cPRO & cPRO ONE
User Guide

v3.0 | October, 2019

Software Release Package v3.0

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For further assistance

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This USER GUIDE applies to the following product:
K2.0016602 cPRO hand unit and K2.0033607 cPRO ONE hand unit
with Software Release Package v3.0

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Disclaimer

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

The cmotion cPRO and cPRO ONE hand unit are only available to commercial customers. By utilization, the customer agrees that the cPRO 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 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 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 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 hand unit

cPRO ONE hand unit

The cPRO 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. Both 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 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.

6 user buttons provide quick access to cPRO's extensive features. Iluminated key elements (focus marker ring, iris slider strip and buttons) offer ideal operation even in dark environments.

The capacative 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 two cPRO 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 or cPRO ONE hand unit can be hard-wired with up to three 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
- 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 three 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 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 and cPRO ONE hand units are equipped with an LBUS connector but do not have integrated CAM connectors. But, 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 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 / available with Software Release Package v3.0).

If a camera is detected in the LBUS daisy-chain, camera data and camera feedback will be displayed on the cPRO 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 hand unit feature only, not available for cPRO ONE hand unit

5.2. Control interface

5.2.1. 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
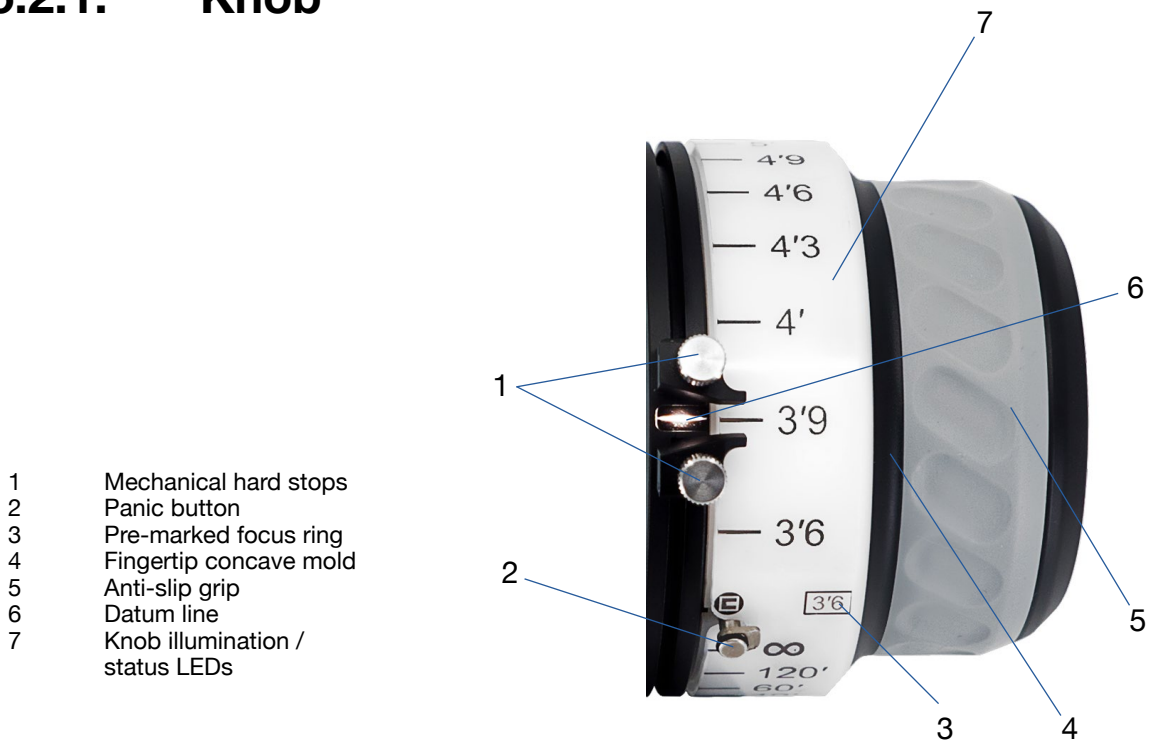
The knob is a control interface with an absolute position encoder. Turn the knob clockwise or counter-clockwise to control the assigend axis. As default the knob is assigned to focus.

5.2.1.1. 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

5.2.1.2. Panic button

The cPRO panic button is a unique feature of the cPRO and cPRO ONE hand unit. It allows you to overwrite the mechnical 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 dive underneath the desired hard stop.

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

5.2.1.3. Pre-marked focus rings
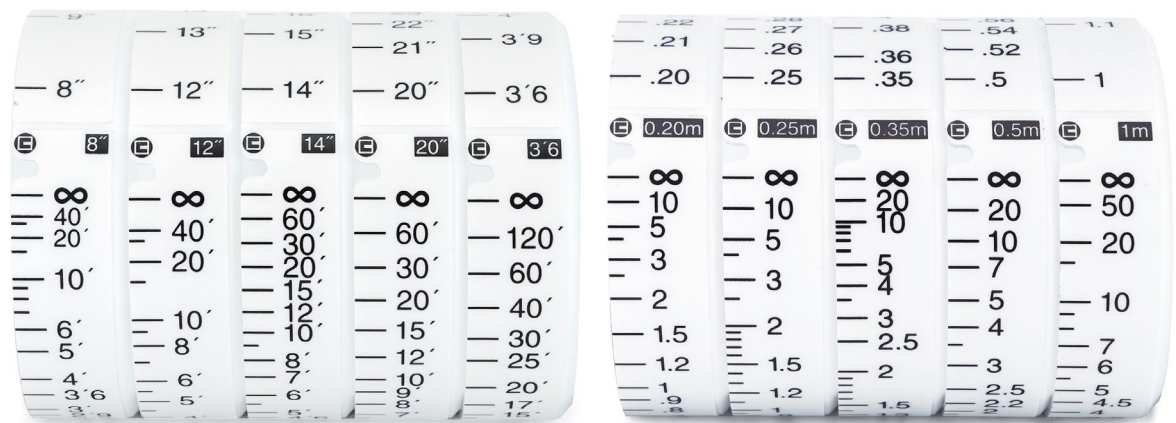
K2.0019834 cPRO pre-marked focus ring imperial set

K2.0019835 cPRO pre-marked focus ring metric set

In order to save time marking your focus rings for each lens, the cPRO and cPRO ONE hand units are compatible with five imperial and five metric pre-marked rings. Each ring is engraved with a scale from infinity to one of five close focus values 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 41 in this manual.

5.2.1.4. 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.

5.2.1.5. 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	no motor connected
red flashing	knob locked / no motor control

5.2.2. Slider

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

1	Slider
2	Pre-marked iris strip
3	Slider illumination / status LEDs
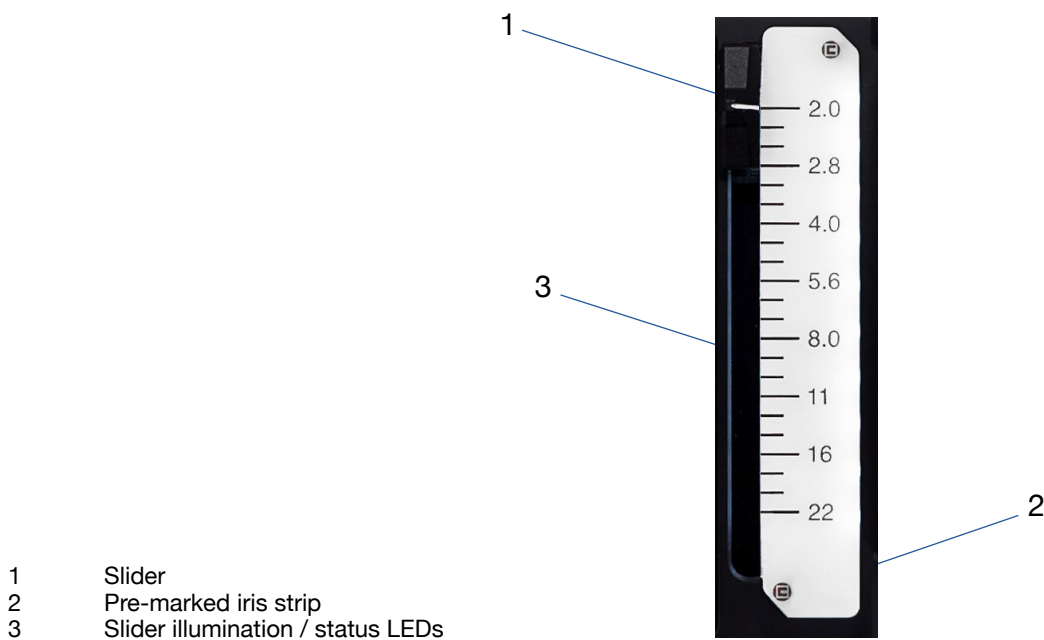
The slider is a control interface with an absolute position encoder. Move the slider up or down to control the assigned axis. As default, the slider is assigned to iris.

5.2.2.1. Pre-marked iris strips

In order to save time marking your iris strips for each lens, the cPRO hand unit offers three pre-marked strips. Each strip is engraved with a scale from close or 22 to one of three wide open iris values. For more information refer to section "6.2.3.2.2.3. Pre-marked strips" on page 43 in this manual.

5.2.2.2. Slider illumination and status LEDs

The slider scale can be illuminated individually through the "Slider brightness" menu. The status LEDs for the slider are built into the scale illumination, which gives you direct feedback of the status for 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	no motor connected
red flashing	slider locked / no motor control

5.2.3. Joystick

(cPRO 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 44 in this manual). As default, the joystick is assigned to zoom.

5.2.3.1. 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.

5.2.3.2. 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	no axis assigned to joystick / joystick illumination off
green/yellow flashing	calibration request
yellow flashing	motor calibration
solid yellow	calibration time out
solid red	no motor connected
red flashing	joystick locked / no motor control

5.2.4. Thumb wheel

1   Thumb wheel

The thumb wheel is a unique control interface of the cPRO 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 thumbwheel 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

5.2.5. Buttons / camera status LED

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

User button functions:

> *cPRO hand unit feature only, not available for cPRO ONE hand unit
> ** available with cmotion Cinefade VariND only

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 / 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 / Switch language / Camera Button 1-6

5.2.5.1. REC button and camera status LED

1   REC button
2   Camera status LED
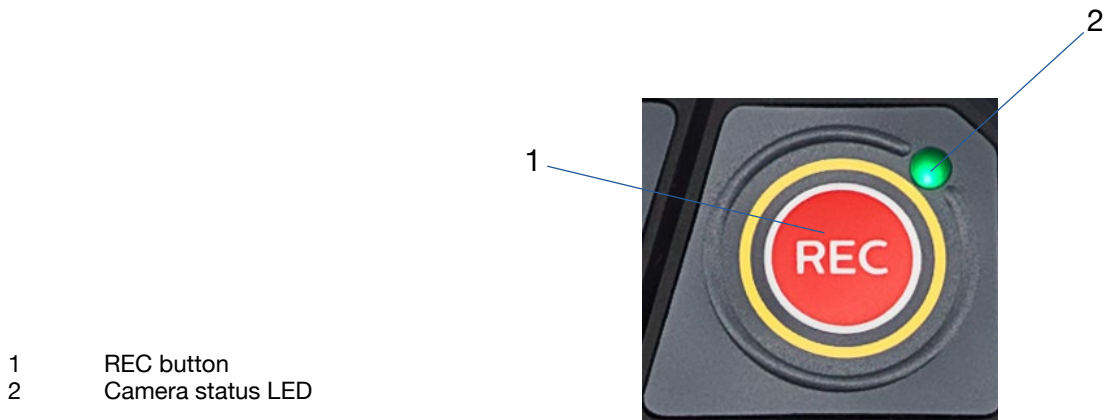
The REC button is assigend to "Camera rec" only and cannot be changed. Anyways the "Camera rec" function can be assigned to any other user button.

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

5.2.5.2.   User buttons

1   User button 1 (UB1)
2   User button 2 (UB2)
3   User button 3 (UB3)
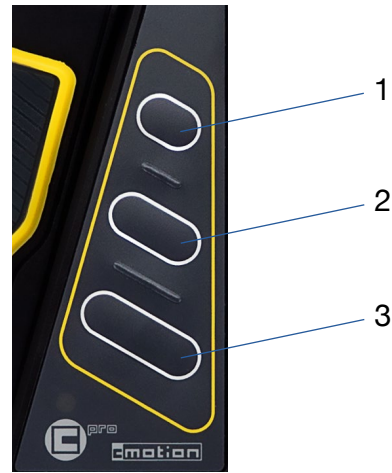
All user buttons (UB1/UB2/UB3) in the center of the cPRO and cPRO ONE hand unit can be assigned individually. Once assigned to a user function, each assigned button will illuminate individually unless keypad brightness is set at 0.

5.2.5.3.   Back button

1   Back button (BB1)
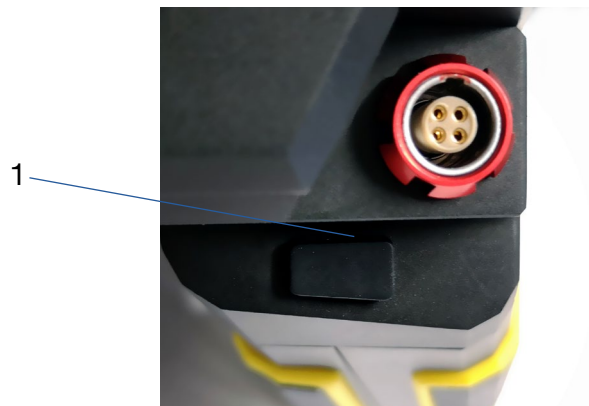
The back button is located underneath the LBUS connector on both the cPRO and cPRO ONE hand units. It is not illuminated but can be assigned individually to any user function.

While navigating in the cPRO menu, the back button is assigned to "select".

5.2.5.4.   Menu buttons

1   Menu button 1 (MB1)
2   Menu button 2 (MB2)
3   Menu button 3 (MB3)
4   HOME Button
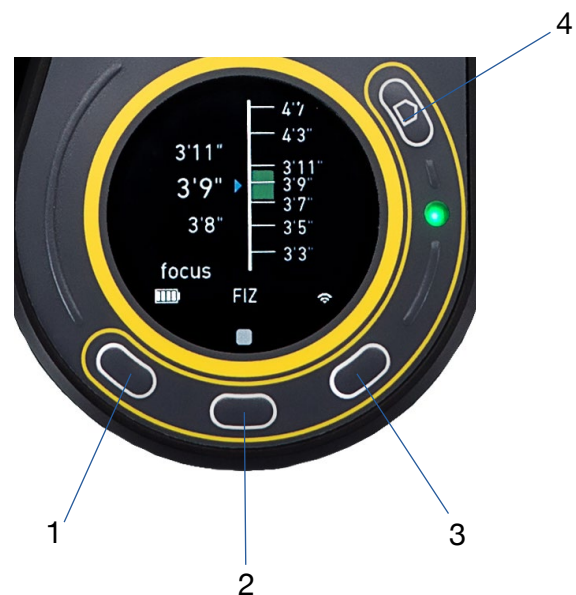
3 menu buttons are located around the touch screen. And, with the exception of MB2, can be assigned to any user function while displaying one of the main screens. When entering the adjustment menu the menu buttons will change their behaviour and show their function on the touch display.

5.2.5.4.1. 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 if the keypad brightness is not set at 0.

5.2.5.4.2. 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 24 in this manual.

5.2.5.4.3. 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.

5.2.5.5. HOME button

The HOME button has various functions and is illuminated permanently if the keypad brightness is not set at 0.

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

5.2.5.6. System status LED

1   System status LED

The sytem status LED indicates the status of the cPRO / 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)
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

5.2.6.   Touch screen

1   Capacitive touch display

The cPRO 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 ONE hand unit software layout

6.1. GUI main screen overview

The cPRO 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.
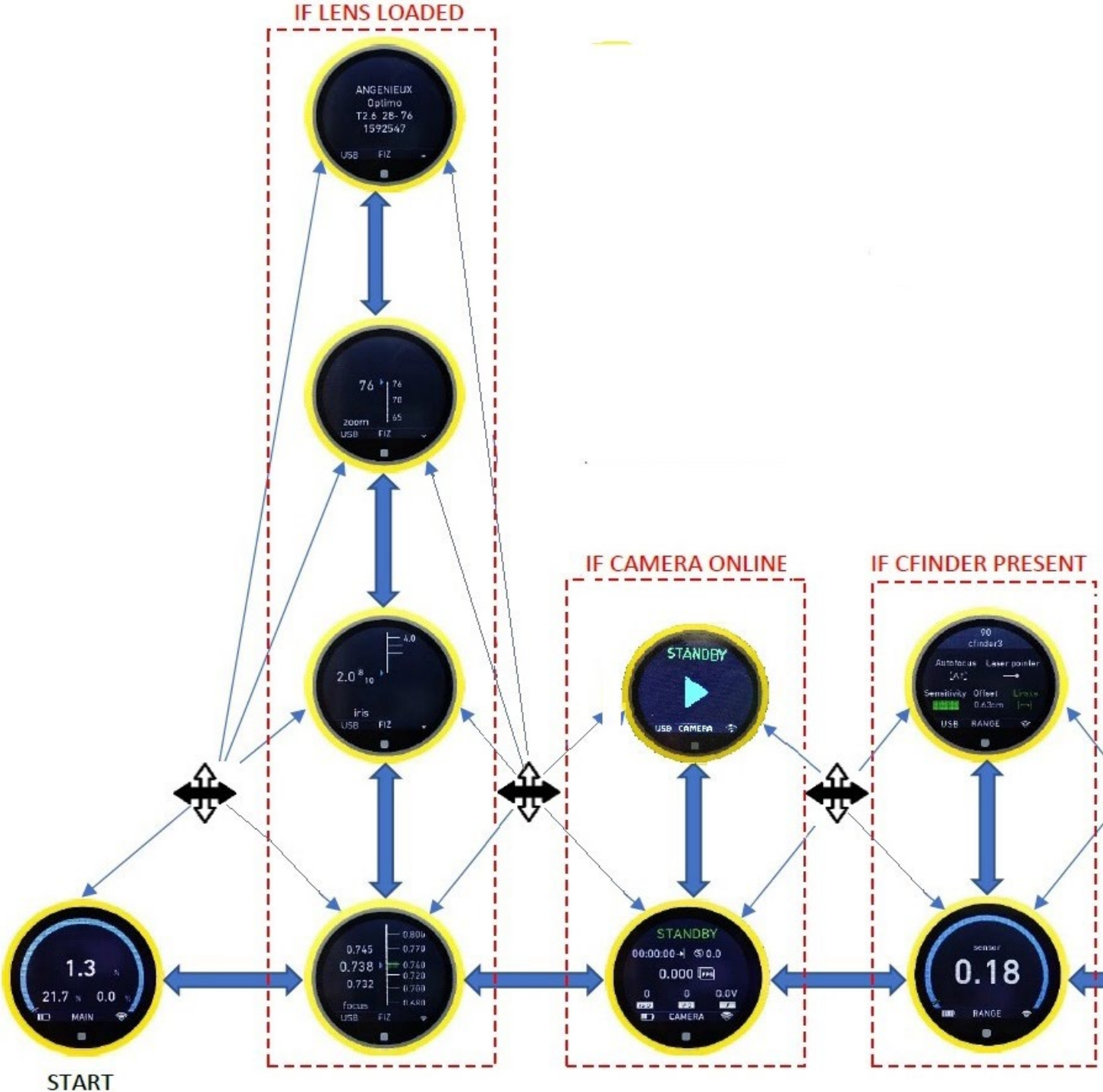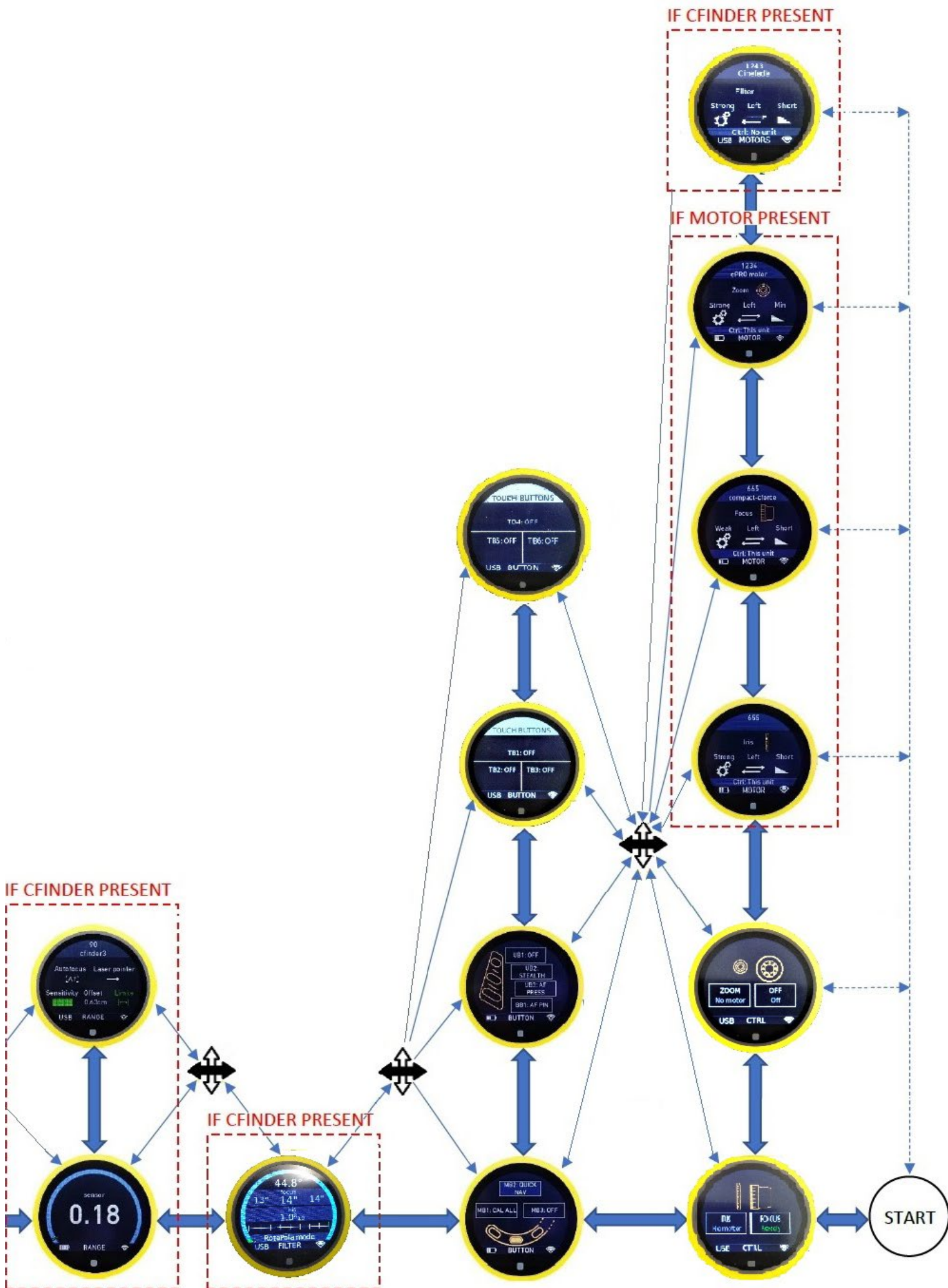
6.1.1.   MAIN screen

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
6	Status bar (with battery status and RF signal strength)

The MAIN screen shows compact focus, iris and zoom information on a simple GUI. If a lens file is loaded, it shows the actual focus, iris, zoom values and the depth of field range. If no lens file is loaded, it shows the motor position as a percentage of the calibration range.

The status bar on all main screens shows information about the main screen page, battery status, wireless signal strength or, if one of the control interfaces is locked.

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.

1	Measured rangefinder distance
2	Actual focus position
3	Depth of field range

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 a full focus scale, as well as depth of field (DOF) information graphically and numerically.

1	Actual focus position (value)
2	Measured rangefinder distance
2	Focus scale
3	DOF range
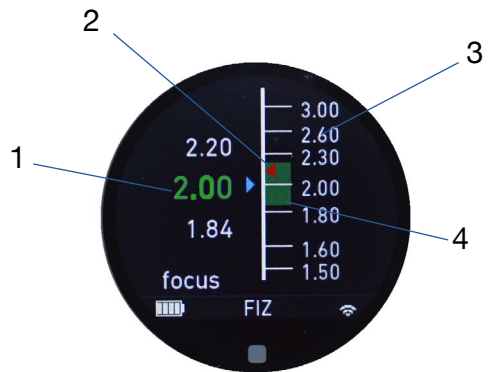
Note: If a rangefinder is attached to the LBUS daisy-chain, and the measured rangefinder distance is within depth of field (DOF), the focus value will turn green. Otherwise it illuminates white.

6.1.2.2. Iris main screen

1	Actual iris position (value)
2	Iris scale
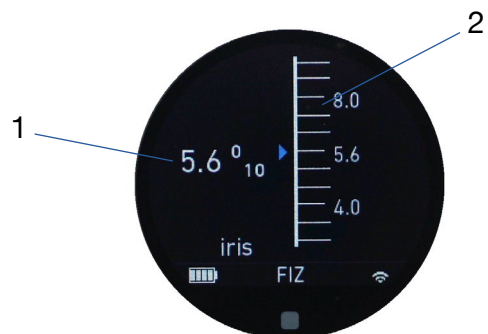
The iris main screen displays a full iris scale graphically and numerically. T-stops are displayed in 1/10 increments.

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

The lens information main screen displays all the relevant information about the loaded lens file, including brand, model, T-stop, zoom range and serial number.

6.1.3. Camera main screen
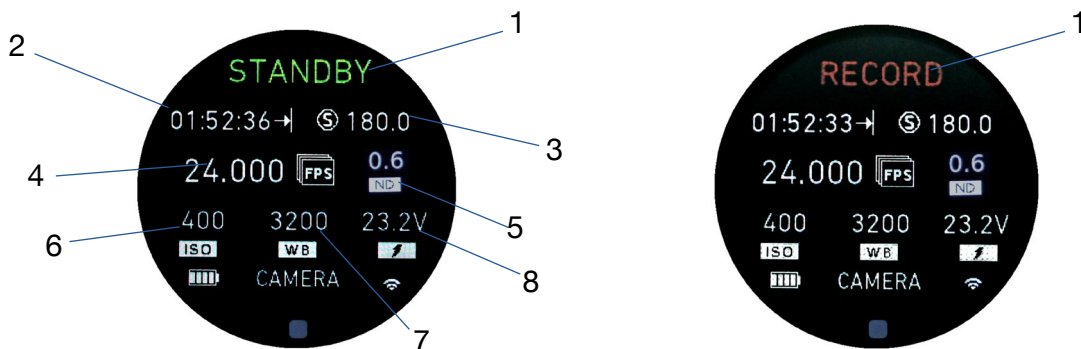
1	Camera record information
2	Remaining record time
3	Shutter speed
4	Frames per second (FPS)
5	ND Filter
6	ISO
7	White balance
8	Camera battery status

The camera information main screen is enabled 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 popolar cameras such as ARRI, RED, SONY, BLACKMAGIC or CANON. Depending on the camera brand and model, different functions including start-stop control and record feedback, camera status, tally and control of camera settings are available. (License required to control camera settings / available with Software Release Package v3.0)

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 consits 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
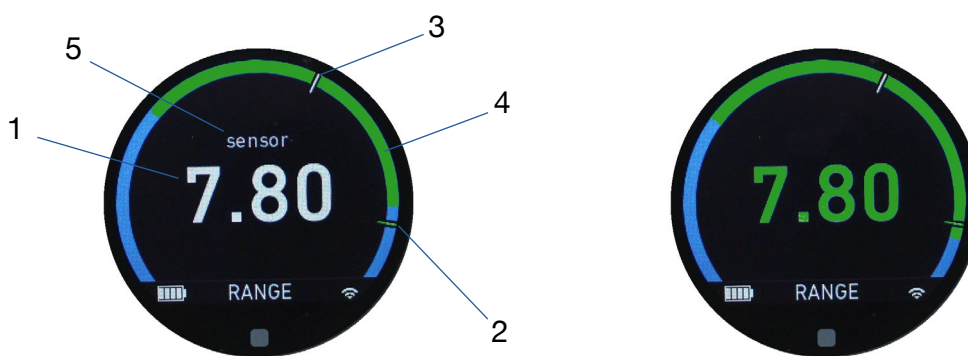
1	Measured rangefinder distance (value)
2	Measured rangefinder distance (position)
3	Actual focus position
4	DOF range
5	Rangefinder sensor warning

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

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

Note: When using cmotion's cfinder III, the rangefinders sensor warning will show up if no vaild measuring is possible. (Please refer to the cfinder III user guide)

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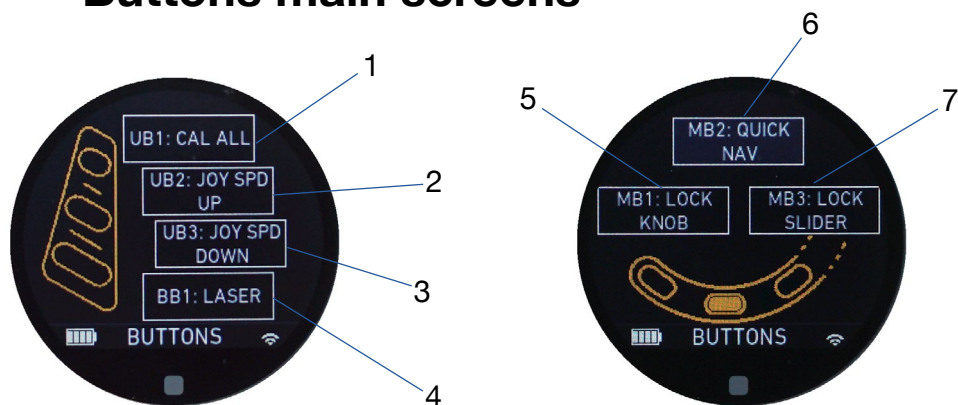
1 User button 1 / UB1 (function)
2 User button 2 / UB2 (function)
3 User button 3 / UB3 (function)
4 Back button 1 / BB1 (function)
5 Menu button 1 / MB1 (function)
6 Menu button 2 / MB2 (QUICK NAV))
7 Menu button 3 / MB3 (function)

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

Note: The buttons adjustment menu can be accessed from both buttons main screens quickly by tapping and holding the touch display or by pressing and holding the menu button 2 (MB2).
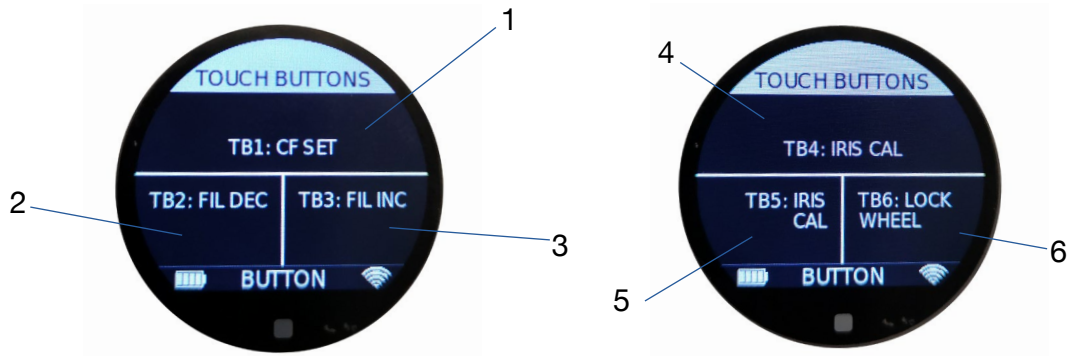
1	Touch button 1 / TB1 (function)
2	Touch button 2 / TB2 (function)
3	Touch button 3 / TB3 (function)
4	Touch button 4 / TB4 (function)
5	Touch button 5 / TB5 (function)
6	Touch button 6 / TB6 (function))

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 from both touch buttons main screens quickly by pressing and holding menu button 2 (MB2).

6.1.6. Controls main screen
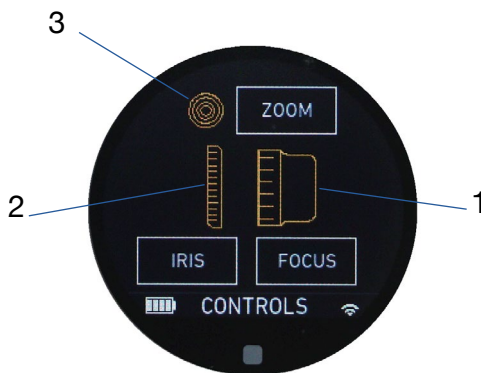
Controls main screen

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 from the controls main screen quickly 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/Thumb wheel)
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 displays information for up to 3 daisy-chained cforce / cPRO motors.

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

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 (Min/ Short/Long/Max) which allows smooth speed-up and slow-down curves.

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 motor settings menu can be accessed from all motors main screens quickly 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

HOME BUTTON
- Home Button HB: list menu functions

MENU
- MAIN
- CONTROLS
- LENS
- MOTORS
- RANGEFINDER
- FILTER
- CAMERA
- BUTTONS
- ABOUT

MAIN
- Radio
- Unit (status)
- Brightness
- Vibration
- Touch screen: (On/Off)
- Thumb wheel: (On/Off)
- Stealth mode all: (On/Off)
- Load settings (not FCS)
- Save settings (not FCS)
- Stealth mode all
- Language

RADIO
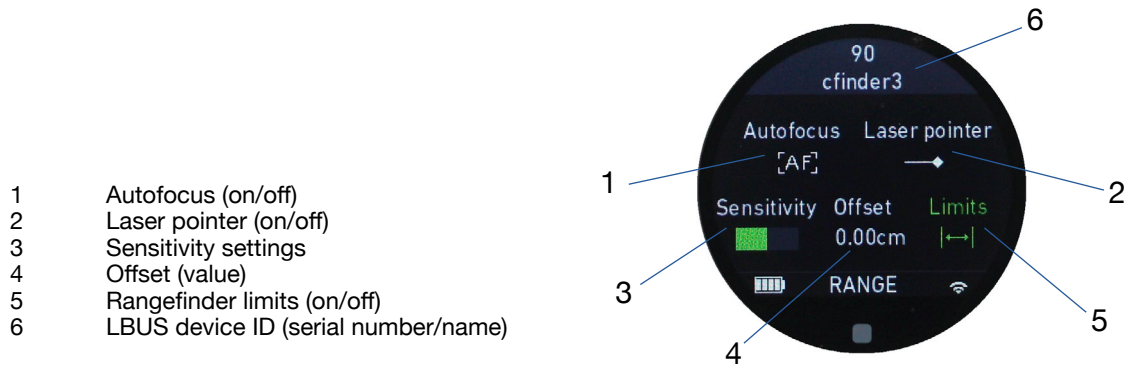- RF: (On/Off)
- Channel: 0–13
- Region: (Country)

REGION
- JAPAN
- EUROPE
- USA
- SOUTH KOREA
- ROW
- AUSTRALIA
- CANADA
- CHINA
- EGYPT
- HONG KONG
- INDIA
- NEW ZEALAND
- PHILIPPINES
- SINGAPORE
- SOUTH AFRICA
- TAIWAN
- THAILAND
- UAE

SYSTEM UNIT
- Imperial
- Metric

BRIGHTNESS
- Auto activate: (On/Off)
- Auto brightness: (On/Off)
- Display brightness: control bar
- Keypad brightness: control bar
- Knob brightness: control bar
- Slider brightness: control bar
- Joystick brightness: control bar

VIBRATION
- Keypad: (On/Off)
- Touch screen: (On/Off)
- Thumb wheel: (On/Off)

CONTROLS
- Knob
- Slider
- Joystick
- Thumb wheel

KNOB
- Control: (Focus/ Iris/ Zoom/ Off)
- Knob direction: (Left/ Right)
- Limits (Motor limit/ Motor + ctrl limit/ Control limit)
- Pre-marked rings: (Plain/ 8"/ 12"/ 14"/ 20"/ 3'6"/ 0.20m, 0.25m/ 0.35m/ 0.5m/ 1m)
- Lock: (On/ Off)

SLIDER
- Control: (Focus/ Iris/ Zoom/ Off)
- Limits (Motor limit/ Motor + ctrl limit/ Control limit)
- Pre-marked strips: (Plain/ 22-2.8/ 22-2.0/ Close-1.0)
- Lock: (On/ Off)

JOYSTICK
- Control: (Focus/ Iris/ Zoom/ Off)
- Sensitivity: (Min/ Mid/ Max)
- Speed: control bar
- Lock: (On/ Off)

THUMBWHEEL
- Control: (Focus/ Iris/ Zoom/ Off)
- Direction: (clockwise/ counter cw)
- Menu direction: (clockwise/ counter cw)
- Axis ratio (1:4/ 1:3/ 1:2/ 1:1/ 2:1/ 3:1/ 4:1)
- Lock: (On/ Off)

LENS
- Load: list lens files
- Unload
- Create: lens wizard
- Edit: list lens files
- Delete: list lens files
- Import from USB (not FCS)
- Export to USB (not FCS)
- Lens view (Small, Medium, Large)
- Set iris
- Set zoom
- Send lens (not FCS)
- Circle of Confusion

Motors
- Calibration all
- Motor Settings
- Stealth mode: (On/Off)

MOTOR SET
- Axis: (Focus/Iris/Zoom)
- Direction: (Left/Right)
- Ramp: (Min/Short/Long/Max)
- Torque: (Min/Weak/Strong/Max)
- Calibrate

RANGE FINDER
- Offset: control bar
- Limits: (Limit max/Limit min)
- Sensitivity: control bar
- Autofocus: (On/Off)
- Laser pointer: (On/Off)
- Stealth mode: (On/Off)

FILTER
- Filter Mode
- Optical save range

BUTTONS
- User Button UB1
- User Button UB2
- User Button UB3
- Back Button BB1
- Menu Button MB1
- Menu Button MB3
- Touch Button TB1
- Touch Button TB2
- Touch Button TB3
- Touch Button TB4
- Touch Button TB5
- Touch Button TB6

RECORD BUTTON
- Record Button–REC, recording function: (On/Off),
  REC-Note: not implemented in Software menu options

MB2 *
- Permanently assigned: access to each submenu functions
  MB2-Note: Button MB2 is not implemented in the Button menu structure "BUTTONS"*

LIST FUNCTIONS
- Off
- Knob limits set
- Slider limits set
- Joystick limits set
- Focus calibration
- Zoom calibration
- Iris calibration
- Calibration all
- ZAP
- Joystick speed up
- Joystick speed down
- Autofocus
- Autofocus toggle
- Autofocus pinpoint
- System unit
- Stealth mode all
- Laser pointer
- Camera rec
- Lock knob
- Lock slider
- Lock joystick
- Lock thumb wheel
- Filter increase
- Filter decrease
- Cinefade set
- Load Lens
- Load premarked ring
- Load premarked strip
- Switch language
- Camera button 1
- Camera button 2
- Camera button 3
- Camera button 4
- Camera button 5
- Camera button 6

CAMERA
- Frame Rate
- Shutter
- ISO
- White Balance
- ND Filter
- Playback
- Camera Buttons
- *Note: Menu entries dependent of camera type*

ABOUT
- cPRO hand unit: info screen
- LBUS DEVICES: List LBUS DEVICES
- Firmware update
- LICENSES
- Factory reset

RESET
- All
- cPRO hand unit
- LBUS devices

Info on Display
- Press RESET for factory settings
- LBUS devices

FIRMWARE UPDATE
- cPRO hand unit
- LBUS devices: list LBUS devices

Infoscreen
- Info on Display

Info on Display
- Press Reset for factory settings

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:

<div align="center">

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

</div>

* 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:

<div align="center">

Radio
Unit (status)
Brightness
Vibration
Touch screen (status)
Thumb wheel (status)
Stealth mode all
Language

</div>

6.2.3.1.1. Radio

The radio menu consits of the following RF related settings:

<div align="center">

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

</div>

6.2.3.1.1.1. RF

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

Note: If the cPRO 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 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 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 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 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 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 and cPRO ONE hand unit. It also includes functions like auto brightness and auto activate.

The brightness menu consits of the following functions:

<div align="center">

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

</div>

*cPRO 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 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 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 all illuminated buttons individually. 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 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 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

6.2.3.1.4. Vibration

The vibration menu consits of the following functions:

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

6.2.3.1.5. Touch screen

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

Note: The touch screen will be locked for all main screen navigation only. Within the adjusement 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. Thumb wheel

The thumb wheel menu allows you to turn the thumb wheel on (unlock) or off (lock). A small red lock will be displayed in the status bar on all main screens. The letter "T" for thumb wheel will illuminate each time you turn the thumb wheel.

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 locked, press the home button twice.

NOTICE
If the thumb wheel and the touch screen is off (locked) 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.

6.2.3.1.7. Stealth mode all

The stealth mode all menu allows to turn the stealth mode on or off for all LBUS devices in the daisy-chain. If stealth mode is on, all LBUS devices on the camera side´s daisy-chain will turn their illumination off (e.g. if the camera angle is critical because of camera reflection in the picture).

6.2.3.1.8. 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.

<div align="center">

Knob
Slider
Joystick
Thumb wheel

</div>

6.2.3.2.1. Knob

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

<div align="center">

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

</div>

6.2.3.2.1.1. Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter) to the knob. If you select Off, the knob will have no control over any axis and will turn its marker ring illumination and 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 right / counter-clockwise.

6.2.3.2.1.3. Knob limits

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

<div align="center">

Motor limits
Motor + control limits
Control limits

</div>

Motor limits: This function spreads a predefined rotation of the focus 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 select one of five imperial and five metric pre-marked focus rings. Each ring is engraved with a scale from infinity to one of five 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

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

In order to use a pre-marked focus rings please proceed as follows:

- Calibrate the lens
- Load the corresponding lens file from the cPRO / cPRO ONE hand unit or cworld
- Choose the right pre-marked focus ring to match the close focus value of your lens.
- Enter the pre-marked rings menu and select the appropriate marker ring from the list

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 will be displayed in the status bar on all main screens. The letter "K" for knob will illuminate each time you turn the knob. The knob illumination will start flashing red, indicating that the knob is locked and no motor control is possible.

6.2.3.2.2. Slider

(cPRO 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) to the slider. If you select Off, the slider will have no control over any axis and will turn its marker strip illumination and 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 iris motor to the full 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 close or 22 to one of 3 open iris values. 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:

close - 1.0
22 - 2.0
22 - 2.8

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

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 be displayed in the status bar on all main screens. The letter "S" for slider will illuminate 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 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:

<div align="center">

Control (status)
Sensitivity
Speed
Lock (status)

</div>

6.2.3.2.3.1.   Control

The control menu allows you to assign the axis you want to control (Focus / Iris / Zoom / Filter) to the joystick. If you select Off, the joystick will have no control over any axis and will turn the illuminated position inticator 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 be displayed in the status bar on all main screens. The letter "J" for joystick will illuminate 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) to the thumb wheel. If you select Off, the thumb wheel will have no control over any axis but will be available for regular menu navigation.

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 45 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 (e.g. if shooting with a locked off camera if the thumb wheel is assigned to any controlling axis or in order to prevent accidental menu navigation).

A small red lock will be displayed in the status bar on all main screens. The letter "T" for thumb wheel will illuminate 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.

6.2.3.3. LENS

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

<div align="center">

Load
Unload
Create
Edit
Delete
Import from USB
Export to USB
Lens View
Set iris
Set zoom
Circle of confusion

</div>

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 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 or cPRO ONE hand unit's internal memory. Up to 30 lens files can be stored internally.
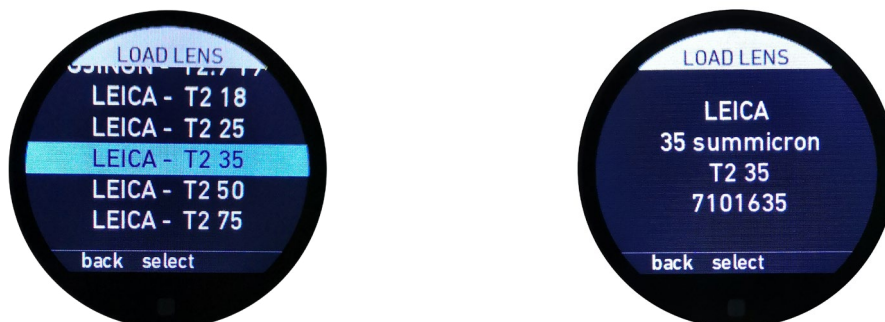
If you select a lens file form the dynamic list by pressing select, detailed lens file information will show up on the following screen. If you press select again or make a short tap on the touch screen, the lens file will be loaded without further confirmation required. If you want to choose a different lens file than the one shown in the details screen, simply press back or swipe right to return to the lens file list.

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

Note: If you have 2 cPRO hand units working in the same wireless network, and you load a lens file on one hand unit, this lens file will transfer "temporarily" to the second hand unit automatically. Power cycling the second hand unit will delete this temporary lens file.

6.2.3.3.2.   Unload

The unload menu allows you to unload an already loaded 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 th motors calibrated range.

6.2.3.3.3.   Create

The Create menu allows you to create a lens file using the cPRO 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 56 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.

6.2.3.3.3.1. 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 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

6.2.3.3.3.2.   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.

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

6.2.3.3.3.3.   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.

6.2.3.3.3.4.   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.

6.2.3.3.3.5. 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, an imperial scale, or a scale for both imperial and metric.

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

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

6.2.3.3.3.6. 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 each 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.

6.2.3.3.3.7. 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. You can also reposition the mark by moving 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.

6.2.3.3.3.8.   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.

As long as a value is highlighted in yellow, you can delete it by pressing UB2. You can also reposition the mark by moving 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.

6.2.3.3.3.9. 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. But you can also reposition the mark 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.

6.2.3.3.3.10.   Save

As soon as at least one value is set per scale, the "save" icon will illuminate white. Press MB2 to save the lens file to the internal memory of the cPRO 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.

6.2.3.3.4. Edit

The edit menu allows you to edit existing lens files on the cPRO 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.

Press "next" (MB3) to select the lens file you want to edit. Press "back" (MB1) if you want to select a different lens file.

If the lens file you have selected does not match the motor calibration range, or e.g. you select a prime lens and 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.

For additional information on the "edit lens" procedure, please refer to section "6.2.3.3.4. Edit" on page 56 in this manual.

6.2.3.3.5.   Delete

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

Once selected from the dynamic list, the 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: Press UB3 while in the dynamic list to show detailed lens file information. Press UB3 again to return to the dynamic lens file list.

6.2.3.3.6.   Send lens

The send lens option allows you to transfer any lens file to a second cPRO or cPRO ONE hand unit in the same wireless network. This lens file will be saved to the second hand unit's internal memory automatically.

Scroll through the dynamic list and select the lens file you want to transfer. Press "select" (MB2) to send the lens file to the second hand unit in the network. A pop-up screen will confirm "lens sent" as soon as the lens file has been transferred successfully.

6.2.3.3.7.   Import from USB

The import from USB menu allows you to import lens files (.cml) from an archive to the cPRO 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 or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

Once selected from the dynamic list, the lens file will turn green. You can select or unselect multiple lens files one after another or select and unselect all. Press import 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 or cPRO ONE hand unit's internal memory will be imported.

6.2.3.3.8. Export to USB

The export to USB menu allows you to export lens files (.cml) from the cPRO 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 or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

Once selected from the dynamic list, the 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).

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

6.2.3.3.9. 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

6.2.3.3.10. Set iris

The set iris menu allows you to enter a fixed iris value if no iris motor is connected, in order to allow valid lens data calculation.

Note: A lens file including a valid iris scale 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.

6.2.3.3.11. Set zoom

The set zoom menu allows you to enter a fixed zoom value if no zoom motor is connected, in order to allow valid lens data calculation.

Note: A lens file including a valid zoom scale 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.

6.2.3.3.12. Circle of confusion

The circle of confusion menu allows you to enter a value depending on your cameras sensor size and image format, in order to allow valid lens data calculation. The circle of confusion (CoC) is used to determine depth of field.

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

6.2.3.4. MOTORS

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

<div align="center">

Calibration all
Motor settings
Stealth mode

</div>

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 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

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

6.2.3.4.2.1.   Axis

The axis menu allows you to change the motor assigment to focus, iris or zoom.

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.

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 of the system and can place stress on the lens. Only increase the torque as much is necessary, in order 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 on 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 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

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 fiter. These are

VariND mode
RotaPola mode
Cinefade mode

NOTICE
A cPRO lens control system is required to allow remote variable ND function, remote variable polariser function or 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 or cPRO ONE hand unit. In standalone mode, the integrated buttons allow precise control over the ND gradient between ND0.4 and ND2.7. This helps save time and effort when compared with changing traditional ND filters. In wireless mode, the cPRO 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 oe 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 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. The cmotion Cinefade VariND filter has to be paired with an LBUS compatible iris motor. Through the cPRO or cPRO ONE hand unit, depth of field can be channged 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:

<div align="center">

Frame Rate
Shutter
ISO
White Balance
ND Filter
Playback
Camera Buttons

</div>

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

Control Features*

	ARRI Alexa Mini / Mini LF / AMIRA	ARRI Alexa EV	ARRI Alexa Plus	RED DSMC-1 / DSMC-2	SONY VENICE (MPC-3610) with SW V4.0 regular camera mode	SONY VENICE (MPC-3610) with SW V4.0 RCP Mode	SONY PMW F5/F55
Cable	[K2.0015756] Cable CAM (7p) - EXT (6p)	[K2.0015755] Cable CAM (7p) - EXT (16p)	[C0XE-K07] Cable CAM (7p) - LCS (Fi 5p)	[K2.0015758] Cable CAM (7p) - RED CTRL/D-Tap	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)
Frame Rate	x	x	x	x	x	x	x
Shutter Speed	x	x	x	x	-	-	x
ISO	x	x	x	x	-	x	x
White Balance	x	x	x	x	-	x	x
ND Filter	x	-	-	-	x	x	x
Playback	x	-	-	x	x (no clip list handling)	x (no clip list handling)	x (no clip list handling)
Playback (Next/Previous)	x	-	-	x	x	x	x
Playback (FFW/JOG)	x	-	-	x	x	x	x
Camera User Buttons	6 (WCU-4 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 Mini / Mini LF / AMIRA	ARRI Alexa EV	ARRI Alexa Plus	RED DSMC-1 / DSMC-2	SONY VENICE (MPC-3610) with SW V4.0 regular camera mode	SONY VENICE (MPC-3610) with SW V4.0 RCP mode	SONY PMW F5/F55
cable	[K2.0015756] Cable CAM (7p) - EXT (6p)	[K2.0015755] Cable CAM (7p) - EXT (16p)	[C0XE-K07] Cable CAM (7p) - LCS (Fi 5p)	[K2.0015758] Cable CAM (7p) - RED CTRL/D-Tap	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)	[C0XE-K08] Cable CAM (7p) - Sony Remote (Hi 8p)
Remaining Playtime	x	x	x	x	-	-	-
Clip name	x	x	x	x	-	-	-
Clip list handling	x	x	x	x	-	-	-
Trackinfo	x	x	x	x	-	-	-
Playback position	x	x	x	x	-	-	-

* license key required

x = 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

SONY VENICE (MPC-3610) with SW V4.0 allows 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.

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. 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. For further information, please refer to the corresponding camera manual.

Depending on the camera settings, shutter speed or shutter angle will be displayed on the cPRO / 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. For further information, please refer to the corresponding camera manual.

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.

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.

The 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).

Note: In order to trigger the camera user button, you must assign a cPRO user button to camera button 1-6.

NOTICE
For ARRI cameras the WCU-4 user buttons 1-6 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 70 in this manual).

6.2.3.7. RANGEFINDER

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

<div align="center">

Offset
Limits
Sensitivity
Autofocus (status)
Laser pointer
Stealth mode

</div>

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 usning the thumb wheel. Confirm your settings 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 be active in this range only.

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 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 be adjusted permanently until turned off again.

Autofocus can be activated through a cPRO 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 70 in this manual)

Note: In order to use autofocus with a cPRO 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 46 in this manual or to the cworld user guide.)

6.2.3.7.5. 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 one minute 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 or cPRO ONE hand unit user function 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 70 in this manual.)

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

6.2.3.8. BUTTONS

The buttons menu allows you to assign user functions to any assignable user button on the cPRO or cPRO ONE hand unit. Once a user function is assigned to a button, the button will illuminate and the buttons assignment 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. In addition to the hardware user buttons, cPRO 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, illuminate once assigned to a user function.

6.2.3.8.1. Assignable user buttons

Assignable user buttons	User button functions
UB1	Off
UB2	Knob limits set
UB3	*Slider limits set
	*Joystick limits set
BB1	Focus calibration
	Iris calibration
MB1	Zoom calibration
MB3	Calibration all
	*ZAP
TB1	*Joystick speed up
TB2	*Joystick speed down
TB3	Autofocus press
TB4	Autofocus toggle
TB5	Autofocus pinpoint
TB6	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
*cPRO hand unit feature only, not available for cPRO ONE hand unit	Switch language
** available with cmotion Cinefade VariND only	Camera button 1-6

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
Knob limits set	please refer to section "6.2.3.2.1.3. Knob limits" on page 40 in this manual

User button function	Description
*Slider limits set	please refer to section "6.2.3.2.2.2. Slider limits" on page 42 in this manual
*Joystick limits set	sets motor + control limits to the axis controlled by the joystick (electronic hard stops)
Focus calibration	calibrates the focus motor only
Iris calibration	calibrates the iris motor only
Zoom calibration	calibrates the zoom motor only
Calibration all	calibrates all connected motors at once
*ZAP	sets the joystick speed to maximum as long as the button is being pressed
*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)
Autofocus 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.
Autofocus 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
Autofocus 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 passed the measured position regains manual focus control.
System unit	changes the scale units between imperial or metric
Steath mode all	turns the illumination of all LBUS devices on the camera side off or on
Laser pointer	turns the laser pointer on as long as the button is being pressed
Camera rec	starts and stops the camera
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
**Filter increase	increases the cmotion Cinefade VariND filter by ND0.1 in VariND mode and 5° in RotaPola mode
**Filter decrease	decreases the cmotion Cinefade VariND filter by ND0.1 in VariND mode and 5° in RotaPola mode
**Cinefade set	sets the Cinefade start exposure
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
Switch language	switches the language between English and Chinese
Camera button 1-6	triggers the assigned camera feature on the camera

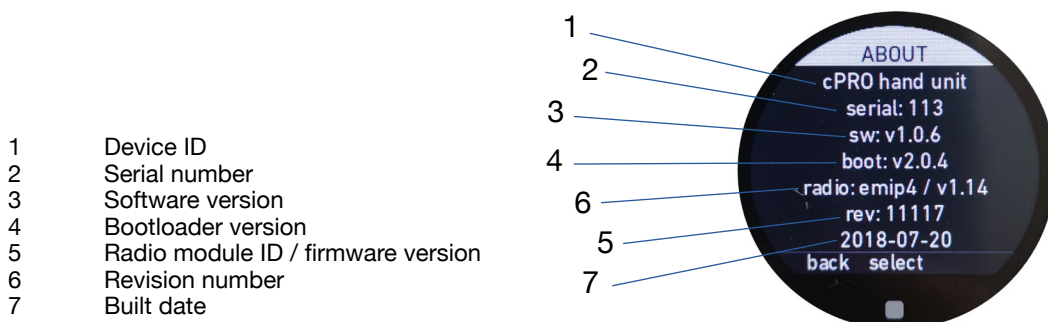*cPRO hand unit feature only, not available for cPRO ONE hand unit

** available with cmotion Cinefade VariND only

6.2.3.9.   ABOUT

The about menu displays information about the current firmware installed on the cPRO 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 ONE hand unit
LBUS DEVICES
Firmware update
Factory reset

6.2.3.9.1.   cPRO hand unit / cPRO ONE hand unit

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 cPRO / cPRO ONE hand unit's ABOUT menu shows you all relevant data about your cPRO 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
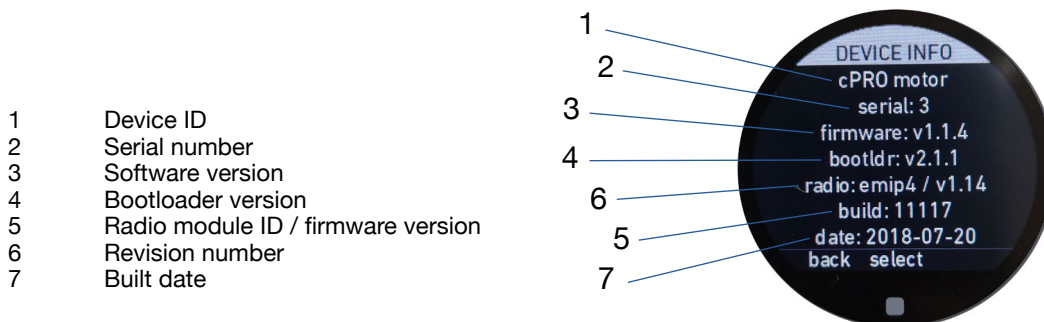
The LBUS device ABOUT menu shows you all relevant data about the connected LBUS devices. Please select the LBUS device form the dynamic list of devices you want more information on.

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 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 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 or cPRO ONE hand unit. The USB drive will be recognized and mounted automatically.

Please select cPRO / 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 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 form the USB drive which 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 will procceed in various steps if required updating your main software, your radio module and your bootloader software. Once finished the cPRO / cPRO ONE hand unit or the connected LBUS device will restart automatically.

NOTICE
Please ensure the battery of the cPRO / 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 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. This feature is available for both new and existing cPRO systems and can be purchased in the form of a license. For further information on available camera control packages and features, please refer to www. cmotion.eu and to section "6.2.3.6. CAMERA" on page 64 in this manual.

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

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

1. Which camera control licence you would like to buy

2. Whether you already have the corresponding camera control cable

3. The serial number of your cPRO / cPRO ONE hand unit.

Once your order is processed, our service team will create your individual licence key and send it by email or install it on your hand unit in cases of a new system order.

Activate camera control:

To activate camera control on your hand unit, please follow these instructions:

1. Ensure your cPRO/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. Software packages are available to download from www.cmotion.eu/service_download.

For further information on how to update software on your cPRO 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 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.
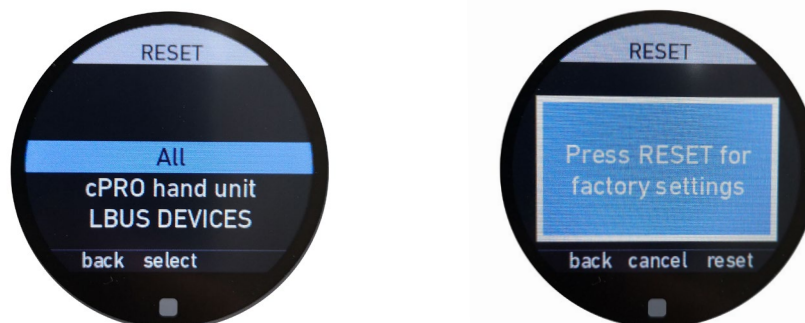
3. Go to ABOUT/LICENSES and select the license key file for the corresponding hand unit.

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

3. Please double check if the license is applied correctly in ABOUT/cPRO hand unit.

6.2.3.9.5.   Factory reset

The factory reset menu allows you to reset the cPRO 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 and the cPRO / cPRO ONE hand unit. Select cPRO / cPRO ONE hand unit if you want to reset the cPRO / 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 in order to reset the selected device or back / cancel in order to cancel the procedure.

When performing a factory reset on the cPRO 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 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 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 system

7.1. using the cPRO motor

camera   12V battery

cPRO hand unit

wireless RF connection

LPS-7 cable
(Lemo 4p to Anton Bauer Dtap)
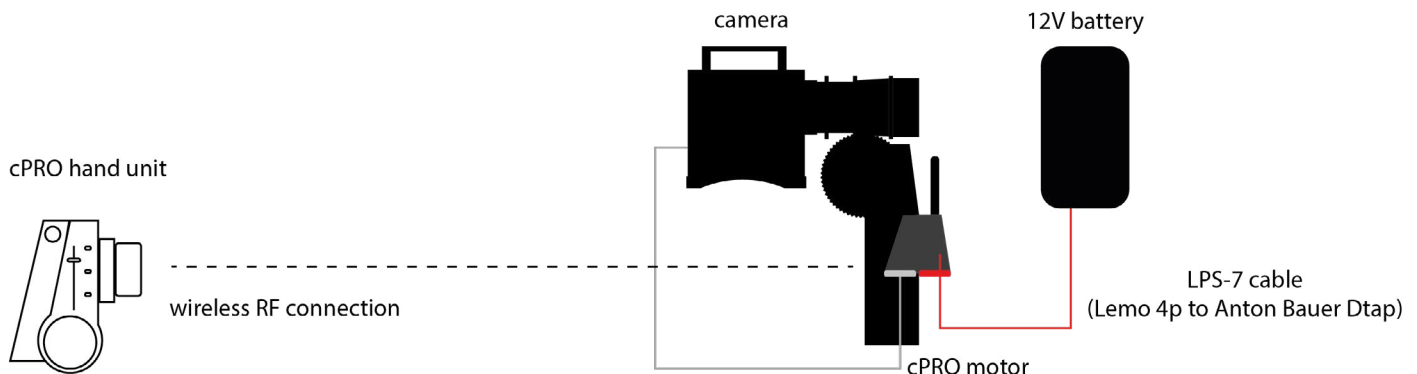
cPRO motor

7.1.1.   Mounting and connecting cables:

- mount the cPRO motor on a 15mm / 19mm support rod and engage it with the lens (please refer to the cPRO motor manual)
- mount the cforce motors on the 15mm /19mm support rod and engage with the lens (please refer to the cforce motor manual)

Note: Up to 2 additional cforce motors can be daisy-chained using any LCB cable from one motor to the other.

- 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 / cPRO ONE hand unit and cPRO motor

7.1.2.1.   Establishing a wireless RF connection

- turn on the cPRO / cPRO ONE hand unit by pressing the HOME button
- select the same RF channel on the cPRO / cPRO ONE hand unit and the cPRO motor
  - **cPRO / cPRO ONE hand unit:** double press the HOME button to enter the adjust ment 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 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 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 ONE hand units you want to connect to the network to the same radio channel as the cPRO motor. Once a cPRO / cPRO ONE hand unit is set to the same radio channel like the cPRO motor, the device will connect automatically. Up to 2 cPRO / cPRO ONE hand units can be connected to a cPRO motor at a time wirelessly. Additional LBUS control devices like e.g. a 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 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

- 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 ONE hand unit functions „calibrate" e.g. double press the HOME button to enter the adjust ment menu; go to MOTORS / Calibrate all)
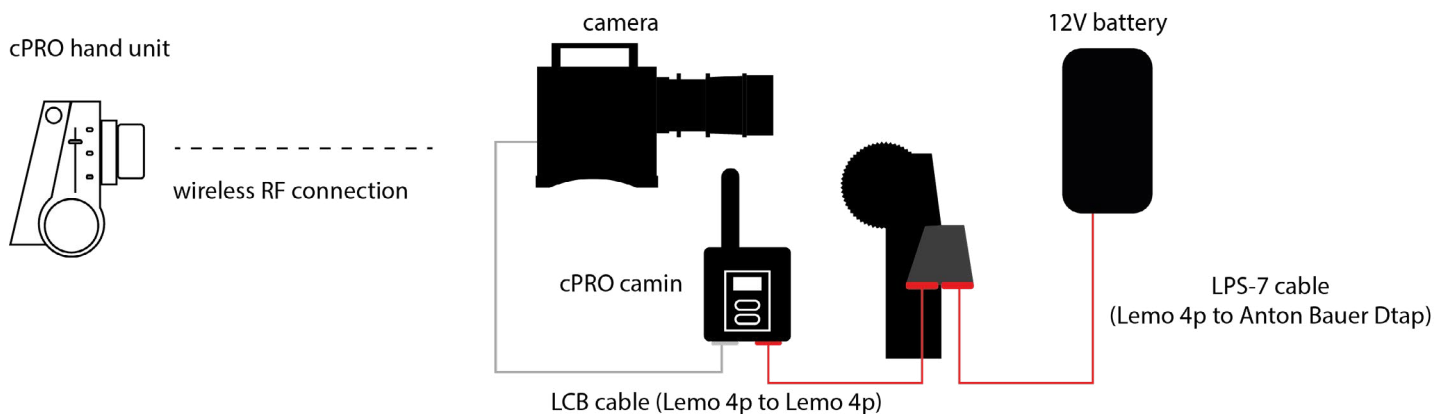
⚠ CAUTION!
Risk of injury! Do not touch the motor gear while motor is powered up!
This device is not intended for use by children. Keep body parts out of the motion path.
Disconnect the plug if the device is not used for a longer period of time.
IEC 60417-6056 (2011-05) for other moving parts

7.2.   using the cPRO camin with cforce motors

cPRO hand unit

camera

12V battery

wireless RF connection

cPRO camin

LPS-7 cable
(Lemo 4p to Anton Bauer Dtap)

LCB cable (Lemo 4p to Lemo 4p)

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 rods and engage them with the lens (please refer to the cforce motor manual)

Note: Up to 3 cforce motors can be daisy-chained using LCB cables from one motor to the other.

- 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 to the cPRO camin

7.2.2.   Setting up cPRO / cPRO ONE hand unit and cPRO camin

7.2.2.1.   Establishing a wireless RF connection

- turn on the cPRO / cPRO ONE hand unit by pressing the HOME button
- select the same RF channel on the cPRO / cPRO ONE hand unit and the cPRO camin
  - **cPRO / 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 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 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 ONE hand units you want to connect to the network to the same radio channel as the cPRO camin. Once a cPRO / cPRO ONE hand unit is set to the same radio channel like the cPRO camin, the device will connect automatically. Up to 2 cPRO / cPRO ONE hand units can be connected to a cPRO camin at a time wirelessly. Additional LBUS control devices like e.g. a 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 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

- 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 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 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
- 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. Power connection and disconnection

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 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 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 using the NP-FM500H battery, do not disassamble, crush, puncture short external contacts or dispose off fire and water.

⚠CAUTION!
Only the originally supplied battery should be used with the cPRO / cPRO ONE hand unit.

Radio system:

The cPRO / cPRO ONE hand unit contains a radio unit that enables wireless lens control with a red coded radio module. A red ring at the base of the antenna mount on both the cPRO motor and cPRO camin identifies 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

Channel	Frequency
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 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

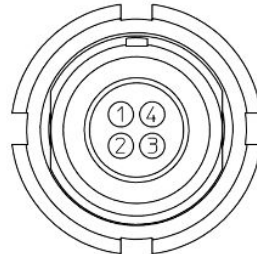## Dimensions:
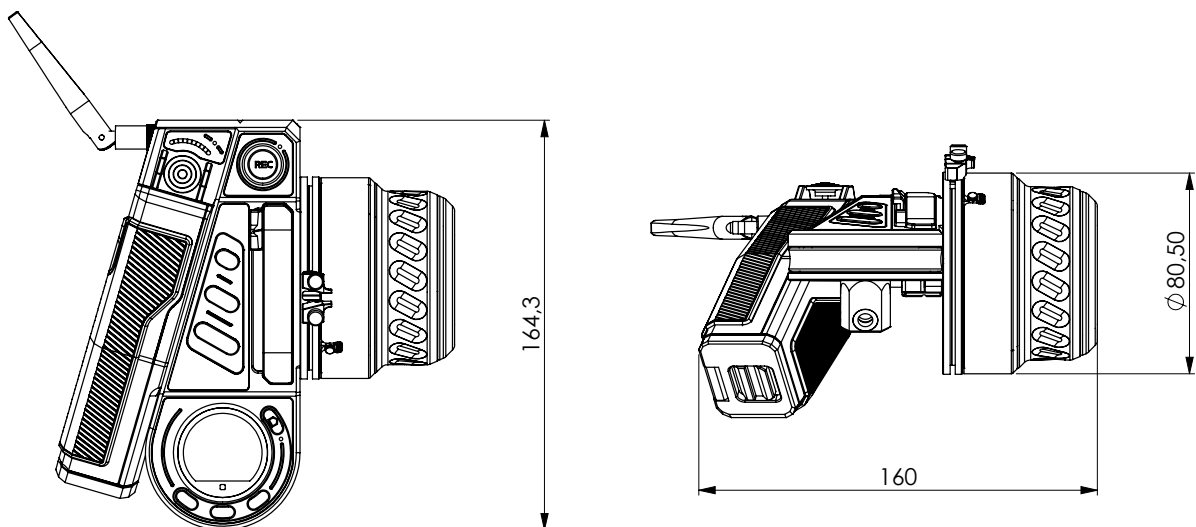
Weight:

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

10.4. Pinouts

The cPRO and cPRO ONE hand unit 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

The cPRO / cPRO ONE hand unit basic set includes:

- cPRO 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 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

Radiall/Larsen K2.0002007 Dipole / Reverse SMA

Wanshih 50.0013627 Dipole / Reverse SMA

Proant K2.0001996 Dipole / Reverse SMA

Nearson O5.20112.0 Dipole / Reverse SMA

Accessories: The following accessories are compatible with the cPRO / cPRO ONE hand unit: * is not comatible with 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 T 22-2.8 for cPRO hand unit
*K2.0019838	pre-marked iris strip T 22-2.0 for cPRO hand unit
*K2.0019837	pre-marked iris strip close- T 1.0 for cPRO hand unit

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 / AMIRA and SONY VENICE 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 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 Epic DSMC-2 and RED Weapon 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.

    *RED camera control license required

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

Connects cPRO motor and camin to the ARRI AMIRA / ALEXA Mini or 3rd-party 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 cameras and D-Tap power source.
Provides camera RUN/STOP function and tally.

C0XE-K08   Cable CAM (7p) - Sony Remote (8p) / D-Tap

Connects cPRO motor and camin to Sony F5/F55/Venice 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 and camin to LBUS devices or LBUS power source.

Provides power to LBUS daisy chain or LBUS device features an cPRO hand unit.
Note: REQUIRED for cPRO motor / camin firmware update.

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.

10.6. Cleaning and maintenance

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

The cPRO 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 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**
    Wiedner Hauptstraße 135/B3
    1050 Vienna / Austria
    http://www.cmotion.eu
    sales@cmotion.eu
    Service Hotline: +43 1 7891096

2. **camadeus Film Technologies, Inc.**
    314 N. Victory Blvd.
    Burbank, CA 91502
    http://www.camadeus.com
    contact@camadeus.com
    Service Hotline: +1 (321) 345-6765

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

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

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