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Heden Carat system is fully compliant with european CE, United States FCC and bluetooth standards.

- Avoid using Carat system near water or in rainy conditions. It is not water proofed. Water intrusion may lead to permanent damage.

- The CARAT transmitter control knob is sensitive to impacts. Impacts may cause damage to the internal potentiometer.

- Carat receiver thread on the backplate is sensitive to over torque (max 5 Nm). Internal electric and/or mechanical damage may occur.

- Carat kits are configured for the motor included, should you want to use your carat with another Heden motor make sure it is the same motortype, encoder and resistor ID. If not use Heden GUI to change motor type.

- All electronics is sensitive to over voltage and ESD, only connect and disconnect the motor when the receiver is not powered up.

- Make sure all cables are original Heden cables and inspect for damage before use. Using faulty cables may cause serious damage to internal electronics.

- We recommend using rechargeable 9V Lithium batteries for longest run time.

Included in carat case
CARAT Transmitter unit 1x
CARAT Receiver unit 1x
HEDÉN motor 1x
Rod mount..1x
Reduction insert (15mm as standard) 1x
0.8 gear (complete gear set is optional)...........1x
Motor cable..1x
Receiever power cable 1x
HEDÉN neck strap...1x
Scale ring 2x

Blue:
Slow blinking - Not paired with receiver
Fast blinking - Searching for reciever
Steady light - Paired
Blinking 3 times, pause, blinking 3 times - Interferance/bad blueooth connection
No light - Hardware connection to blueooth not active/failed

Short press - power on/off
Long press - reset

Short press - Camera run
Long press - Pair

Green - Power on
Green blinking - Sleep mode
Yellow - Battery below 50%
Red - Battery low
Red blinking - Battery empty

Green light - Motor running
Red blinking - Camera run active

Short press - Activate knob limits. See page 5.
Long press - Motor direction

Short press - Toggle between Hedén motor/ AUX FIZ. See page 5.

Short press - Activate lens limits. See page 5.
Long press - Manual calibration. See page 5.

Both LEDs
Orange slow flash – Motor calibration pending
Red slow flash – Calibration error

Left LED
Orange fast flash – Motor is calibrating
Green light – Motor calibrated
Green fast flash – Waiting for knob limit input
Green slow flash – Knob limit active
Blue flash – Waiting for knob to be turned to center to "pick up" AUX FIZ motor
Blue – AUX/FIZ active

Right LED
Green fast flash – Waiting for lens limit input
Green slow flash – Lens limit active
Orange – Waiting for wheel to be turned to center to begin manual calibration. See page 5.
Orange flash – Waiting for 1st and 2nd position of manual calibration

Camera run/stop connection
See our website for cables

Blue LED
Slow blinking - Not paired
Fast blinking - Searching for transmitter
Steady light - Paired

CR ⬆

Pair

Long press to start
pairing process

HEDÉN®
CARAT

DM   AUX   PWR

204-210003

MAX 5 Nm

FC   S/N CR-0000   CE
Made in Sweden
Our Bluetooth module cB-OBS421X/433X

1/4" thread
MAX 5Nm. Damage to internal electronics
may accur if over torqued.

Motor connection

Canon/Fujinon connection
See our website for cables

Power connection PTAP (14.4V 2.5A)

Motor type configuration
When a Carat is delivered the transmitter unit is configured for the specific motor type included. If you connect the Carat to another motor type than the one that was originally shipped with the system, the motor type needs to be changed in the GUI (See page 7). The parameters are changed in the transmitter unit. The receiver is interchangeable with no need to change parameters in GUI. If you are you uncertain about what encoder your Hedén motor are configured with, just send an email to "techsupport@heden.se" with the serial number and we will help you out.

Connecting
Slide the rod mount on to the motor housing. Put reduction insert into the mount. Attach the gear to the motor (gear can be mounted from either side of the motor. Make sure the gear pin is inserted in the slot in the hub. Mount the motor to lens and make sure gear is firmly connect to lens. Connect motor cable between the motor and receiver (DM connector). Connect the power cable to receiver (14.4V 2.5A PTAP). We recommend connecting and disconnecting the motor cable only when the receiver is not powered up. Slide scale ring on to knob. Note that there is a slot in scale ring and a pin on the knob that should line up.

Pairing
When delivered as a complete kit the transmitter and receiver is already paired.
Long press (2 seconds) the "Pair" buttons on the sender and receiver simultaneously or in short sequence will start the pairing sequence. Blue LEDs will start flashing rapidly. After successful pairing the LEDs will show a steady blue light and if a motor is connected the lower LEDs will start flashing orange.

Auto calibration
The 2 lower LEDs will flash orange if the system is ready for calibration. Use auto calibration if your lens has fixed end stops. Long press "Auto cal." button to start the calibration sequence. The torque used by the motor to calibrate can be tuned in GUI if the lens is unusually stiff or sensitive. If you have a lens with no fixed ends/floating focus ring use manual calibration.

Manual calibration
When the lower LEDs are flashing orange, long press "Man cal." button. Lower right LED will show a steady orange light waiting for you to turn the knob into the center position to do a "pick up" of the motor. The lower right LED will start blinking orange when you find the control knobs center, now the knob works as a speed controller rather than the normal position control. This means that turning the knob will move the motor incrementally faster depending on how far from center it is turned. The motor will not stop running until knob is returned to center again. Run the motor and stop it at its first limit and press "Man cal." button. Run it in the other direction to the next limit and press "Man cal." again. Manual calibration is finished.

Knob Limit
Knob limit lets you set 2 limits in the knob range and move the motor only between these points. Turning the control knob beyond the assigned points will activate the transmitters vibrator unless this is turned off in the GUI (see page 7). To enter this mode move to desired start position then short press center lower button ("Knob limits"). Move to desired second position and press button again. To exit mode press button a third time.

Lens limit
Lens limits allows you to use a selected/limited range of the lens and use the whole range of the knob. This makes fine increment adjustments easier. To enter this mode move to desired start position then short press right lower button ("Lens limits"). Move control knob to second position and press button again. To exit mode press button a third time.

Controlling Fujinon Cabrio or Canon lenses with internal motors (Additional cables needed - see our website)
Switching between controlling Canon or Fujinon is done in the GUI. As default the Carat is configured to work with Fujinon lenses, indicated by blue LED on receiver. When configured for Canon the LED on the receiver will switch to magenta color. Connect your lens's remote/AUX port to the Carat receiver AUX port using a Hedén Fujinon or Canon adapter cable. Power up the Carat receiver and sender unit. The lower left LED on the Carat transmitter should now start flashing blue. This means you need to turn the control knob until it matches the position of internal motor in lens. The vibrator will indicate that the correct position is found and you will be able to control the lens. If your lens has multiple motors for focus/zoom/iris you can cycle trough the motors by short pressing lower left button on sender unit. In the GUI it is possible to pre-determine which lens motors you want to be able to control with the Carat transmitter. It is also possible to have a Hedén motor connected simultaneously with an external lens. Toggle between the modes using lower left button short press.

GUI installation

Software is only availible as windows application(.exe).

Download file "Héden GUI" (40Mb) from our website www.heden.se/support/downloads
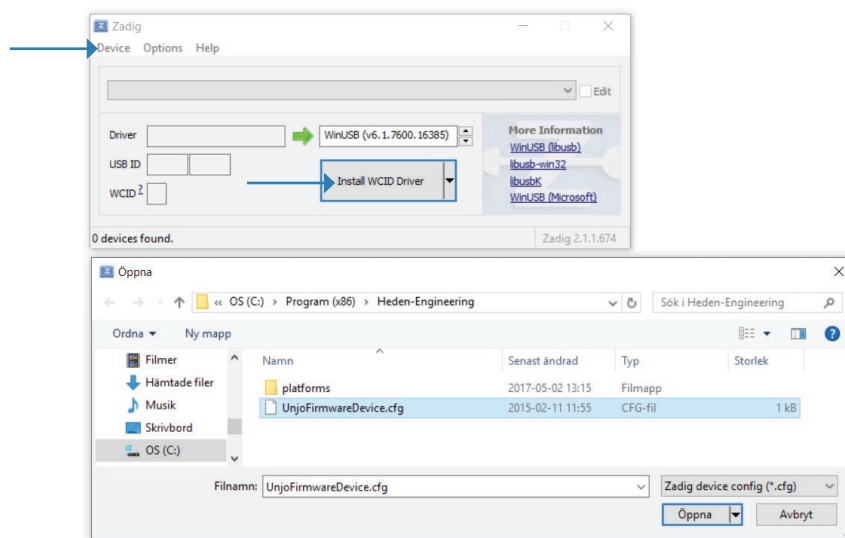
Installing:

Windows 10 users will proably be warned that the software is from unknown source. Ignore this and proceed.

We recommend installing GUI in the default location.

In the first window of installtion it is important that the following boxes are ticked:
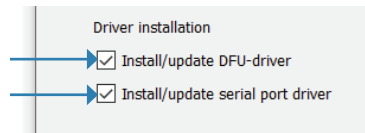
If you get asked to update Zadig driver online press NO. In Zadig installer go to device/load preset device and pick the file "UnjoFirmwareDevice". "Press Install WCID Driver". Close Zadig insataller.

Continue with the installtion of "Virtual COM port". Just press next untill installation is finished.
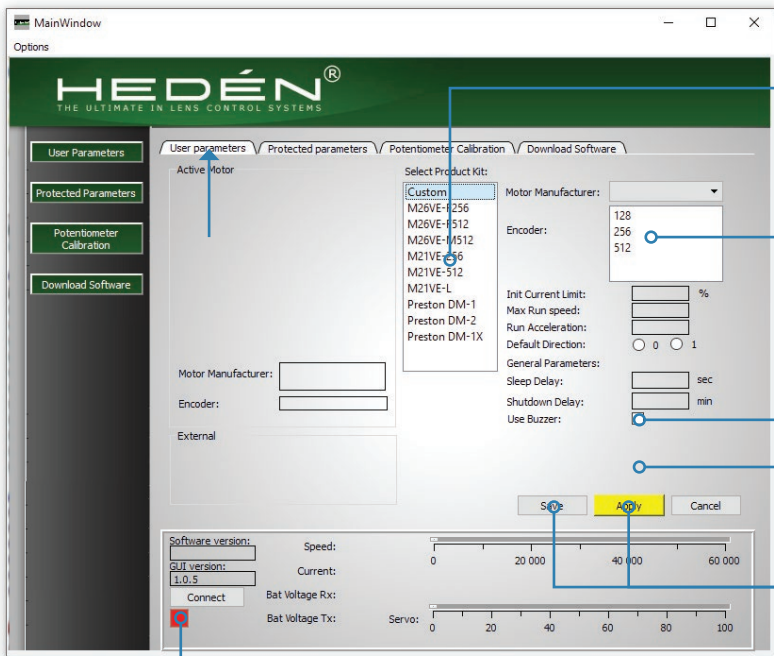
Connect your Carat with Mini USB cable. Open up Héden GUI. Open "options" menu. Open list "connections" and pick a comport.
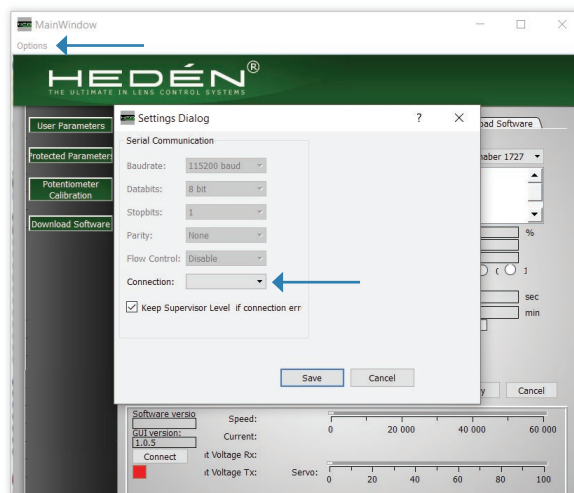
GUI overview

Connect the Carat transmitter to usb and power it up before starting GUI.
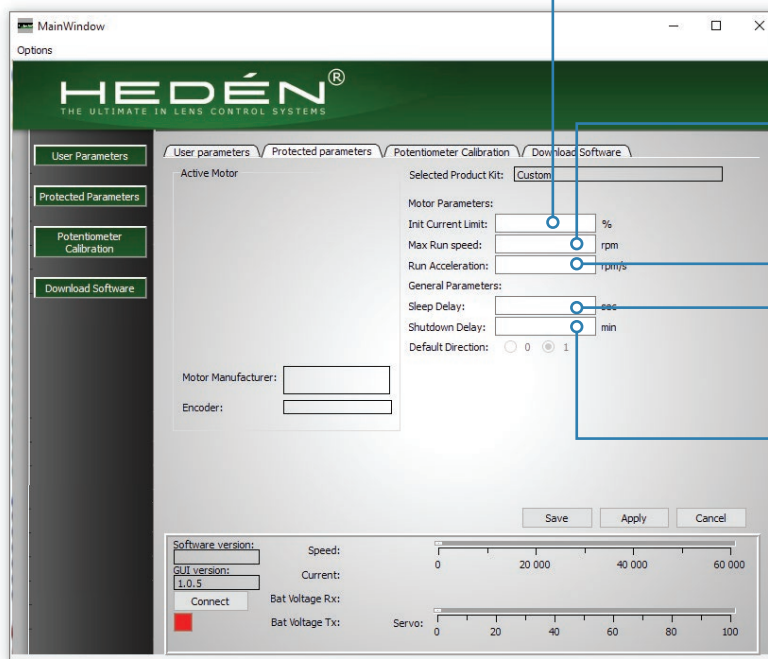
User parameters

Motor Type

Encoder setting

Toggle buzzer on/off for knob limit mode

Switch between Canon/Fujinon FIZ
(only shown when Carat is connected)

After any changes to settings press apply then save

Connection status (blinking green when Carat is connected)

Protected parameters (Password is"protected")

Calibration torque/current limit.
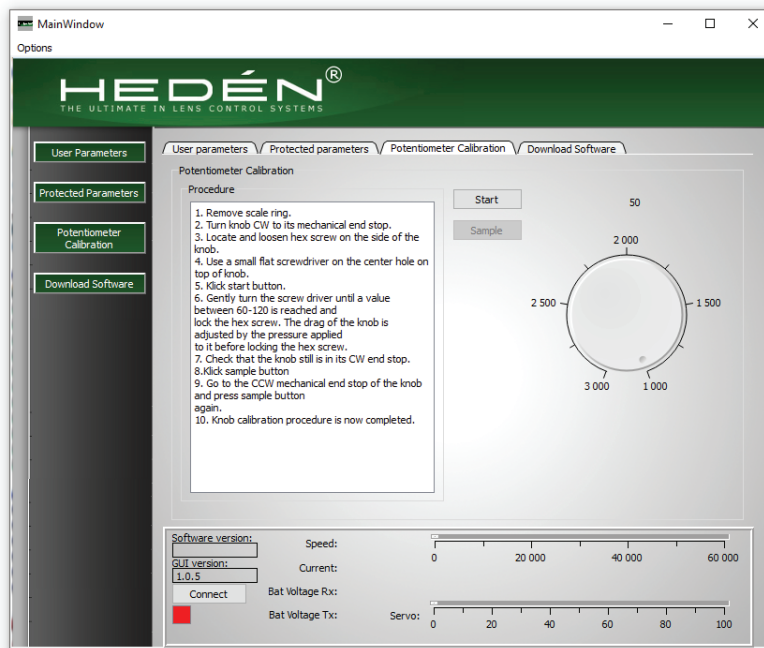If using stiff lenses this value can be increased from default value

Max motor rpm, do not change

Acceleration, do not change

Carat sender sleep timeout

Carat transmitter shutdown timer

Adjustment of resistance in knob/end point calibration

1. Remove scale ring.
2. Connect Carat transmitter with mini USB cable.
3. Start GUI
4. Go to "potentiometer calibration". To access enter password "protected". If carat is succesfully connected, turning the contoll knob of the carat will move the virtual knob in GUI.
5. Turn knob clockwise to its mechanical end stop.
6. Locate and loosen hex screw on the side of the knob. See fig. A. (1.5mm hex tool)
7. Use a small flat screwdriver in the center hole on top of knob. See fig. B.
8. Klick start button.
9. Gently turn the screw driver until a value between 60-120 is reached. Value will be shown above virtual knob. Make sure knob is still in clockwise position.
10. Resistance of knob is determined by applying force to the knob before tightening hex screw. More force means more resistance. See fig .C.
11. Tighten hex screw and try resistance in knob. If not satisfied loosen hex screw again and reapply force.
12. Still in counterclockwise position, press "sample"
13. Move wheel all the way to counterclockwise position and press "sample again"
14. Knob calibration procedure is now completed.

A

B

C

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sales@heden.se

For questions regarding service, support and general technical queries:
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