a dedicated time can be assigned to shift focus from one target to the other. The motor speed will adapt within the set time automatically to allow a smooth focus transition. To set the time for an automatic focus pull between two targets, please refer to section “6.2.3.7.6. AF Ramp time” on page 97.

1	Measured rangefinder distance (value)
2	Measured rangefinder distance (position)
3	Actual focus position (white)
4	Actual knob position (red)
5	Target direction indicator
6	Ramp progress bar
7	DOF range

As soon as a user button assigned to Target A, B, C or M has been pressed, autofocus will be activated and the focus ramp will start automatically. On the rangefinder main screen, the selected target will be highlighted using the target direction indicator. The time ramp will also be visualized. After the ramp has finished, the target will continue to be tracked.

Pressing another assigned target button will start another time ramp to the next target automatically.* You can exit the ramp mode by turning the autofocus off (e.g. AF toggle) or by pressing Target M. This allows you to switch to manual focus control as soon as the time ramp is completed.

* available with compatible rangefinders offering more than one target

6.2.3.7.5.3. Speed mode

When the AF ramp mode is assigned to Speed mode, a dedicated speed can be assigned to shift focus from one target to the other at a constant lens feed rate. The motor speed will adapt automatically to allow for a constant focus pull in relation to the lens scale. In order to set the speed for an automatic focus pull between two targets, please refer to section “6.2.3.7.7. AF Ramp speed” on page 97

1 Measured rangefinder distance (value)
2 Measured rangefinder distance (position)
3 Actual focus position (white)
4 Actual knob position (red)
5 Target direction indicator
6 Ramp progress bar
7 DOF range

As soon as a user button assigned to Target A, B, C or M has been pressed, autofocus will be activated and the focus ramp will start automatically. On the rangefinder main screen, the selected target will be highlighted using the target direction indicator. The time ramp will also be visualized. After the ramp has finished, the target will continue to be tracked.

Pressing another assigned target button will start another speed ramp to the next target automatically.* You can exit the ramp mode by turning the autofocus off (e.g. AF toggle) or by pressing Target M. This allows you to switch to manual focus control as soon as the speed ramp is completed.

* available with compatible rangefinders offering more than one target

6.2.3.7.5.4. Manual mode

Manual mode is a unique cPRO LCS feature. It allows you to assign a controller from the CONTROLS menu (knob, slider or thumb wheel) to control the AF ramp manually.

1 Measured rangefinder distance (value)
2 Measured rangefinder distance (position)
3 Actual focus position (white)
4 Actual knob position (red)
5 Target direction indicator
6 Ramp progress bar
7 DOF range

As soon as a user button assigned to Target A, B, C or M has been pressed, autofocus will be activated. Focus control will remain on the manual focus controller (e.g. focus knob) until the controller assigned to the ramp axis (e.g. slider) is physically moved from one end stop to the other. On the rangefinder main screen, the selected target will be highlighted using the target direction indicator and the manual ramp will be visualized. After the ramp has finished, the target will continue to be tracked.

In contrast to the time and speed ramps, the manual ramp can be reversed by simply moving the assigned controller (e.g.slider) in the opposite direction back to its starting position.

Pressing another target user button will change the target*. But, the ramp will still be controlled manually by the assigned controller.

You can exit the manual ramp mode by turning the autofocus off (e.g. AF toggle). A manual ramp towards the focus controller (Target M) allows full manual focus control at any time.

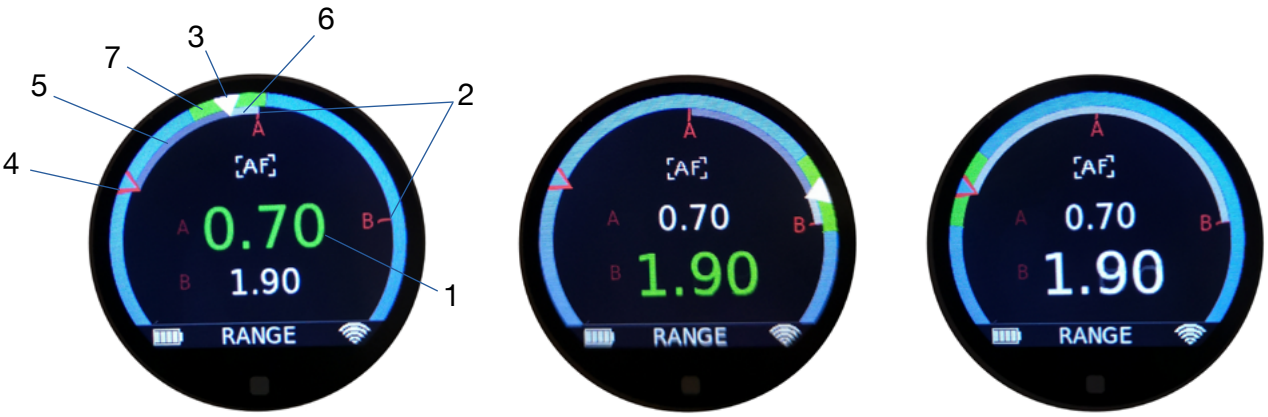
The manual ramp feature allows you to creatively control the time and speed of the focus shift between 2 targets without having to concentrate on the actual distance of each subject. A manual ramp between an autofocus target and the manual focus controller can provide a creative and seemless transition from autofocus to manual focus.

Note: A manual ramp should always be completed by moving the ramp controller to its end position.

* available with compatible rangefinders offering more than one target

6.2.3.7.5.5. Multiple rangefinder targets*

The cPRO lens control system supports AF ramp modes and visualization of up to 3 rangefinder targets and the manual focus controller.



1 Measured rangefinder distance (value)
2 Measured rangefinder distance (position)
3 Actual focus position (white)
4 Actual knob position (red)
5 Target direction indicator
6 Ramp progress bar
7 DOF range

For AF time and AF speed ramps, autofocus will be activated and the focus ramp will start automatically as soon as a user button assigned to Target A, B, C or M has been pressed. On the rangefinder main screen, the selected target will be highlighted using the target direction indicator and the automatic ramp will be visualized. After finishing the automatic ramp, the target will continue to be tracked.

Pressing another target user button function will start another automatic ramp to the next target automatically. An automatic ramp mode can be quit directly by turning the autofocus off (e.g. AF toggle) or by pressing Target M, which allows manual focus control as soon as the automatic ramp is completed. Please also refer to section “6.2.3.7.5.2. Time mode” on page 94 and section “6.2.3.7.5.3. Speed mode” on page 95 in this manual.

As soon as a user button assigned to Target A, B, C or M has been pressed, autofocus will be activated. Focus control will remain on the manual focus controller (e.g. focus knob) until the controller assigned to the ramp axis (e.g. slider) is physically moved from one end stop to the other. On the rangefinder main screen, the selected target will be highlighted using the target direction indicator and the manual ramp will be visualized. After the ramp has finished, the target will continue to be tracked.

In contrast to the time and speed ramps, the manual ramp can be reversed by simply moving the assigned controller (e.g.slider) in the opposite direction back to its starting position.

Pressing another target user button will change the target*. But, the ramp will still be controlled manually by the assigned controller.

The manual ramp mode can be quit by turning the autofocus off (e.g. AF toggle). A manual ramp towards the focus controller (Target M) allows full manual focus control at any time. Please also refer to section “6.2.3.7.5.4. Manual mode” on page 95 in this manual.

* available with compatible rangefinders offering more than one target

6.2.3.7.6. AF Ramp time

The AF ramp time menu allows you to set a ramp time between 0.1 and 5 seconds. This is the predetermined time that the focus will shift automatically from one target to the other when ramp time is active. Use the thumb wheel to increase or decrease the ramp time. Press select to confirm your speed settings.

6.2.3.7.7. AF Ramp speed

The AF ramp speed menu allows you to set a ramp speed between 0.1 and 1.5 m/s. This is the predetermined speed that the focus will shift automatically from one target to the other when ramp speed is active. Use the thumb wheel to increase or decrease the ramp time. Press select to confirm your speed settings.

6.2.3.7.8. Laser pointer

The laser pointer menu allows you to turn the rangefinder’s laser pointer on or off. When the laser pointer is turned on, it will remain active for 30 seconds before turning off automatically. During this time, you can turn it off manually by selecting “off“.

Note: The laser pointer icon in the rangefinder main screen turns green if the laser pointer is on. If the laser pointer is off it illuminates white.

Note: The laser pointer can be activated through a cPRO / cPRO PLUS or cPRO ONE hand unit user buttons as well. This allows the laser to remain active as long as the user button is being pressed. (For further information, please refer to section “6.2.3.8. BUTTONS” on page 98 in this manual.)

Note: All laser pointer functions are available with cmotion cfinder III only.

6.2.3.7.9. Distance predict*

The Distance predict menu allows you to turn the cvision distance predict feature on or off. For further information, please refer to the cvision focus assist user guide.

* available with cvision focus assist only

6.2.3.7.10. Stealth mode*

The stealth mode menu allows you to independently turn the stealth mode on or off for a rangefinder* connected through the LBUS daisy-chain. When stealth mode is on, the rangefinder's* display will be turned off. (I.e. if the camera angle is critical because of camera reflection in the picture).

* available with cmotion cfinder III and cvision focus assist only

6.2.3.8. BUTTONS

The buttons menu allows you to assign user functions to any assignable user button on the cPRO / cPRO PLUS or cPRO ONE hand unit. Once a user function is assigned to a button, the button will illuminate and the buttons function will be displayed in the buttons main screens. If the button is assigned to no function (off) the corresponding user button will not be illuminated. A cPRO PLUS hand unit offers 3 additional non-illuminated physical user buttons on its advanced focus knob (KB1-3). In addition to the hardware user buttons, cPRO / cPRO PLUS and cPRO ONE allow user functions to be assigned to 6 digital touch buttons (TB1-6). These can be accessed and triggered through the touch screen interface.

Note: With the exception of of the REC button, the HOME button and the menu button 2 (MB2) all other buttons can be assigned individually. All buttons, with the exception of the back button and the knob buttons on a cPRO PLUS hand unit, illuminate once assigned to a user function.

6.2.3.8.1. Assignable user buttons

Assignable user buttons	User button functions
UB1	OFF
UB2	AF press
UB3	AF toggle
	AF pinpoint
BB1	AF catch
	****AF Target A / B / C / M
MB1	AF Target toggle
MB3	AF Laser pointer
	Calibration Focus
TB1	Calibration Iris
TB2	Calibration Zoom
TB3	Calibration all
TB4	Camera button 1-6
TB5	Camera functions
TB6	Camera playback
	Camera rec
*KB1	External buttons 1-3
*KB2	***Filter decrease
*KB3	***Filter increase
	***Filter Cinefade set
	**Joystick speed up
	**Joystick speed down
	**Joystick ZAP
	Limits set Knob
	**Limits set Slider
	**Limits set Joystick
	Load lens
	Load pre-marked ring
	Load pre-marked strip
	Lock Knob
	**Lock Slider
	**Lock Joystick
	Lock Thumb Wheel
* cPRO PLUS hand unit feature only, not available for cPRO / cPRO ONE hand unit	
** cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit	
*** available with cmotion Cinefade VariND only	
**** RANGE license key required	

UB1	Marker Focus
UB2	Marker Iris
UB3	Marker Zoom
	Marker Distance
BB1	Marker Aux
	Release all axis
MB1	Release Focus
MB3	Release Iris
	Release Zoom
TB1	Steath mode all
TB2	System unit
TB3	
TB4	
TB5	
TB6	
*KB1	
*KB2	
*KB3	

* cPRO PLUS hand unit feature only, not available for cPRO / cPRO ONE hand unit

** cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

*** available with cmotion Cinefade VariND only

**** RANGE license key required

6.2.3.8.2. User button functions

User button function	Description
OFF	Turns the user button off / no function / the user button illumination will turn off.
AF press	Activates autofocus as long as the user button is being pressed / after releasing the user button, the focus will move to the preset knob position.
AF toggle	Activates autofocus by a single press of the user button / press again to deactivate / after deactivating the autofocus, the focus will move to the preset knob position.
AF pinpoint	This user button function takes continuous readings from the rangefinder and focuses automatically. If the user button is pressed and held, autofocus will remain active until the button is relased. After releasing the user button, the focus will stay at the last measured distance. Turning the focus knob past the measured position regains manual focus control. A small arrow on the focus scale will indicate in which direction you should move the controller.
AF catch	In order to use the Autofocus catch function, you first need to activate AF either through a user button or directly through the rangefinder's menu. Then, press the user button assigned to AF catch (once) to active this feature. From that point, you can regain manual focus control seamlessly as soon as the focus knob passes over the measured AF position. A small arrow on the focus scale will indicate in which direction you should move the controller.
AF Target A / B / C / M****	Depending on the rangefinder´s capabilities*****, Target A / B / C allow you to select a rangefinder target and to trigger AF ramp modes between the manual focus controller and a rangefinder target. Target M allows you to select the manual focus controller (e.g. the focus knob) as a target and to trigger AF ramp modes between a rangefinder target and the manual focus controller. For available AF ramp modes, please refer to section "6.2.3.7.5. AF Ramp mode*" on page 89 ff. in this manual.
AF Target toggle	Toggels between available rangefinder target. Selects and highlights the active rangefinder target A / B / C on the rangefinder screen. Please also refer to section "6.2.3.7.5.5. Multiple rangefinder targets*" on page 96 in this manual.
AF Laser pointer	Turns the laser pointer on as long as the button is being pressed.
Calibration Focus	Calibrates the focus motor only.
Calibration Iris	Calibrates the iris motor only.
Calibration Zoom	Calibrates the zoom motor only.
Calibration all	Calibrates all connected motors at once.

User button function	Description
Camera button 1-6	Triggers the assigned camera feature on the camera. Please also refer to section “6.2.3.6.7. Camera Buttons” on page 91 in this manual.
Camera functions	Opens the camera functions menu. Camera functions need to be assigend to a cPRO user button. The listed camera functions can be triggered from the camera functions menu directly. Please also refer to section “6.2.3.6.7. Camera Buttons” on page 91 in this manual.
Camera playback	Opens the camera playback menu. Please also refer to section “6.2.3.6.6. Playback” on page 90 in this manual.
Camera rec	Starts and stops the camera.
External buttons 1-3	Sends an event flag via RS232 “Remote Cine Control Protocol” to be used with any 3rd-party applications. Please contact support@cmotion.eu to receive further information on our possibilities for 3rd-party integration via RCCP.
Filter decrease***	Decreases the cmotion Cinefade VariND filter by ND0.1 in VariND mode and 5° in RotaPola mode.
Filter increase***	Increases the cmotion Cinefade VariND filter by ND0.1 in VariND mode and 5° in RotaPola mode.
Filter Cinefade set***	Sets the Cinefade start exposure.
Joystick speed up**	Turns the joystick speed up (press and hold to speed the adjustment up).
Joystick speed down**	Turns the joystick speed down (press and hold to speed the adjustment up).
Joystick ZAP**	Sets the joystick speed to maximum as long as the button is being pressed.
Limits set Knob	Please refer to section “6.2.3.2.1.3. Knob limits” on page 49 in this manual.
Limits set Slider**	Please refer to section “6.2.3.2.2.2. Slider limits” on page 52 in this manual.
Limits set Joystick**	Sets motor + control limits to the axis controlled by the joystick (electronic hard stops).
Load lens	Opens the load lens menu.
Load pre-marked ring	Opens the load pre-marked ring menu.
Load pre-marked strip	Opens the load pre-marked strip menu.
Lock Knob	Digitally locks and unlocks the knob.
Lock Slider**	Digitally locks and unlocks the slider.
Lock Joystick**	Digitally locks and unlocks the joystick.
Lock Thumb Wheel	Digitally locks and unlocks the thumb wheel.

User button function	Description
Marker Focus	Press the user button for 3 seconds to set a focus marker on the focus scale. You can set up to five digital focus marks. If more than one mark is set, a short single press on the user button will move the motor and toggle between the marks automatically. Regain manual control by moving the controller assigned to focus over the current motor position. A small arrow on the focus scale will indicate in which direction you should move the controller. Pressing the user button for 3 seconds will delete a selected marker. Pressing the user button for 6 seconds will delete all markers from the scale. A set focus marker will give progressive haptic feedback when getting close to and hitting your mark.
Marker Iris	Press the user button for 3 seconds to set an iris marker on the iris scale. You can set up to five digital iris marks. If more than one mark is set, a short single press on the user button will move the motor and toggle between the marks automatically. Regain manual control by moving the controller assigned to iris over the current motor position. A small arrow on the iris scale will indicate in which direction you should move the controller. Pressing the user button for 3 seconds will delete the selected marker. Pressing the user button for 6 seconds will delete all markers from the scale. A set iris marker will give progressive haptic feedback when getting close to and hitting your mark.
Marker Zoom	Press the user button for 3 seconds to set a zoom marker on the zoom scale. You can set up to five digital zoom marks. If more than one mark is set, a short single press on the user button will move the motor and toggle between the marks automatically. Regain manual control by moving the controller assigned to zoom over the current motor position. A small arrow on the zoom scale will indicate in which direction you should move the controller. Pressing the user button for 3 seconds will delete the selected marker. Pressing the user button for 6 seconds will delete all markers from the scale. A set zoom marker will give progressive haptic feedback when getting close to and hitting your mark.

User button function	Description
Marker Distance	A single press sets a focus marker on the focus scale based on the measured rangefinder distance (rangefinder required). You can set up to five digital focus marks. You can not move the motor and toggle between the marks automatically using the distance marker function, however you can use the marker focus feature to do this. Pressing the user button for 3 seconds deletes the selected marker. Pressing the user button for 6 seconds deletes all markers from the focus scale. A set focus marker will give you progressive haptic feedback when getting close to and hitting your mark.
Marker Aux	Press the user button for 3 seconds to set a AUX marker on the AUX scale from 0% - 100%. You can set up to five digital AUX marks. If more than one mark is set, a short single press on the user button will move the motor and toggle between the marks automatically. Regain manual control by moving the controller assigned to AUX over the current motor position. Pressing the user button for 3 seconds deletes the selected marker. Pressing the user button for 6 seconds deletes all markers from the AUX scale. A set AUX marker will give you progressive haptic feedback when getting close to and hitting your mark.
Release all axis	Press the user button to release all FIZ motors and activate encoder mode. Now all FIZ motors can be controlled manually, while still outputting encoded lens data through the cPRO eco-system. Press again to re-engage all FIZ motors and de-activate encoder mode. From that point, regain manual control by moving the controller assigned to the coresponding axis over the current motor position. A small arrow on the focus, iris and zoom scale will indicate in which direction you should move the controller.
Release Focus	Press the user button to release the motor assigned to focus and activate encoder mode. Now the motor can be controlled manually, while still outputting encoded lens data through the cPRO eco-system. Press again to re-engage the motor assigned to focus and de-activate encoder mode. From that point, regain manual control by moving the controller assigned to focus over the current motor position. A small arrow on the focus scale will indicate in which direction you should move the controller.

User button function	Description
Release Iris	Press the user button to release the motor assigned to iris and activate encoder mode. Now the motor can be controlled manually, while still outputting encoded lens data through the cPRO eco-system. Press again to re-engage the motor assigned to iris and de-activate encoder mode. From that point, regain manual control by moving the controller assigned to iris over the current motor position. A small arrow on the iris scale will indicate in which direction you should move the controller.
Release Zoom	Press the user button to release the motor assigned to zoom and activate encoder mode. Now the motor can be controlled manually, while still outputting encoded lens data through the cPRO eco-system. Press again to re-engage the motor assigned to zoom and de-activate encoder mode. From that point, regain manual control by moving the controller assigned to zoom over the current motor position. A small arrow on the zoom scale will indicate in which direction you should move the controller.
Steath mode all	Turns the illumination of all LBUS devices on the camera side off or on.
System unit	Changes the scale units between imperial or metric.

* cPRO PLUS hand unit feature only, not available for cPRO / cPRO ONE hand unit

** cPRO / cPRO PLUS hand unit feature only, not available for cPRO ONE hand unit

*** available with cmotion Cinefade VariND only

**** RANGE license key required

***** amount of targets depending on rangfinder model and firmware:

cmotion cvision:

- 2 targets and license features available

cmotion cfinder III:

- 1 target and licence features available

CineRT Focus Bug:

- up to 3 targets and licence features available

Qinematic Smart Ranger:

- up to 3 targets and licence features available

all other supported 3rd party rangefinder:

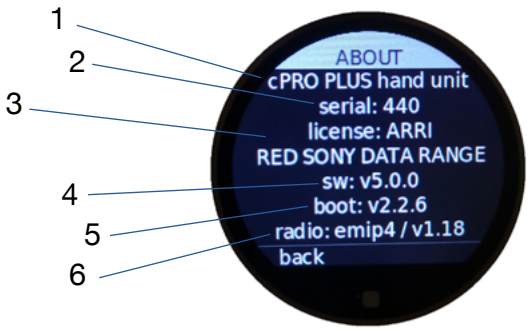
- 1 target and licence features available

6.2.3.9. ABOUT

The about menu displays information about the current firmware installed on the cPRO / cPRO PLUS or cPRO ONE hand unit and each connected component. It also allows you to update firmware and perform a factory reset. The menu consists of:

cPRO / cPRO PLUS / cPRO ONE hand unit
LBUS DEVICES
Firmware update
LICENSES
Factory reset

6.2.3.9.1. cPRO / cPRO PLUS / cPRO ONE hand unit

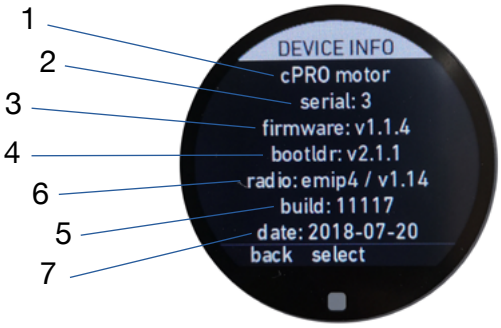


1	Device ID
2	Serial number
3	License keys installed
4	Software version
5	Bootloader version
6	Radio module ID / firmware version
	Revision number (not on image)
	Built date (not on image)

The cPRO / cPRO PLUS / cPRO ONE hand unit's ABOUT menu shows you all relevant data about your cPRO / cPRO PLUS or cPRO ONE hand unit.

Note: Please have this data available, if contacting the cmotion support team with any technical enquiries.

6.2.3.9.2. LBUS devices



1	Device ID
2	Serial number
3	Software version
4	Bootloader version
5	Radio module ID / firmware version
6	Revision number
7	Built date

The LBUS device ABOUT menu shows you all relevant data about the connected LBUS devices. Please select the LBUS device form the dynamic list of devices you want more information on.

Note: Please have this data available, if contacting the cmotion support team with any technical enquiries.

6.2.3.9.3. Firmware update

The firmware update menu allows you to update your cPRO / cPRO PLUS or cPRO ONE hand unit as well as other connected LBUS devices.

Note: In order to perform an update, a USB stick formated in ExFAT or FAT32 loaded with the appropriate update file for the cPRO / cPRO PLUS or cPRO ONE hand unit or an other LBUS device needs to be inserted in the USB slot on the back side of the cPRO / cPRO PLUS or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

Please select cPRO / cPRO PLUS / cPRO ONE hand unit if you want to update your hand unit or LBUS devices and the corresponding LBUS device form the dynamic list if you want to update another LBUS product. The update procedure is the same for any device as follows.

NOTICE
In order to update LBUS devices, the cPRO / cPRO PLUS or cPRO ONE hand unit needs to be hard-wired to the corresponding LBUS device using any LCB cable. The cPRO motor and cPRO camin can also be updated through their CAM interface using the cable CAM (7p) - LBUS [K2.0015760].

Please select the update file from the USB drive you want to up- or down-grade to.

Please check the current firmware status and the new firmware upgrade option. Press select if you want to procceed, press back if you want to select another update file.

Please confirm the update by pressing update. Press back to return to the previous page.

The update process will be completed over several stages. It will remove old files before updating the cPRO bootloader, cPRO main software and the radio module. Once finished, the cPRO / cPRO PLUS / cPRO ONE hand unit or the connected LBUS device will restart automatically.

NOTICE
Please ensure the battery of the cPRO / cPRO PLUS / cPRO ONE hand unit is completely charged before starting any update! Do not remove the battery or the USB drive from the cPRO hand unit while the update is in progress!

NOTICE
Do not power off the cPRO / cPRO PLUS / cPRO ONE hand unit or the connected LBUS devices while the update is in progress as this may damage the device!

Note: Please check cmotion`s website for the latest firmware packages.

6.2.3.9.4. Licenses

cPRO is capable of controlling camera settings for selected ARRI, RED and SONY cameras. The “DATA” license allows you to import and export ARRI lens files and to feed FIZ metadata from your cPRO system to selected ARRI, RED and SONY cameras for internal recording. It is also possible to display ARRI LDS and Cooke i/data on the cPRO hand unit direct from an ARRI ALEXA camera. The “RANGE” license allows you to select up to 3 different rangefinder targets and trigger AF ramp modes between the manual focus controller and a rangefinder target. These features are available for both new and existing cPRO systems as a license and can be purchased separately. For further information on available license packages and features, please refer to www. cmotion.eu and to section “6.2.3.6. CAMERA” on page 64, section “6.2.3.3.17. Sync cam data” on page 74, section “6.2.3.7.5. AF Ramp mode*” on page 94 ff. and section “6.2.3.8.2. User button functions” on page 101 in this manual.

Note: Licenses are not transferable. Each license key is written and encrypted for use on individual cPRO / cPRO PLUS or cPRO ONE hand units.

In order to purchase a camera control license, please contact sales@cmotion.eu and confirm:

1. Which licence you would like to buy (ARRI/RED/SONY/DATA/RANGE).
2. Whether you already have the corresponding camera control cable
3. The serial number of your cPRO / cPRO PLUS / cPRO ONE hand unit.
4. Which license (if any) you already have on your hand unit.

Once your order is processed, our service team will create your individual license key and send it by email. If you are purchasing a new cPRO hand unit at the same time, the license will be installed before shipping.

Activate a new camera control, data or rangefinder license:

If you have received your new camera control, data or rangefinder license by email, you can activate this on your hand unit by following these instructions:

1. Ensure your cPRO / cPRO PLUS / cPRO ONE hand unit AND cPRO motor/camin are updated with software release package v3.0 (cPRO_SW_PK_v3.0.0.cmf) or higher for the ARRI, RED and SONY camera control licences, Software release package v4.0 or higher for the DATA license. And, Software release package v5.0 or higher for the RANGE license. Software packages are available to download from www.cmotion.eu/service_download.

For further information on how to update software on your cPRO / cPRO PLUS or cPRO ONE hand unit, please refer to “6.2.3.9.3. Firmware update” on page 74 in this manual.

2. Please copy the license key file to a USB drive and insert it into your cPRO / cPRO PLUS or cPRO ONE hand unit.

Note: Every license key is encrypted to match the serial number of an individual hand unit. Licenses are not transferable. Please ensure you only attempt to activate the corresponding license file that matches the serial number on your hand unit.

3. Go to ABOUT/LICENSES and select the license key file for the corresponding hand unit.

A pop-up screen will say „New license added“.

3. Please double check if the license is applied correctly in the ABOUT menu of your cPRO / cPRO PLUS or cPRO ONE hand unit.

6.2.3.9.5. Factory reset

The factory reset menu allows you to reset the cPRO / cPRO PLUS or cPRO ONE hand unit and all connected LBUS devices to manufacturer settings.

Please select all if you want to reset all connected LBUS devices together with the cPRO / cPRO PLUS / cPRO ONE hand unit. Select cPRO / cPRO PLUS / cPRO ONE hand unit if you want to reset the cPRO / cPRO PLUS / cPRO ONE hand unit only. Select LBUS devices and then one device from the dynamic LBUS device list if you want to reset a specific LBUS device only.

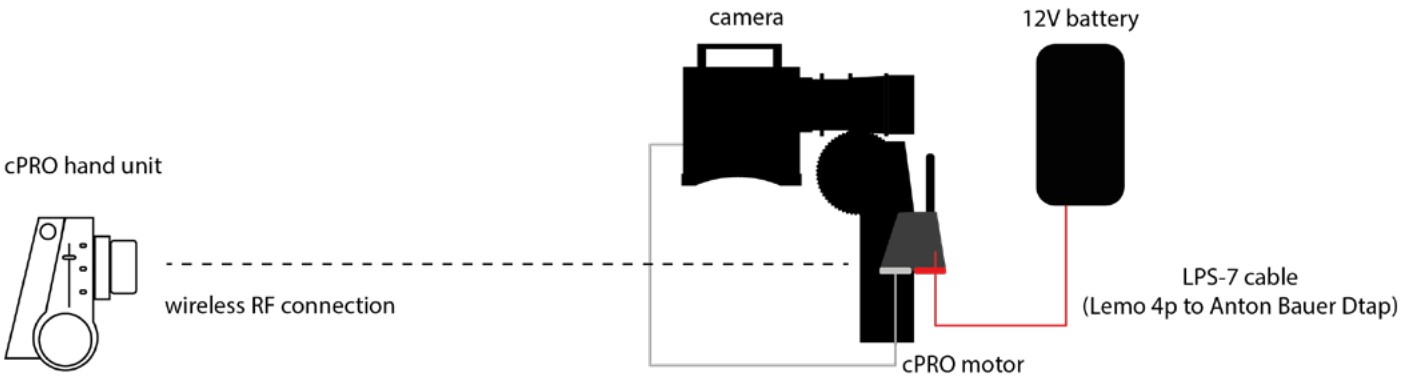
Please confirm your selection by pressing reset. Press back / cancel to cancel the reset procedure.

When performing a factory reset on the cPRO / cPRO PLUS or cPRO ONE hand unit, you will be asked to confirm whether you also want to reset the internal lens database. If you do want to delete ALL lens files saved on the cPRO / cPRO PLUS or cPRO ONE hand unit, press “yes”. Press “no” to perform a factory reset without deleting the entire lens database.

NOTICE
Do not power off the cPRO / cPRO PLUS / cPRO ONE hand unit or the connected LBUS devices while the factory reset is in progress as this may damage the device!

7. Setting up the cPRO LCS system

7.1. using the cPRO motor



7.1.1. Mounting and connecting cables:

- mount the cforce motors on the 15mm /19mm support rod. But, do not engage with the lens (please refer to the cPRO motor manual)
- mount the cforce motors on the 15mm /19mm support rod. But, do not engage with the lens (please refer to the cforce motor manual)

Note: Up to 3 additional cforce motors can be daisy-chained using any LCB cable from one motor to the next.

- connect the cPRO motor to the power supply e.g. D-Tap battery using cable LPS-7.
- depending on your camera, connect the corresponding camera interface cable between the CAM port on the cPRO motor and the camera.

7.1.2. Setting up cPRO LCS and cPRO motor

7.1.2.1. Establishing a wireless RF connection

- turn on the cPRO / cPRO PLUS / cPRO ONE hand unit by pressing the HOME button
- select the same RF channel on the cPRO / cPRO PLUS / cPRO ONE hand unit and the cPRO motor
  - **cPRO / cPRO PLUS / cPRO ONE hand unit:** double press the HOME button to enter the adjustment menu; go to MAIN / RADIO / Channel to change the RF channel (0-13)
  - **cPRO motor:** press the lower button to change the RF channel (0-13)

Note: The RF connection will be established automatically

Note: please double check if the region settings are set to the region you are located in.

- cPRO / cPRO PLUS / cPRO ONE hand unit: double press the HOME button to enter menu; go to MAIN /RADIO / Region to change the region settings. The region will be set on the cPRO motor automatically.

NOTICE
It may not be legal to operate the cPRO / cPRO PLUS / cPRO ONE hand unit in a country/ region other than the country/region selected in the region menu. Select ROW (Rest of world) or use the device in hard-wired mode if you are unsure of the correct region setting.

Note: If multiple hand units are used, please set all cPRO / cPRO PLUS / cPRO ONE hand units you want to connect to the network to the same radio channel as the cPRO motor. Once a cPRO / cPRO PLUS / cPRO ONE hand unit is set to the same radio channel as the cPRO motor, the device will connect automatically. Up to 3 cPRO / cPRO PLUS or cPRO ONE hand units can be connected wirelessly to a cPRO motor at a time. Additional LBUS control devices including the steady zoom can be hard-wired either to one of the hand units for wireless operation or directly to the LBUS daisy chain.

7.1.2.2. Assigning the cPRO and other motor's control axis

- To assign the cPRO motor to the corresponding lens axis, press the upper button repeatedly until the correct axis name is displayed.
- To assign a cforce mini or cforce plus motor to the corresponding lens axis, press the FIZ button repeatedly until the correct axis character is illuminated. (F=Focus / I=Iris / Z=Zoom)
- alternatively, assign the cPRO / cforce motors control axis using the cPRO / cPRO PLUS / cPRO ONE hand unit; double press the HOME button to enter the adjustment menu; go to MOTORS / Motor Settings /select the right motor / Axis

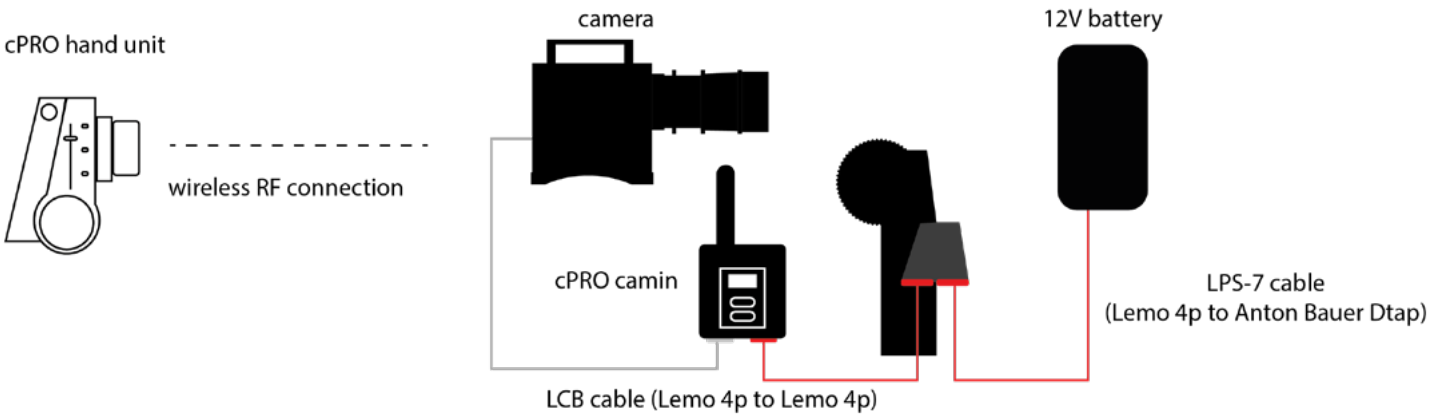
7.1.2.3. Calibrating the cPRO / cforce motors

- Turn the lens by hand so it is roughly half way between its mechanical end stops
- Engage all motors with the lens and secure firmly
- calibrate the cPRO motor by pressing and holding the upper button for 3 seconds
- calibrate the cforce motors by pressing and holding the FIZ button on each cforce motor for 3 seconds
- alternatively, calibrate the cPRO / cforce motors using one of the cPRO / cPRO PLUS / cPRO ONE hand unit functions „calibrate“ e.g. double press the HOME button to enter the adjustment menu; go to MOTORS / Calibrate all).

⚠CAUTION!

Risk of injury! Do not touch the motor gear while motor is moving!
This device is not intended for use by children. Keep body parts out of the motion path.
Disconnect the plug if the device is not used for a longer period of time.
IEC 60417-6056 (2011-05) for other moving parts

7.2. using the cPRO camin with cforce motors



7.2.1. Mounting and connecting cables:

- mount the cPRO camin on the camera using e.g the cPRO camin bracket (please refer to the cPRO camin manual)
- mount the cforce motors on the 15mm /19mm support rod. But, do not engage with the lens (please refer to the cforce motor manual)

Note: Up to 4 cforce motors can be daisy-chained using LCB cables from one motor to the next.

- connect the cPRO camin with the first cforce motor using a LCB cable (e.g. cable LCB-A)
- connect the last cforce motor in the daisy-chain to the D-Tap power source using cable LPS-7.
- for camera data and run/stop control, connect the corresponding camera interface cable to the camera and the CAM connector on the cPRO camin.

7.2.2. Setting up cPRO LCS and cPRO camin

7.2.2.1. Establishing a wireless RF connection

- turn on the cPRO / cPRO PLUS / cPRO ONE hand unit by pressing the HOME button
- select the same RF channel on the cPRO / cPRO PLUS / cPRO ONE hand unit and the cPRO camin
  - **cPRO / cPRO PLUS / cPRO ONE hand unit:** double press the HOME button to enter the adjustment menu; go to MAIN / RADIO / Channel to change the RF channel (0-13)
  - **cPRO camin:** press the lower or upper button to change the RF channel (0-13) up or down

Note: The RF connection will be established automatically

Note: please double check if the region settings are set to the region you are located in.

- cPRO / cPRO PLUS /cPRO ONE hand unit: double press the HOME button to enter menu; go to MAIN / RADIO / Region to change the region settings. The region will be set on the cPRO camin automatically.

NOTICE
It may not be legal to operate the cPRO / cPRO PLUS / cPRO ONE hand unit in a country/ region other than the country/region selected in the region menu. Select ROW (Rest of world) or use the device in hard-wired mode if you are unsure of the correct region setting.

Note: If multiple hand units are used, please set all cPRO / cPRO PLUS / cPRO ONE hand units you want to connect to the network to the same radio channel as the cPRO camin. Once a cPRO / cPRO PLUS / cPRO ONE hand unit is set to the same radio channel as the cPRO camin, the device will connect automatically. Up to 3 cPRO / cPRO PLUS / cPRO ONE hand units can be connected wirelessly to a cPRO camin at a time. Additional LBUS control devices including the steady zoom can be hard-wired either to one of the hand units for wireless operation, or directly to the LBUS daisy chain.

7.2.2.2. Assigning the motor's control axis

- To assign a cforce mini or cforce plus motor to the corresponding lens axis, press the FIZ button repeatedly until the correct axis character is illuminated. (F=Focus / I=Iris / Z=Zoom)
- alternatively, assign the cforce motors control axis using the cPRO / cPRO PLUS / cPRO ONE hand unit; double press the HOME button to enter the adjustment menu; go to MOTORS / Motor Settings / select the corresponding motor / Axis

7.2.2.3. Calibrating the cforce motors

- Turn the lens by hand so it is roughly half way between its mechanical end stops
- Engage all motors with the lens and secure firmly
- calibrate the cforce motors by pressing and holding the FIZ button on each cforce motor for 3 seconds
- alternatively, calibrate the cforce motors using one of the cPRO / cPRO PLUS / cPRO ONE hand unit functions „calibrate“ e.g. double press the HOME button to enter the adjustment menu; go to MOTORS / Calibrate all).

⚠CAUTION!

Risk of injury! Do not touch the motor gear while motor is powered up!
This device is not intended for use by children. Keep body parts out of the motion path.
Disconnect the plug if the device is not used for a longer period of time.
IEC 60417-6056 (2011-05) for other moving parts

8. Compatibility

The cPRO / cPRO PLUS / cPRO ONE hand unit is directly compatible with the following cmotion / ARRI products:

- cPRO motor / cPRO camin
- cforce mini lens motor
- cforce plus lens motor
- cdistance
- cvision focus assist
- Cinefade VariND
- cfinder III
- steady zoom / pan-bar zoom
- UDM-1 (Ultrasonic Distance Measure) via LCUBE CUB-1
- Master Grips

Note: run/stop control is supported for all standard digital cameras (ARRI, BLACKMAGIC, CANON, RED, SONY) using optional CAM interface cables.

9. Connecting and disconnecting power

9.1. Power connection

⚠Warning!
Requirement for the external power supply: Limited power source according to IEC60950-1 or PS2 classified IEC62368-1 and short-circuit current < 8A.

9.2. Power disconnection

⚠CAUTION!
To disconnect the device safely from the power source, remove the cable connector from the cPRO / cPRO PLUS / cPRO ONE hand unit´s LBUS port. Mount and operate the device in an orientation to ensure easy access to the connectors.

10. Appendix

10.1. Antenna connector

Radio connection can be established between the cPRO / cPRO PLUS / cPRO ONE hand unit and cPRO motor / cPRO camin when an antenna is mounted on each device. It is recommended to only use certified antennas supplied by cmotion.

⚠Warning!
Please ensure the antenna connector is covered by the antenna or the safety cap at any time. The radio module can suffer damage from electrostatic discharge if the antenna connector is left exposed.

10.2. Specifications

Electrical data:

Temperature range: -20 to +50° C (-4 to +122° F)

Battery type: NP-FM500H, 7,2V, 2040mAh

⚠ Warning!

To reduce risk of fire or burns from using the NP-FM500H battery, do not disassemble, crush, puncture, short external contacts or dispose of in fire or water.

⚠ CAUTION!

Only the batteries supplied with the cPRO / cPRO PLUS / cPRO ONE hand unit should be used. For additional batteries, please contact sales@cmotion.eu.

Radio system:

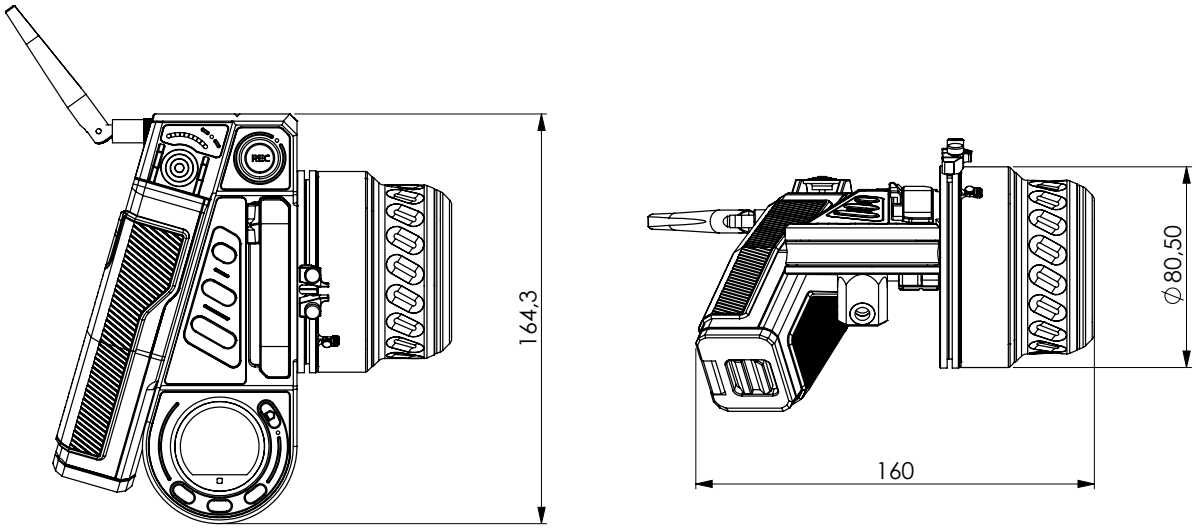
The cPRO / cPRO PLUS / cPRO ONE hand unit contains a cmotion red coded radio module that enables wireless communication with other red coded radio units. A red ring at the base of the antenna mount on both the cPRO motor and cPRO camin helps to visually identify this. There are 14 channels to choose 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
8	2.420 GHz
9	2.425 GHz
10	2.440 GHz
11	2.445 GHz
12	2.460 GHz
13	2.465 GHz

Note: cmotion red radio and ARRI white radio are not compatible. This means the cPRO / cPRO PLUS / cPRO ONE hand unit will not communicate with an ARRI white enabled camera or UMC. However, because both modules use the same radio frequency, it is important to have each system set to a different radio channel when being used in parallel.

10.3. Dimensions and weight

Dimensions:



Weight:

cPRO hand unit: appx. 0,89 kg (< 32 oz) (incl. battery and antenna)

cPRO PLUS hand unit: appx. 0,98 kg (< 35 oz) (incl. battery and antenna)

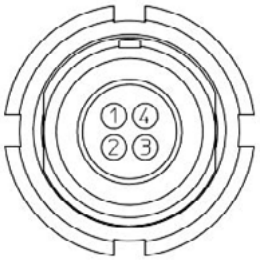
cPRO ONE hand unit: appx. 0,87 kg (< 32 oz) (incl. battery and antenna)

10.4. Pinouts

The cPRO / cPRO PLUS / cPRO ONE hand units are equipped with one LBUS connector (Lemo 4 pin).

LBUS connector:

1 GND
2 CAN-L
3 V-BAT
4 CAN-H



10.5. Part numbers

K2.0016602 cPRO hand unit basic set

K2.0033607 cPRO ONE hand unit basic set

[K2.0037381] cPRO PLUS hand unit

The cPRO / cPRO PLUS / cPRO ONE hand unit basic set includes:

- cPRO / cPRO PLUS or cPRO ONE hand unit
- K2.0001996 swivel antenna for SMC-1, EMC-1, AMC-1, cPRO hand unit / motor / camin
- K2.0019833 cPRO plain white iris strip (not available for cPRO ONE)
- K2.0020890 plain white focus ring for cPRO hand unit
- K2.0019832 cPRO truss

NOTICE
The cPRO / cPRO PLUS / cPRO ONE hand unit basic set does not include an LBUS or CAM cable. LBUS cables are available in various lengths and need to be ordered separately.

Antenna part numbers

[K2.0002007] Outdoor antenna (straight)

[K2.0001996] cPRO swivel antenna

Accessories: Accessories: The following accessories are compatible with the cPRO / cPRO PLUS and cPRO ONE hand unit:

K2.0019832	cPRO truss
K2.0019827	cPRO monitor bracket
K2.0019830	cPRO v-lock plate
K2.0019824	cmotion battery
K2.0019822	cmotion battery charger

Focus rings / Iris strips:

K2.0020890	plain white focus ring for cPRO hand unit
*K2.0019833	plain white iris strip for cPRO hand unit

Pre-marked focus ring sets:

K2.0019834	pre-marked focus ring imperial set
K2.0019835	pre-marked focus ring metric set

Pre-marked focus rings:

K2.0020897	pre-marked focus ring 3 feet 6 inch for cPRO hand unit
K2.0020904	pre-marked focus ring 20 inch for cPRO hand unit
K2.0020903	pre-marked focus ring 14 inch for cPRO hand unit
K2.0020902	pre-marked focus ring 12 inch for cPRO hand unit
K2.0020901	pre-marked focus ring 8 inch for cPRO hand unit
K2.0020896	pre-marked focus ring 1.0m for cPRO hand unit
K2.0020891	pre-marked focus ring 0.5m for cPRO hand unit
K2.0020894	pre-marked focus ring 0.35m for cPRO hand unit
K2.0020893	pre-marked focus ring 0.25m for cPRO hand unit
K2.0020892	pre-marked focus ring 0.20m for cPRO hand unit

Pre-marked iris strips:

*K2.0019836	pre-marked iris strip T2.8-22 for cPRO hand unit
*K2.0019838	premarked iris strip T2.0-22 for cPRO hand unit
*K2.0019837	pre-marked iris strip T1.0-close for cPRO hand unit

* is not compatible with cPRO ONE hand unit

Smart Focus Ring (Meter):

C0EK-500	cPRO Smart Focus Ring 0.20m
C0EK-501	cPRO Smart Focus Ring 0.25m
C0EK-502	cPRO Smart Focus Ring 0.30m
C0EK-503	cPRO Smart Focus Ring 0.35m
C0EK-504	cPRO Smart Focus Ring 0.50m
C0EK-505	cPRO Smart Focus Ring 0.75m
C0EK-506	cPRO Smart Focus Ring 1.00m
C0EK-507	cPRO Smart Focus Ring 1.50m
C0EK-508	cPRO Smart Focus Ring 2.00m
C0EK-509	cPRO Smart Focus Ring 3.00m

Smart Focus Ring (Feet):

C0EK-510	cPRO Smart Focus Ring 9“
C0EK-511	cPRO Smart Focus Ring 1’
C0EK-512	cPRO Smart Focus Ring 1’3
C0EK-513	cPRO Smart Focus Ring 1’8
C0EK-514	cPRO Smart Focus Ring 2’
C0EK-515	cPRO Smart Focus Ring 2‘6
C0EK-516	cPRO Smart Focus Ring 3’6
C0EK-517	cPRO Smart Focus Ring 5’
C0EK-518	cPRO Smart Focus Ring 6’6
C0EK-519	cPRO Smart Focus Ring 10‘

Smart Focus Ring (Reverse Meter):

C0EK-520	cPRO Smart Focus Ring Reverse 0.20m
C0EK-521	cPRO Smart Focus Ring Reverse 0.25m
C0EK-522	cPRO Smart Focus Ring Reverse 0.30m
C0EK-523	cPRO Smart Focus Ring Reverse 0.35m
C0EK-524	cPRO Smart Focus Ring Reverse 0.50m
C0EK-525	cPRO Smart Focus Ring Reverse 0.75m
C0EK-526	cPRO Smart Focus Ring Reverse 1.00m
C0EK-527	cPRO Smart Focus Ring Reverse 1.50m
C0EK-528	cPRO Smart Focus Ring Reverse 2.00m
C0EK-529	cPRO Smart Focus Ring Reverse 3.00m

Smart Focus Ring (Reverse Feet):

C0EK-530	cPRO Smart Focus Ring Reverse 9“
C0EK-531	cPRO Smart Focus Ring Reverse 1’
C0EK-532	cPRO Smart Focus Ring Reverse 1’3
C0EK-533	cPRO Smart Focus Ring Reverse 1’8
C0EK-534	cPRO Smart Focus Ring Reverse 2’
C0EK-535	cPRO Smart Focus Ring Reverse 2’6
C0EK-536	cPRO Smart Focus Ring Reverse 3’6
C0EK-537	cPRO Smart Focus Ring Reverse 5’
C0EK-538	cPRO Smart Focus Ring Reverse 6’6
C0EK-539	cPRO Smart Focus Ring Reverse 10’

Smart Iris Ring:

C0EK-540	cPRO Smart Iris Ring T1.0-T22
C0EK-541	cPRO Smart Iris Ring T1.4-T22
C0EK-542	cPRO Smart Iris Ring T2.0-T22
C0EK-543	cPRO Smart Iris Ring T2.8-T22
C0EK-544	cPRO Smart Iris Ring T1.0-Close

Camera interface cables:

K2.0015754 Cable CAM (7p) - RS

Connects cmotion cPRO motor and camin to RS connector.

Provides power, camera RUN/STOP and tally function on cPRO hand unit. Works with ARRI ALEXA / ALEXA LF / MINI LF / ALEXA 35 / ALEXA 265 / AMIRA and SONY VENICE-1 / VENICE-2 cameras.

K2.0015755 Cable CAM (7p) - EXT (16p)

Connects cPRO motor and camin to the EXT connector of an ARRI ALEXA EV camera.

Provides camera RUN/STOP function, tally and camera status information on cPRO hand unit.

K2.0015756 Cable CAM (7p) - EXT (6p)

Connects cPRO motor and camin to ARRI AMIRA / ALEXA MINI / ALEXA LF / MINI LF EXT connector.

Provides camera RUN/STOP function, tally, camera status information and remote camera control* on cPRO hand unit.

* ARRI camera control license required

C0XE-K07 Cable CAM (7p) - LCS (5p)

Connects cPRO motor and camin to ARRI ALEXA PLUS / ALEXA LF cameras.

Provides power to LBUS daisy chain, RUN/STOP function, tally, camera status information and camera control* on cPRO hand unit.

* ARRI camera control license required

K2.0015757 Cable CAM (7p) - LANC/D-Tap

Connects cPRO motor and camin to LANC connector (e.g. Canon C300 / C500) and D-Tap power source.

Provides camera RUN/STOP function and tally on cPRO hand unit.

K2.0015758 Cable CAM (7p) - RED CTRL/D-Tap

Connects cPRO motor and camin to RED CTRL connector on RED DSMC-1, DSMC-2, DSMC-3 cameras* and D-Tap power source.

Provides camera RUN/STOP function, tally, camera status information, control of EF lenses** and camera control*** on cPRO hand unit.

* optional breakout box required

** with cPRO camin only

*** RED camera control license required

C0XE-K27 Cable CAM (7p) - RED EXT (9p) / D-Tap

Connects cPRO motor and camin to RED EXT 9p connector on RED DSMC-3 cameras and D-Tap power source.

Provides camera RUN/STOP function, tally, camera status information, control of EF lenses** and camera control*** on cPRO hand unit.

** with cPRO camin only

*** RED camera control license required

C0XE-K10 Cable CAM (7p) - DXL2 AUX (7p)/AUX (3p)

Connects cPRO motor and camin to AUX connector on Panavision DXL2 cameras and 24V AUX power source.

Provides camera RUN/STOP function, tally, camera status and camera control* on cPRO hand unit.

* RED camera control license required

K2.0015759 Cable CAM (7p) - ENG (12p)

Connects cPRO motor and camin to the ARRI AMIRA / ALEXA Mini or other cameras LENS connector.

Provides camera RUN/STOP function, tally and camera status information on cPRO hand unit.

K2.0018814 Cable CAM (7p) - Sony Hi (4p) / D-Tap

Connects cPRO motor and camin to SONY F5 / F55 / VENICE-1 / VENICE-2 cameras and D-Tap power source.

Provides camera RUN/STOP function and tally.

K2.0047268 Cable CAM (7p) - Sony Remote (8p) / D-Tap

Connects cPRO motor and camin to SONY F5 / F55 / VENICE-1 / VENICE-2 cameras and D-Tap power source.

Provides camera RUN/STOP function, tally, camera status information and camera control* on cPRO hand unit.

* SONY camera control license required

K2.0015760 Cable CAM (7p) - LBUS

Connects cPRO motor, cPRO camin to LBUS port of ALEXA Mini LF (from SUP 7.3), ALEXA 35 / ALEXA 265.

Provides camera RUN/STOP function, tally, camera status information and camera control* on cPRO hand unit.

* ARRI camera control license required

Connects cPRO motor and camin to LBUS devices or LBUS power source.

Provides power to LBUS daisy chain or LBUS device features through cPRO hand unit.

Power cables:

K2.0018813 Cable CAM (7p) - D-Tap

Connects cPRO motor and camin CAM connector to D-Tap power source.

K2.0006758 Cable LPS-7

Connects cPRO motor and camin LBUS connector to D-Tap power source.

C0JE-K41 cable LPS-18

Connects cPRO motor and camin LBUS connector to 2pin Lemo power source.

K2.0023823 Cable LBUS Star

Supplies additional power to the LBUS daisy chain from a camera's RS power source. Connects between 2 LBUS devices. Additional LBUS cables are required.

C0JE-K79 Cable LBUS Star-2

Supplies additional power to an LBUS daisy chain. Connects directly between 2 LBUS devices and can be powered using standard cmotion power cables including:

C019-K31 cable RRS-1

C019-K36 cable RRS-6

C019-K37 cable RRS-7

C019-K3R cable RRS-R

10.6. Cleaning and maintenance

The cPRO, cPRO PLUS and cPRO ONE hand units are precision instruments. Do not drop them or subject them to physical shock.

The cPRO, cPRO PLUS and cPRO ONE hand units are not waterproof and cannot be used underwater. If you accidentally drop a cPRO hand unit into water, remove the battery and consult your nearest service center. Wipe off any water droplets with a dry cloth and do not attempt to turn the hand unit on.

If the hand unit has been exposed to salty air, wipe down the external components with a damp but well-wrung cloth.

Do not use cleaning agents that contain organic solvents to clean the button panels or display. For stubborn marks, please take the hand unit to your nearest service center.

If the cPRO, cPRO PLUS or cPRO ONE hand unit is transferred suddenly from somewhere cold to somewhere warm, condensation may form on both external and internal components. To prevent condensation, put the hand unit in a sealed plastic bag and let it adjust to the warmer temperature before use.

If condensation has formed on the hand unit, do not power on as this could damage electrical components. Simply remove the battery and wait until the condensation has evaporated.

10.7. Service contacts

1. **cmotion GmbH**
   Biedermanngasse 28
   1120 Vienna / Austria
   http://www.cmotion.eu
   sales@cmotion.eu
   Service Hotline: +43 1 78910960

2. **camadeus Film Technologies, Inc.**
   http://www.camadeus.com
   contact@camadeus.com
   Service Hotline: +1 818 764 1234

3. **ARRI China (Beijing) Co. Ltd**
   China, Chaowai SOHO Suite C0656
   Chaowai Dajie Yi 6, Chaoyang Qu,
   100020, Beijing / China
   store@arri.cn
   Service Hotline: +86 10 5900 9680

4. **Cineom Broadcast India Ltd.**
   Unit 4C, 4th Floor, Goldline Business Centre,
   New Malad Link Rd, Malad (W),
   400064, Mumbai / India
   support@cineom.com
   Service Hotline: +91 22 42109000

5. **CVP UK**
   23 Shield Drive, West Cross Industrial Estate,
   Brentford, Middlesex,TW8 9EX
   United Kingdom
   prorepairs@cvp.com
   Service Hotline: +44 208 380 7400

10.8. International declarations

EU-Declaration of Conformity

This designated product conforms with the specifications of the following European directives:

Directive 2014/53/EU of the European Parliament and the Council of 16 April 2014 on the harmonization of the laws of the Member States relating to the making available on the market of radio equipment and repealing Directive - OJ L 153, 22.5.2014, S. 62–106.

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 - OJ L 174, 1.7.2011, S. 88–110.

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

- EN 62368-1:2014 + AC:2015-05 + AC:2015-11
- EN 301 489-1 V2.1.1; EN 301 489-17 V3.1.1
- EN 300 328 V2.1.1
- EN 50581:2012

To evaluate the respective information we used:

http://ec.europa.eu/growth/single-market/european-standards/harmonised-standards/index_en.htm

CE

UK Declaration of Conformity

Brand Name: cmotion
Product Description: cPRO / cPRO ONE / cPRO PLUS hand unit

The designated products conform to the specifications of the following United Kingdom regulations:

- Radio Equipment Regulations 2017
- Electrical Equipment (Safety) Regulations 2016
- Electromagnetic Compatibility Regulations 2016
- The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

The compliance with the requirements of the United Kingdom regulations was proved by the application of the following standards:

- EN 300 328 V2.1.1;
- EN 62368-1:2014 + AC:2015-05 + AC:2015-11;
- EN 301 489-1 V2.1.1; EN 301 489-17 V3.1.1;
- EN 50581:2012;

The manufacturer bears sole responsibility for issuing this declaration of conformity.

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.

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. Cet appareil est conforme à CNR-210 d'Industrie 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 Réglement sur le matériel brouilleur du Canada.

Japan MIC Statement

Complies with Ministry of Internal Affairs and Communications notification Article 88, Annex 43.

Radio Module

The cPRO hand unit contains the following radio module:

FCC ID: Y7N-EMIP400

IC ID: 9482A-EMIP400

CMIT ID: 2017DJ7863C(M)

MIC ID: 020-180030

NCC: CCAH18LP0660T0

KC: R-CRM-ARg-EMIP400

EMIP400s: ETA:1385/2018/ERLO