cfinder III User Guide

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Imprint & Disclaimer
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1. General information and safety precautions

1.1. General information

Dear customer, we would like to take this opportunity to thank you for purchasing cfinder III.
Please read this user manual carefully and keep it available for future reference.
cfinder III has been tested for manufacturing quality and operating functions carefully before leaving our hands. In order to allow smooth performance, it is essential that you make yourself familiar with this user manual and that you follow the operating instructions as described.
Any violation of these instructions could cause serious injuries and damage to the system or to other connected devices.

 **Warning:**
cmotion can guarantee successful performance only if original cmotion components and accessories are used.

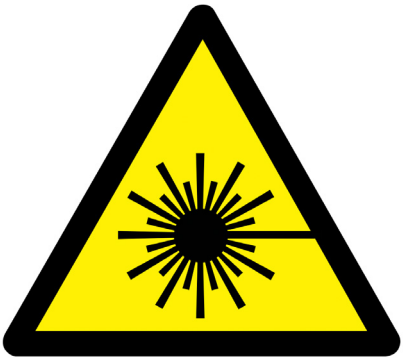
Note:
If you have any questions, or you need to order parts, please note the component´s model and serial number. This information can be either found on the cmotion product label or within the system‘s “about“ menu.
For support requests, please supply the installed firmware number of all system components referring to the component‘s “about“ menu.

Please visit http://cmotion.eu/show/support for up-to-date product information and software updates regularly.

1.2. General safety precautions

- Do not put anything near the motors while motors are moving!
- Make sure all components (cfinder III, camin, lens motors, etc.) are mounted securely!
- Remove batteries from components before transportation or storage!
- Never open the product. Repairs should be done by authorized service centers only!
- Use original cmotion replacement parts only!
- If operating in wet weather, general safety precautions for handling electrical equipment in wet weather conditions should be taken!
- Always protect the product from moisture, cold, heat, dirt, vibration, shock or aggressive substances!
- Do not remove any screws which are secured with screw lock!
- Do not remove any warranty seals!

1.3. Safety precautions using class 1 and class 2 lasers



cfinder III uses an invisible class 1 laser for distance measurement and a visible class 2 laser as a pointer (alignment laser). The invisible class 1 laser used for measuring is based on the norm EN 60825-1:2015. Therefore, it will not cause any damage to the human eye. The visible class 2 alignment laser is equivalent to the norm IEC825-1/DIN EN 60825-1:2015 and similar to a laser class 2 based on FDA 21 CFR.
Damage to the human eye is possible if exposed directly for an extended period of time. Whenever the eye is exposed to this laser, the body's natural reflex is to close the eyelid as quickly as possible. However, this reflex can be affected by pharmaceuticals, alcohol or drugs. Under regular working conditions no additional safety precautions are necessary. Do not stare into any laser radiation source(s) or shine into the eyes of others. It is safe to view a diffuse-reflected beam.

Do not dismantle the unit in any way. Doing so may expose laser radiation in excess of class 1, class 1M, class 2 or class 2M limits respectively.

Warning:
Always avoid direct eye contact with the beam of the red alignment laser. Staring into the visible class 2 laser may cause permanent eye damage.

Note:
Depending on camera manufacturer and in rare disadvantageous angle where the measuring laser could bounce back into the lens if shooting reflective surfaces, the reflection of the invisible class 1 laser´s measusring spot might be visible in camera.

2. Component overview

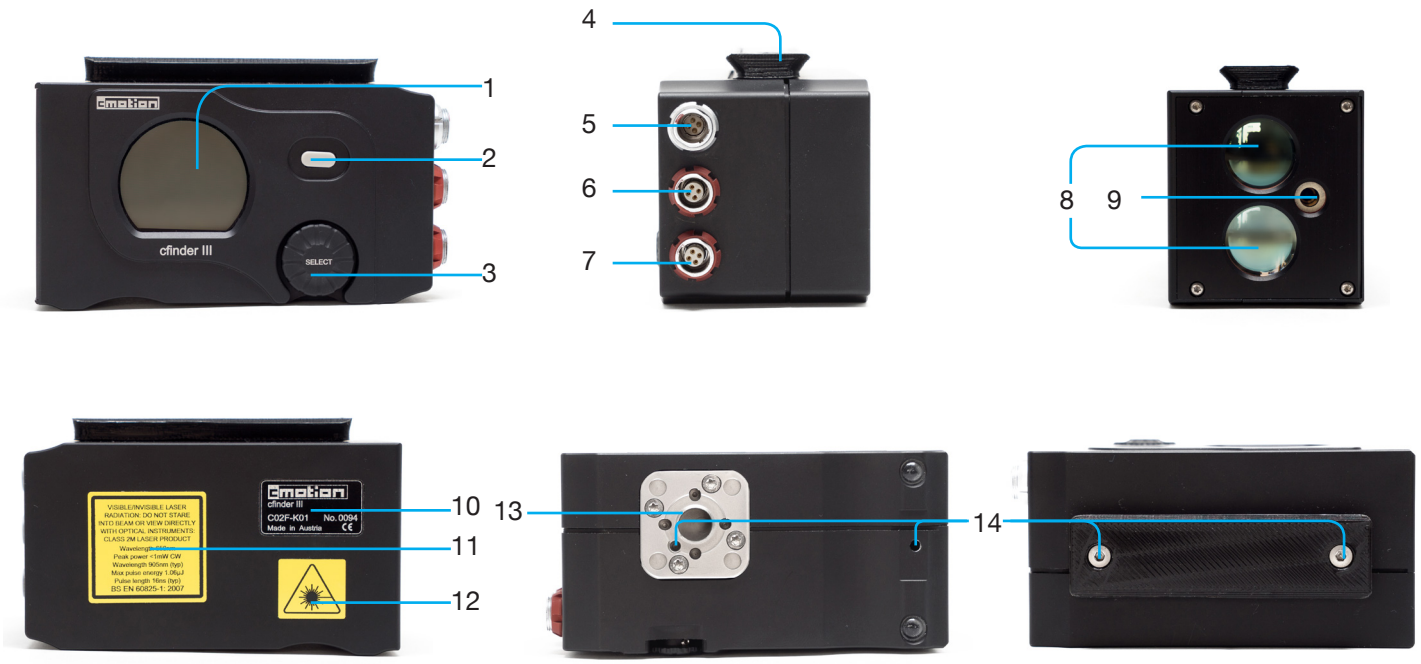
2.1. cfinder III

2.1.1. Main component overview

cfinder III is an optical distance measurement tool that works with an invisible class 1 laser. The laser has a measurement range of 1 m – 150 m (approx. 3.3 – 492 ft) and an accuracy range of less than +/- 5 cm (approx. +/- 2 inches) (depending on environmental conditions / target surface, color and reflectivity).
A visible class 2 laser (alignment laser) is used to visualize the relative position of the invisible class 1 laser‘s measuring spot.

Image 1: cfinder III main body

2.1.2. Detailed Component Description



Pos	Description
1	display
2	user button
3	menu selection wheel
4	NATO rail
5	serial connector to connect 3rd party equipment
6	LBUS connector to connect LBUS capable peripheral devices or power supply
7	LBUS connector to connect LBUS capable peripheral devices or power supply
8	measurement laser (invisible class 1 laser for distance measurement)
9	alignment laser (visible class 2 laser as a pointer, representing the invisible measurement laser)
10	cmotion product label including product ID and serial number
11	laser type label
12	laser safety label
13	mounting cube with 3/8” UNC-16 bushing
14	M3 bushing for NATO rail (Allen key, size 2mm required)

2.1.4. Technical specifications

Power supply:	7,5 - 35 V DC
Power consumption:	max. 4 W
Weight:	538 g (1.19 lbs), with reflector sight; 331 g (0.73 lbs), without reflector sight
Dimensions:	101 x 52 x 56 mm (3.97 x 2.05 x 2.21 inches), without reflector sight
Display size:	31 x 26 mm (1.22 x 1.02 inches)
Display resolution:	240 x 206 px
Temperature range:	-10°C to +60°C
Laser type / Wavelength:	Laser diode λ 655 nm & 905 nm
Op.mode/ Power:	cw (655 nm), pulsed (905 nm)
Pmax:	<0,6 mW (655 nm) 306 nJ/Pulse (905 nm)
Measuring range:	1 - 150 m; approx. 3.3 - 492 ft (depending on environmental conditions / target surface, color and reflectivity)
Accuracy:	+/- 5 cm; approx. +/- 2 inches (depending on environmental conditions / target surface, color and reflectivity)
Speed of measurement:	300x / second

Laser divergence:

dist (m)	beam size: width x height (mm)
0	18.0 x 18.0
10	42.7 x 19.2
50	141.5 x 24.2
100	264.9 x 30.4
150	388.4 x 36.5

Interfaces: 2x LBUS interface, 1x serial interface

Norms / Regulations:

ISO IEC EN	60 825-1:2015
FDA ANSI	21 CFR 1040
EU or national	EU directive 2006/25/EC // OStrV 2010-07 // TROS-Laser

Classification

Operating mode / Condition	Normal operation	Teaching / Service	Maintance / Repair
Applies to	User	User	Manufacturer
Satisfies the conditions of laser class	2	2	3B
Eye safety confirmed	YES	YES	only with PSE
Laser safety officer	NO	NO	YES
Laser safety goggles	NO	NO	YES

2.1.3. System requirements

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

Product	**Firmware**
cvolution camin 2M	cvolution-caminbasic-3.11.30 or higher
cvolution camin 3M	cvolution-camin3m-3.11.25 or higher
cvolution camin 4M	cvolution-caminbasic-3.11.30 or higher
cvolution camin 8M	cvolution-caminbasic-3.11.30 or higher
cvolution hand unit*	cvolution-handunit-3.11.29 or higher
compact hand unit**	compact-2017_01 or higher
cworld ***	cworld-v1.6.0 or higher
cdistance	cdistance-3.8.4 or higher
ARRI Alexa Plus	available with ARRI software release from Q1 2017
ARRI Alexa Mini	available with ARRI software release from Q1 2017
ARRI UMC-4	available with ARRI software release from Q1 2017
ARRI AMC-1	available with ARRI software release from Q1 2017
ARRI WCU-4****	available with ARRI software release from Q1 2017

* works in combination with cvolution camin 2M, 3M, 4M or 8M only
** works in combination with compact LCS camin and cdistance only (limited functions)
*** works in combination with cvolution camin 2M, 3M, 4M, 8M or compact LCS camin
**** works in combination with ARRI Alexa Plus, Alexa Mini, UMC-4 or AMC-1 only

2.2. Reflector sight

2.2.1. Main component overview

The reflector sight uses a small light which is projected onto a curved semi-transparent mirror. From there the light is reflected towards the operators eye. The reflector sight can be attached to the NATO rail of cfinder III easily (Allen key, size 3 mm required). For further operation the target mark (red/green spot) of the reflector sight needs to be aligned to the measuring laser which is represented by the visible alignment laser of cfinder III. After alignment the operator can target and track objects easily referring to the superimposed marker within the reflector sight while filming.

Image 2: Reflector sight

Image 3: Reflector sight mounted on cfinder III

Note:
This red/green spot reflected from the semi-transparent mirror is not harmful to the human eye and can be watched without any safety precautions.

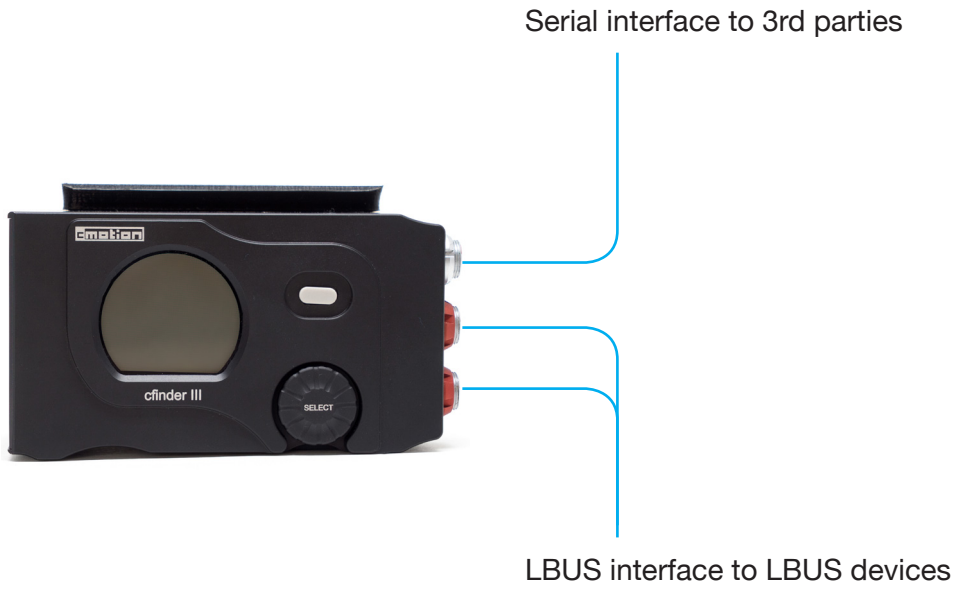
2.2.2. Detailed component description (Image 2: Reflector sight)

1. tilt adjustment wheel with protective cap (flathead screwdriver required)
2. pan adjustment wheel with protective cap (flathead screwdriver required)
3. rotary switch to activate target mark
   - •at position “G“ the target mark is off
   - •turn the rotary switch clockwise to activate GREEN target mark in 1-5 light intensities
   - •at position “R“ the target mark is off
   - •turn the rotary switch clockwise to activate RED target mark in 1-5 light intensities
4. NATO rail slide mount using M4 screws (Allen key, size 3 mm required)

Battery:
The target mark of the reflector sight is powered by a 3 V lithium coin style battery (CR 2032). Replace the battery if the target mark dims or does not light up at all. To install the battery, unscrew the battery cap on top of the rotary switch and insert the battery with the positive terminal facing up. Screw the battery cap back on again.

Note:
Always remember to turn off the target mark of the reflector sight (position “G“ or “R“) once you are finished using it.

3. System environment overview



Serial interface to 3rd parties

To ARRI ALEXA Plus via UDM to ALEXA cable (K2.65261.0)
To ARRI ALEXA Mini* only available via LCUBE at time of writing

- connect serial connector of cfinder III via UDM to UMC/CUB-1 cable (K2.65144.0) to serial connector of the LCUBE CUB-1
- connect LCUBE CUB-1 via LCB (Le m4p, Le m4p) cable to Alexa Mini

To ARRI UMC-4 via UDM to UMC/CUB-1 cable (K2.65144.0)

LBUS interface to LBUS devices

- To cvolution camin 3M via LCB (Le m4p, Le m4p) cable
- To cdistance via LCB (Le m4p, Le m4p) cable
- To Alexa Mini* through the end motor of the cforce motor daisy-chain connection via LCB (Le m4p, Le m4p) cable
- TTo cvolution camin 2M, 3M, 4M, 8M and cworld via LCB-7 cable (Le m4p, Le m8p)
- To cforce, cforce plus, cforce mini motor, via LCB (Le m4p, Le m4p) cable
- To power (LBUS power supply options can be found in the cmotion cable guide at www.cmotion.eu)

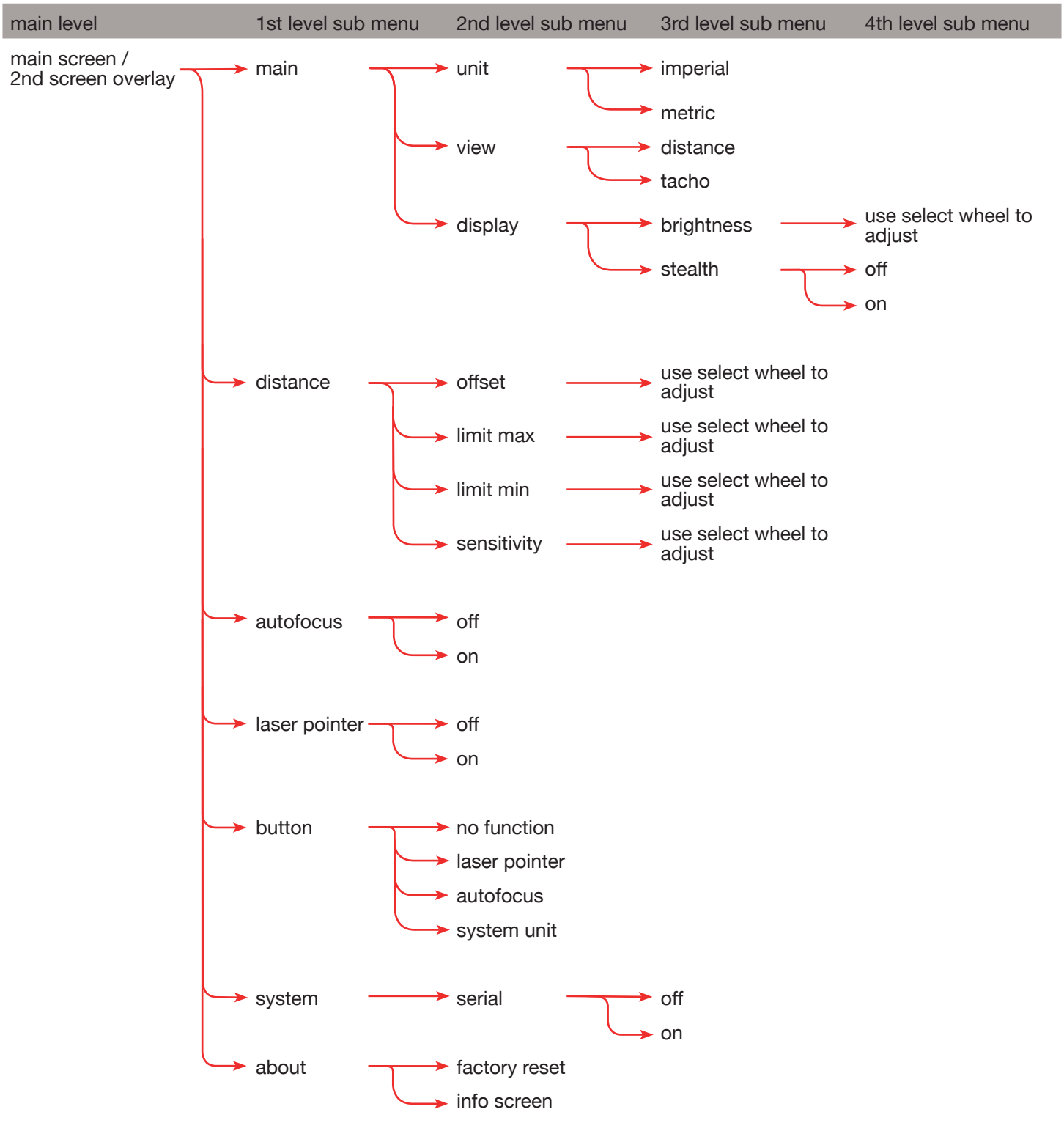
* direct compatibility with ARRI Alexa Mini through the LBUS protocol will be possible with ARRI Alexa Mini firmware released Q1 2017

4. System structure and navigation

4.1. General navigation

- double click selection wheel to enter menu
- rotate selection wheel clockwise / anti-clockwise to scroll up / down
- single click selection wheel to enter sub menus
- single click selection wheel to confirm selection
- press user button to cancel selection
- press user button to leave sub menu to the next higher menu
- press and hold user button to leave menu from the first level sub menu

4.2. Menu tree overview



4.3. Detailed menu functions

unit: - use selection wheel to choose between “imperial“ and “metric“ scale units

view: - use selection wheel to choose between “distance“ and “tacho“ view
distance view: - shows measured distance values only
tacho view: - if limits are set, tacho view visualizes limit range by a bright green scale
- a blue needle indicates the currently measured value

brightness: - use selection wheel to adjust display brightness

stealth: - use selection wheel to turn stealth mode “on“ or “off“
- stealth mode turns the display off once you exit to the main menu
- double click selection wheel to reenter menu and to turn display on again
- to leave stealth mode, select stealth mode “off“
- if the unit is powered down, stealth mode is set to “off“ as default

offset: - use selection wheel to enter the measured offset from the datum line of cfinder III to the sensor plane of the camera
- if cfinder III is mounted in front of the sensor plane, dial in positive values
- if cfinder III is mounted behind the sensor plane, dial in negative values

Note: Offset can be adjusted in increments of +/- 0,5cm (+/- 0.25 inches) up to +/- 50cm (+/- 20 inches)

limit max: - use selection wheel to enter a far distance limit
- if in AF mode, focus will not be adjusted for measurements beyond this limit

limit min: - use selection wheel to enter a close distance limit
- if in AF mode, focus will not be adjusted for measurements below this limit
Note: Please also refer to section 6.1.2. in this manual.

sensitivity: - use selection wheel to increase or decrease sensor sensitivity
- sensitivity adjusts the reaction behaviour of the readout on the display and the motor response
Note: The lower the sensitivity, the more stable the distance display and the smoother the motor movement. Please refer to section 6.1.3. in this manual.

autofocus: - use selection wheel to turn autofocus “on“ or “off“
- if turned on through cfinder III, activates autofocus permanently (other options are available using a cvolution hand unit, please refer to the latest cvolution user guide)

Note: In order to use autofocus with a cvolution system, a lens file needs to be loaded in the camin, 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 the cvolution user guide and the cworld user guide.

laser pointer: - use selection wheel to turn laser pointer “on“ or “off“
- laser pointer will turn off after 30 seconds automatically
- during those 30 seconds you can turn it off manually at any time by selecting “off“

button: depending on user requirements the user button can be configured to
- “no function“
- “laser pointer“, to activate the laser pointer by press and hold command
- “autofocus“, to activate and deactivate AF by single click command
- “system unit“, to change scale units between metric and imperial by single click command

serial out:	- use selection wheel to turn the serial interface output “on“ or “off“ - if cfinder III is connected through its serial interface with compatible 3rd party devices, turn the serial output “on“ - if cfinder III is connected through its LBUS interface using the LBUS protocol, turn the serial output “off“
factory reset:	- double click selection wheel to reset manufacturer settings
about:	- contains information about serial number, firmware version, boot loader version, hardware revision number and firmware build

Note: For any support requests please provide information listed in the about menu

4.4. Second screen overlay

Besides the main screen the display accommodates a second screen with additional information

- turn the selection wheel by one step in any direction to activate the second screen overlay
- turn the selection wheel by another step to deactivate the second screen overlay

Image 4: cfinder III main screen (tacho view)

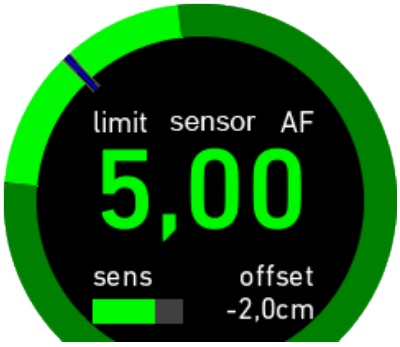


Image 5: cfinder III second screen overlay (tacho view)

limit:	indicates that a min or max limit is active, other than default values (limit min=0, limit max=inf)
AF:	indicates if autofocus is on or off
sens:	indicates how sensitivity is adjusted
offset:	displays the offset between the cfinder III‘s datum line and the camera‘s sensor plane
sensor:	lights up if no valid measurement is possible

Note:
Usually cfinder III covers a maximum distance of 150 m (492 ft). Depending on target surface, color or reflectivity, the measurement may be restricted. If no valid measurement is possible or target is out of range, the information “sensor“ will light up on the main and second screen overlay.

Ambient illumination does not affect the range of cfinder III. It works in bright sunlight as well as in complete darkness. Nevertheless weather phenomenons like heavy rain, snowfall or fog may reduce the maximum range of cfinder III and airborne particles may be detected as new targets.

5. System set-up and operation

5.1. Aligning the reflector sight to cfinder III using the internal target mark

1. mount the reflector sight to the NATO rail of cfinder III (Allen key, size 3 mm required)
2. remove the protective caps for the pan and tilt adjustment wheel of the reflector sight
3. activate a target mark by turning the rotary switch of the reflector sight
4. activate the alignment laser of cfinder III
5. turn the pan adjustment wheel (left/right) until the target mark matches the laser spot projected by the alignment laser horizontally (flathead screwdriver required)
6. turn the tilt adjustment wheel (left/right) until the target mark matches the laser spot projected by the alignment laser vertically (flathead screwdriver required)
7. replace on the protective caps for the pan and tilt adjustment wheel of the reflector sight

Note:
Projecting the alignment laser onto a target as far away as possible improves the alignment if tracking far distance objects. Nevertheless, aligning onto a far distance target creates a small vertical parallax between the target mark of the reflector sight and the actual position of the measuring laser spot of approx. 6,5 cm (approx. 2.5 inches) in close distance.

Due to light conditions the laser spot of the alignment laser might not be visible in far distance. In order to be independent of light conditions you can align the reflector sight using the sensor feedback of cfinder III or cdistance (if available). (please refer to section 6.2.1. in this manual)

5.2. Mounting cfinder III on the camera

Common fastening tools can be used to mount cfinder III to the camera. Optional fastening tools are available from cmotion.

- in order to avoid horizontal parallax, mount cfinder III centered along the optical axis, above or below the camera lens.
- in order to minimize vertical parallax, mount cfinder III as close as possible to the lens vertically

Note:
Minor horizontal or vertical offsets relative to the optical axis will not cause significant parallax hence measurement precision. Nevertheless, parallax may cause issues when tracking a precise object from far to close.

cfinder III can be mounted along the optical axis of the lens, behind or in front of the camera‘s sensor plane. This offset can be compensated using the offset function in the systems menu.

 **Warning:**
In order to allow smooth operation, the measuring laser should not be blocked by any camera parts or accessories. Especially if you want to cover a range from far to close distance, we recommend to mount cfinder III in line with the matte box.

5.3. Aligning cfinder III to the optical axis of the lens

5.3.1. Using the reflector sight

1. align the reflector sight to cfinder III (please refer to section 5.1. or 6.2.1. in this manual)
2. activate a target mark by turning the rotary switch of the reflector sight
3. activate a center cross on your camera
4. if using a zoom lens, zoom in all the way
5. aim your camera at a far-away target
6. slightly pan/tilt cfinder III until the target mark of the reflector sight matches the same point as the center cross on your camera

5.3.2. Using the alignment laser

1. activate the alignment laser of cfinder III
2. activate a center cross on your camera
3. if using a zoom lens, zoom in all the way
4. aim your camera at a far-away target
5. slightly pan/tilt cfinder III until the spot of the alignment laser matches the same point as the center cross on your camera

Note:

Due to light conditions the laser spot of the alignment laser might not be visible in far distance. In order to be independent of light conditions you can align cfinder III to the optical axis of the lens using its sensor feedback or the sensor feedback of cdistance (if available). (please refer to section 6.2.2. in this manual)

All methods described above are aligning the measuring laser to the center of the lens. Under certain circumstances you may want the measuring laser to be off center. If so, please align cfinder III accordingly.
Aligning onto a far distance object improves the alignment if tracking far distance targets. Nevertheless, aligning onto a far distance target creates a small vertical parallax between the center cross and the actual position of the measuring laser in close distance. Although this parallax will not have any significant effect on the measurement precision, it may cause issues when tracking a precise object from far to close.

5.4. Using cfinder III separate from the camera

cfinder III can be used on a tripod separate from the camera. In this configuration the operator can pan and tilt cfinder III independently from the camera to track a moving target. In order to give the operator reference of the lasers measuring spot you should use cfinder III with the reflector sight in this configuration only (please refer to section 5.1. or 6.2.1. in this manual).

Note:

The tripod does not need to be positioned in line with the film plane. This offset can be compensated using the offset function within the systems menu (please refer to section 6.1.1. in this manual). Although in this configuration the risk of vertical parallax can be eliminated by mounting cfinder III at the same height as the camera lens, keeping cfinder III as close to the lens as possible will reduce the risk of horizontal parallax.

6. Practical system operation

6.1. System settings

6.1.1. Offset

The offset function allows you to consider the difference between the mounting point of cfinder III and the sensor plane of the camera.

- measure the distance from the datum line of cfinder III to the sensor plane of your camera
- enter the measured distance into the cfinder III offset menu
  - if cfinder III is mounted in front of the sensor plane enter positive values
  - if cfinder III is mounted behind the sensor plane enter negative values

6.1.2. Limits

The limit function allows you to define your range of interest. If in AF mode, focus will be adjusted for this range only.

limit max:

- use selection wheel to enter a far distance limit
- if in AF mode, focus will not be adjusted for measurements beyond this limit

limit min:

- use selection wheel to enter a close distance limit
- if in AF mode, focus will not be adjusted for measurements below this limit

The second screen overlay will show “limit“ if any limits other than default values (limit min=0, limit max=inf) are set. Tacho view visualizes the set limit range by a bright green scale.

6.1.3. 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.

6.1.4. Autofocus

The autofocus function will seamlessly match distance measurement data from the cfinder III with lens data from the camin to control the focus scale of the lens automatically.
If autofocus “on“ is selected within the cfinder III menu, focus will be adjusted permanently until turned off again.
Autofocus can be activated through a cvolution hand unit as well. Using a cvolution hand unit various autofocus trigger options including toggle and mark are available. (For further information, please refer to the latest cvolution user guide)

Note:
In order to use autofocus with a cvolution system, a lens file needs to be loaded in the camin, 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 the cvolution user guide and the cworld user guide.

6.2. Practical Tips and Tricks

Due to light conditions the laser spot of the alignment laser might not be visible in far distance. In order to be independent of light conditions you can use the cfinder III sensor feedback to align the reflector sight to cfinder III as well as to align cfinder III to the optical axis of the lens. cdistance (if available) shows the same sensor feedback and can be used for these practical alignment methods as well.

6.2.1. Aligning the reflector sight to cfinder III using the sensor feedback

1. mount the reflector sight to the NATO rail of cfinder III (Allen key, size 3 mm required)
2. mount cfinder III onto a camera tripod
3. remove the protective caps of the reflector sight
4. activate a target mark by turning the rotary switch of the reflector sight
5. aim at a fixed horizontal and vertical target as far away as possible but within the range of cfinder III (e.g. aim the tip of a building against the sky)
6. pan the tripod head until the sensor does not get any feedback, measuring out of range (e.g. hitting the sky)
7. pan back slightly until you have a first measurement from the target (e.g. vertical edge of the building) and fix the pan axis of your tripod head
8. turn the pan adjustment wheel of the reflector sight (left/right) until the target mark matches your target horizontally (e.g. vertical edge of the building) (flathead screwdriver required)
9. tilt the tripod head until the sensor does not get any feedback, measuring out of range (e.g. hitting the sky)
10. tilt back slightly until you have a first measurement from the target (e.g. horizontal edge of the building) and fix the tilt axis of your tripod head
11. turn the tilt adjustment wheel of the reflector sight (left/right) until the target mark matches your target vertically (e.g. horizontal edge of the building) (flathead screwdriver required)
12. replace the protective caps of the reflector sight

6.2.2. Aligning cfinder III to the optical axis of the lens using the sensor feedback

1. activate a center cross on your camera
2. if using a zoom lens, zoom in all the way
3. aim at a fixed horizontal and vertical target as far away as possible but within the range of cfinder III (e.g. the tip of a building against the sky)
4. once the center cross of your camera is matching the horizontal and vertical edges of your target, lock your camera tripod
5. pan cfinder III until the sensor does not get any feedback, measuring out of range (e.g. hitting the sky)
6. pan cfinder III back slightly until you have a first measurement from the target (e.g. vertical edge of the building)
7. tilt cfinder III until the sensor does not get any feedback, measuring out of range (e.g. hitting the sky)
8. tilt cfinder III back slightly until you have a first measurement from the target (e.g. horizontal edge of the building)
9. Lock off the cfinder III fastening tool

6.3. Maintenance

If not in use, cfinder III should be kept in a clean and dry place.

The front lenses of cfinder III are optical elements and should be treated as such.
The lenses should be kept dry and dust free.
In order to avoid scratching the lenses always remove dust with compressed air before cleaning with a soft cloth.

In order to keep your unit up-to-date, please check cmotion website http://cmotion.eu/show/support regularly for the latest firmware updates available and also refer to section 7. in this manual.

Warning:
Dust particles or fingerprints may cause false or unstable readings.

Note:
cmotion can guarantee successful performance only if original cmotion components and accessories are used.

7. Updating firmware

In order to update firmware on cfinder III you need a compact hand unit or a cworld.
Please check cmotion website http://cmotion.eu/show/support for the latest firmware updates available.

7.1. Using cworld

- download the latest cvol-{date}_SW_package.zip file or directly download the latest cfinder3-{version}.cmf update fil
- unzip the cvol-{date}_SW_package.zip file
- copy the cfinder3-{version}.cmf update file onto an empty USB drive, formatted to FAT32
- connect cfinder III to cworld via LCB-7 cable (Le m4p, Le m8p)
- insert the USB drive into the USB port of cworld
- power and turn on both devices

connecting to cworld:

- switch on cworld Wi-Fi and wait for Wi-Fi LED to turn green
- search for the cworld network on your mobile device*
- select the default Wi-Fi network: cworld-XXX (serial number)
- enter default Wi-Fi password: CMcworld1
- open the browser** on your mobile device and search for the cworld application page: http//cworld.lan
- log in to cworld, as “Operator“ and confirm by pressing the CONNECT button within 10 seconds***

updating cfinder III:

- once connected to cworld application press “updates“ selection button
- select cfinder3-{version}.cmf update file
- as soon as asked if you are sure to install the update, press “update“
- the update will proceed and status will be displayed in cworlds status bar
- once update is completed successfully the new firmware number will be shown next to the device name

* recommended/tested mobile devices: Apple devices with IOS6 or higher: IPad (2, 3, mini) IPhone (4, 4s, 5); Android devices with version 4.1 or higher: Nexus (7, 10) (stock browser)
** recommended browser for Desktop: current versions of Firefox, Chrome, or Safari
*** physical or electromagnetic interferences in the 2.4 GHz ISM frequency band may cause a limited function of the generated cworld network

Warning:
Do not turn off cworld or cfinder III and do not remove the USB drive while the update is in progress. Doing so may damage cfinder III or result in firmware incompatibility.

Note:
In order to allow smooth operation please select the correct country you are located in under cworlds Wifi hotspot settings.

The primary way to work with cworld is Wi-Fi which uses the 2.4 GHz frequency band and which is free for use worldwide. Despite a worldwide availability the exact number of legally usable Wi-Fi channels differs slightly from country to country. We respect those country restrictions by providing our users a “Country“ selection in cworlds “Wifi hotspot settings“.
Even though using Wi-Fi Channel 11 (2.462 GHz) as default, which should be a worldwide available channel, incompatibilities may still occur.

7.2. Using cmotion compact hand unit

- download the latest cvol-{date}_SW_package.zip file, or directly download the latest cfinder3-{version}.cmf update file
- unzip the cvol-{date}_SW_package.zip file
- copy the cfinder3-{version}.cmf update file onto an empty USB drive, formatted to FAT32
- connect the compact hand unit to cfinder III via LCB (Le m4p, Le m4p) cable
- power and turn on both devices
- remove the rubber USB plug and insert the USB drive into the USB port of the compact hand unit
- the USB drive will be recognized automatically. As soon as requested, press, “yes“ to start the “Update Wizard“
- the following messages will be displayed: “Erasing Memory“ and “Programming Memory“
- Bootloader page will open, allowing you to select a unit to be updated
- select the cfinder3-{version}.cmf update file
- “Erasing Memory“ and “Programming Memory“ status 0-100% will be displayed
- “Update Successfully Done“ will be displayed
- press “Exit“ or press “Continue“ to update further units
- once finished updating, remove the USB drive and insert the rubber USB plug into the USB port of the compact hand unit again

 **Warning:**
Do not turn off the compact hand unit or cfinder III and do not remove the USB drive while the update is in progress. Doing so may damage cfinder III or result in firmware incompatibility.

Note:
At the moment a compact-{date}_{version}.cmf file is required to activate the Update Wizard within the system. Please download such file with the latest compact-{date}_SW_package.
Copy the compact-{date}_{version}.cmf file and the cfinder3-{version}.cmf update file onto an empty USB drive to start update. Please proceed as described above.

LCB cables are not included as standard with cfinder III. Please contact your local reseller or sales@cmotion.eu for further information.

8. Appendix

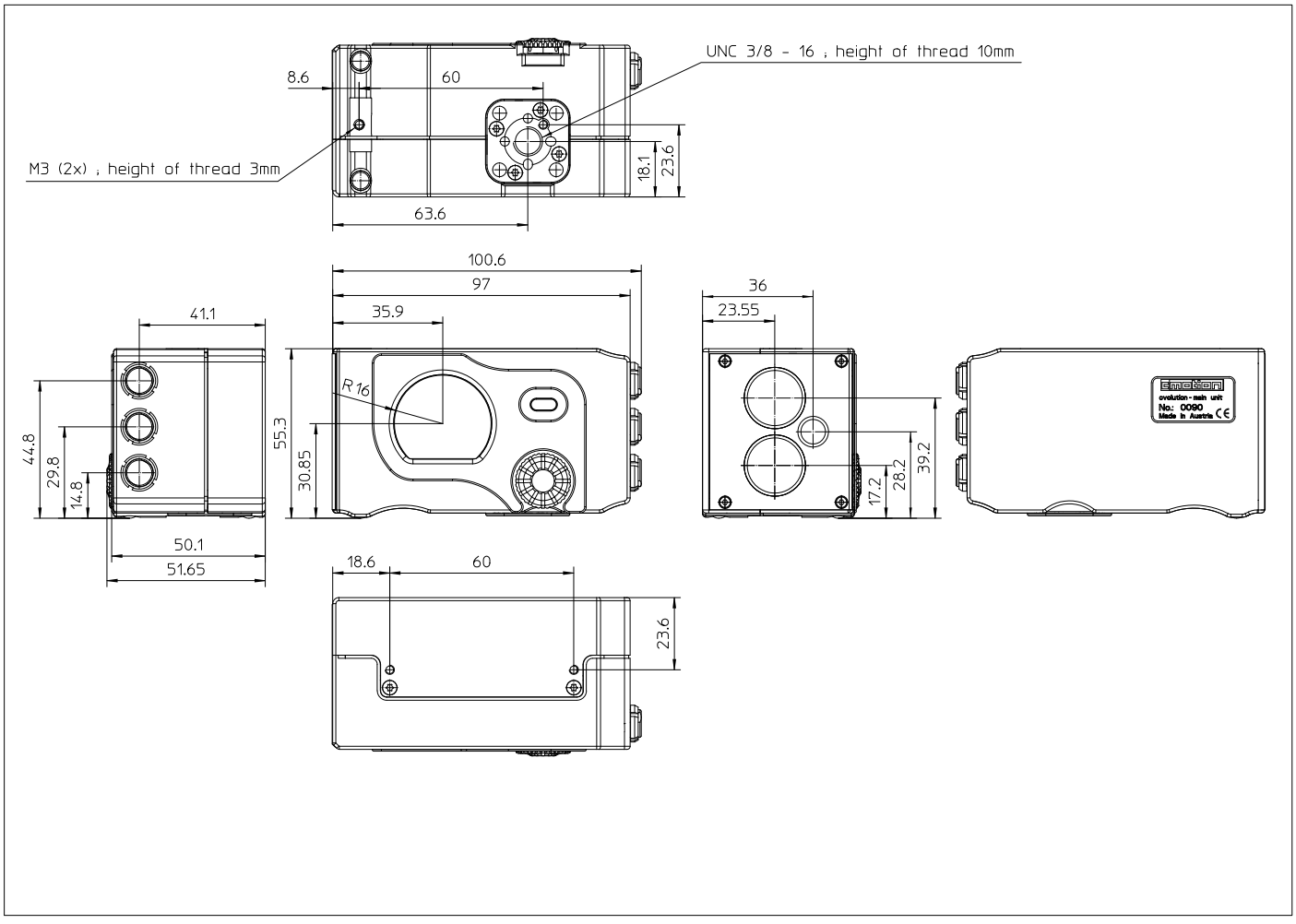
8.1. Compatible products

cfinder III is compatible with the following products:

- cvolution camin 2M, 3M, 4M, 8M
- cvolution hand unit*
- compact hand unit**
- cworld***
- cdistance
- cforce, cforce plus, cforce mini
- ARRI Alexa Plus
- ARRI Alexa Mini
- ARRI UMC-4
- ARRI AMC-1
- ARRI WCU-4****

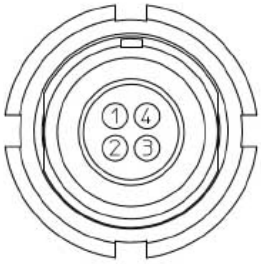
* works in combination with cvolution camin 2M, 3M, 4M or 8M only
** works in combination with compact LCS camin and cdistance only (limited functions)
*** works in combination with cvolution camin 2M, 3M, 4M, 8M or compact LCS camin
**** works in combination with ARRI Alexa Plus, Alexa Mini, UMC-4 or AMC-1 only

8.2. Dimensional drawings



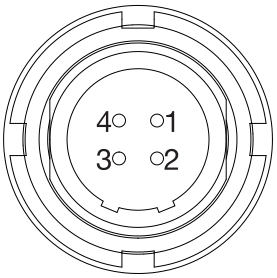
8.3. Connector pinouts

LBUS connector (Le f4p)



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

Serial connector (Le m4p)



1	GND
2	CB >FMP (Rx)
3	FMP >CB (Tx)
4	SUPPLY (Vcc)

8.4. cmotion service contacts

cmotion GmbH
Vienna, AUSTRIA
+43.1.789.1096
sales@cmotion.eu

Business hours:
Mo. - Fr. 8:00 - 18:00 (CET)

camadeus Film Technologies, Inc.
North Hollywood, CA, USA
+1.818.764.1234
sales@camadeus.com

Business hours:
Mo. - Fr. 9am - 6pm (PST)