



ez-Config[®]

Series 150 & 160 Version E.1

Instruction manual [EN]

Revision 04/08/2023



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1. Preamble

1.1 Important information about the manual

| | |
|---|--|
|  | Important information – Read carefully |
|  | Additional information |

1.2 Compatibility information

Using the ez-Config software and ez-Wheel devices requires the following configuration:

- A Windows based computer, with Windows 7 or later, 32-bit or 64-bit (computer not included)
- The Microsoft .NET framework version 4 or later installed
- A USB port
- A USB cable, USB type A / USB type B (cable not included)

1.3 License and password

A nominative password is required to use the ez-Config software, provided after acceptance of the software License.

- **Please download the License following this link:**

<https://www.ez-wheel.com/storage/upload/pdf/ez-config-licence-en.pdf>

- **Print, read, sign and send a scanned copy to your reseller.**

Your login and password will be returned by email.

1.4 Important notice regarding modification of parameters

| | |
|--|---|
|   | <p>Parameters modifications may lead to hazardous situations. By using the ez-Config software you understand that you can modify the behavior of the electric drive installed on your machine, and you take the entire responsibility of any changes performed with ez-Config and their consequences on the machine operation.</p> <p>CE Marking: within the European Economic Area, the machine equipped with an ez-Wheel electric drive shall be and remain compliant with the Machinery Directive 2006/42/EC. New settings made with ez-Config may differ from parameters recommended by the machine manufacturer or integrator and may void the CE marking of the machine. Do not perform any change if you are not allowed by the manufacturer or integrator.</p> <p>Your Login and Password are unique and nominative and attest your identity. When programming new parameters on your ez-Wheel device, your identity will be stored in the device.</p> |
|--|---|

2. Safety Instructions - Precautions for the use of ez-Wheel products

| | |
|---|--|
|  | <p>Do not use ez-Wheel products for other purposes or in other conditions than those mentioned in the technical documentation.</p> <p>Read and make sure you have understood the manual before using ez-Wheel products. Observe all the warnings and usage instructions in this manual.</p> <p>Keep this manual for reference throughout the life of the product.</p> <p>In the event of loss, you can obtain a copy of this manual from your dealer or from the ez-Wheel Service Department.</p> <p>If the product is transferred to another owner, make sure that the manual is transferred as well.</p> <p>The characteristics, descriptions, and illustrations in this document are applicable at the date of publication.</p> <p>ez-Wheel reserves the right to make any modifications and revisions to this document. Product users obtain their own information on these modifications.</p> |
|---|--|

3. Before the first use

3.1 Download and install

-  Software can be downloaded from <http://www.ez-wheel.com> under “Downloads and resources”.

Install the driver:

Before using the application for the first time, install the driver.

2 possibilities:

| | |
|---|--|
| 1 | <ul style="list-style-type: none"> ▪ Plug the wheel on a USB port and the installation will run by itself ⚠ Windows Update must be activated ⚠ Your PC must be connected to the internet |
| 2 | <ul style="list-style-type: none"> ▪ Download the Virtual COM Port Driver V1.4.0 or later available on the ez-wheel.com website under "Download center" ▪ Unzip and install the driver executable file |

-  The driver functions at its best with Windows 7 or later
-  In case you encounter any difficulties while installing the driver, please contact your reseller

Install the software:

- **Download the ez-Config Series 150 & 160 version E.1 software**
-  The ez-Config/150-160 user manual Version E.1 is dedicated to Series 150-160 wheels programmed with the ez-Config tool Version E.1.
-  Update the wheel software to take advantage of the latest features.
-  The wheel must be programmed for version C.0 or later, using the **Update to version 8.0 or later update utility**.

3.1 Connecting the wheel to the computer with the USB-A/USB-B cable



Figure 1 - Plug the USB-B cable to the wheel and connect the USB-A cable to the computer

4. First use

4.1 Identification

- **Launch the application**

An identification window **Log** pops up.

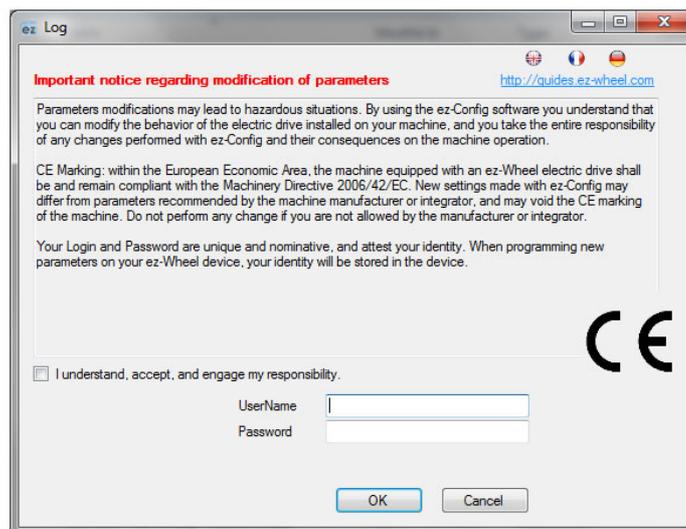


Figure 2 - Identification window

- **Fill in the two fields with the information provided by ez-Wheel.**

- ⚠ The password supplied is strictly confidential and personal.
- ⚠ It can't be shared at any time. This password is valid for one year. Contact your reseller after expiration.

- **Click on OK to open the ez-Config application. The Identity page pops up [Figure 2]**

4.2 "Identity" tab

- **Click on the Connect button**

- **Wait for the program to recognise the connected wheel**

The serial number will appear, which means the wheel has been found by the system.



Figure 3 - Identification Window / Serial number display

The following information are available: [Figure 3]

| | |
|------------------------------------|---------------------------------------|
| Serial number | Serial number of the wheel |
| Software version | Software version of the wheel |
| Electronic version | Hardware version of the electronics |
| Internal batteries detected | Number of internal batteries detected |

5. Genral buttons

General buttons are located at the bottom of the window ez-config/150-160.

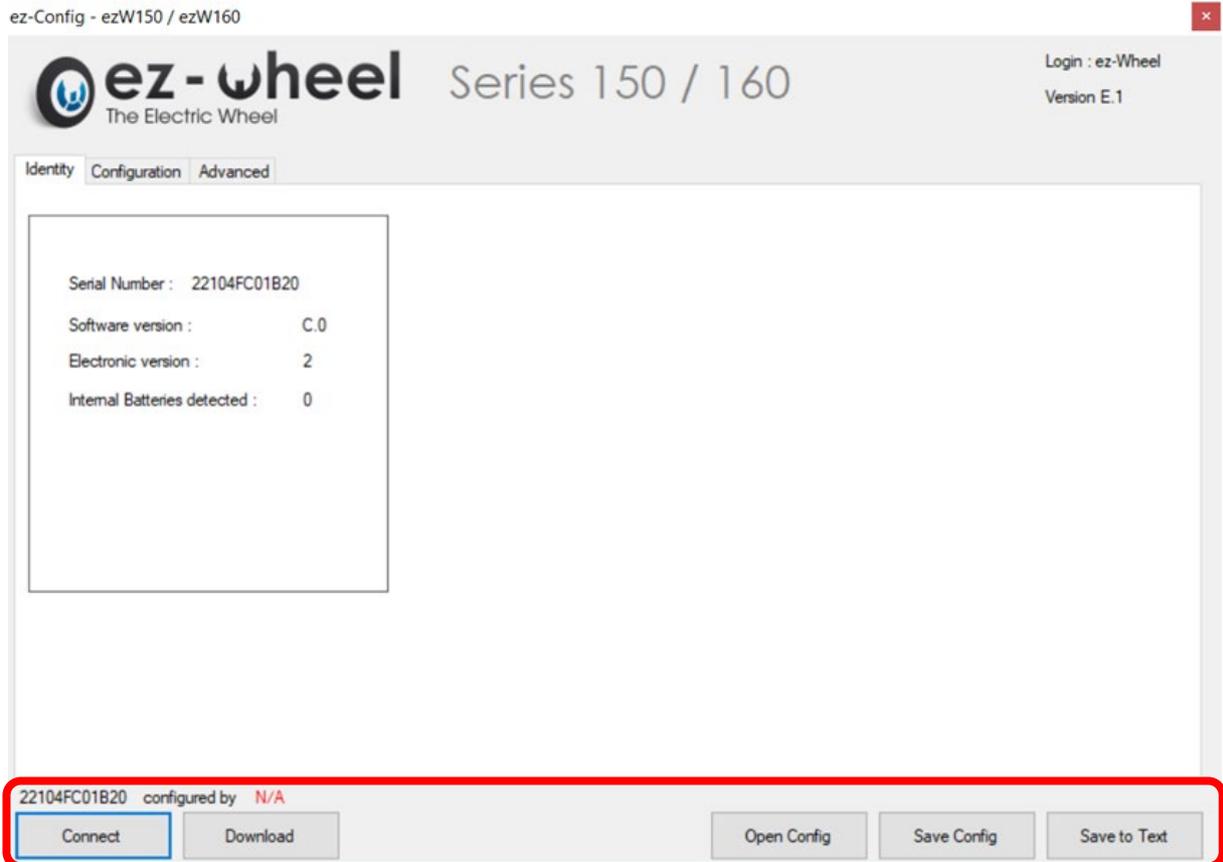


Figure 4 - General buttons

5.1 "Connect" button

This button enables to create a connection between the software **ez-Config** and the wheel ezW160M / ezW150I when plugged to a USB port.

- Click on the **Connect** button

The connection to the wheel is set and the fields in the ez-Config windows are filled in with the data read from the wheel's memory.

If the wheel isn't properly connected to the PC, a window indicates it couldn't be found on the USB ports.

- **Connect the wheel to a USB port**
- Click on **OK**
- Click again on the **Connect** button

5.2 "Download" button

This button enables to upload the typed setting on the wheel.

5.3 "Open Config" button

This button enables to upload a pre-existing configuration.

A window pops up so that you can choose a configuration file.

- **Choose a file and then click on Open**

5.4 "Save Config" button

Settings can be saved for a future use.

- Click on the **Save Config. button**
- **Type in the file name**
- **Choose the saving location**

6. Configuration tab

This tab allows to set the configuration parameters. [Figure 6]

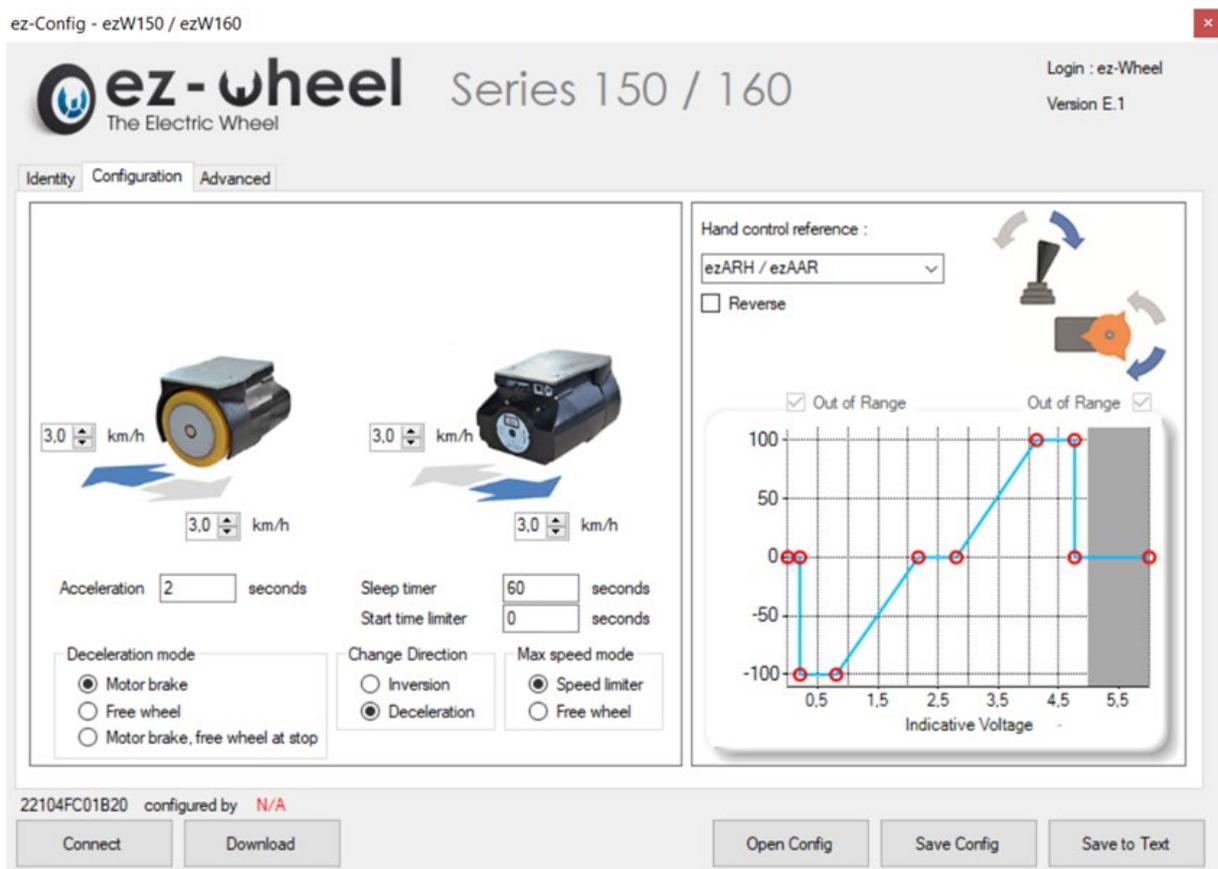


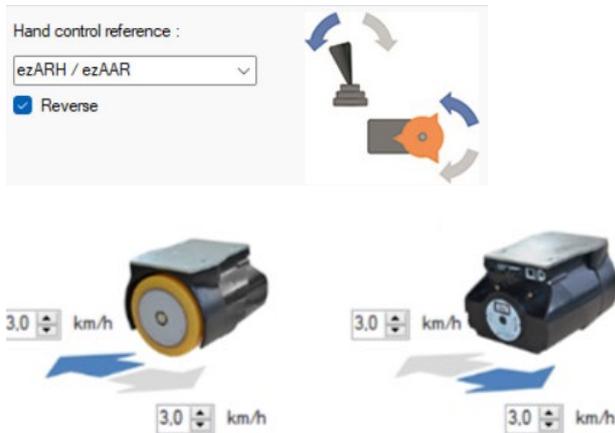
Figure 5 - User parameters panel

Different settings are possible:

- Forward speed
- Reverse speed
- Deceleration mode
- Acceleration
- Direction change
- Start time limiter
- Time to auto-sleep mode
- Maximum speed mode

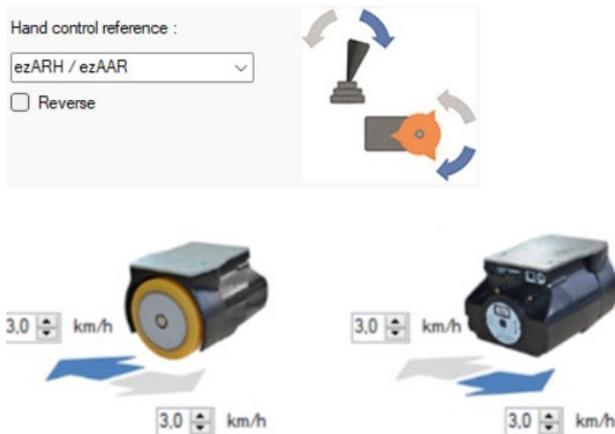
6.1 Reading the configuration tab

First case: the top arrow in the frame is blue



- i** The blue arrow indicates the way the hand control rotates and this corresponds to the blue arrows **1** near the wheels.

Second case: the bottom arrow in the frame is blue



- i** The blue arrow 2 indicates the way the hand control rotates and this corresponds to the blue arrows near the wheels.



Depending on the direction in which the wheel is fitted to the machine, the blue arrow will indicate forward or reverse.

Check the direction in which the wheel is fitted to the machine.

6.2 Deceleration mode

The **Deceleration Mode** mode box enables the user to choose how the wheel behaves when it is not controlled – wheel switched on and zero setpoint.

| | |
|--|---|
| <p>“Free wheel” mode</p> | <p>Allows the wheel to continue rolling without any resistive torque from the motor.</p> <p>Product with parking brake option: the brake opens to allow rotation as soon as the product is switched On. It closes to prevent rotation when the product is switched Off.</p> |
| <p>“Motor brake” mode</p> | <p>The motor exerts a resistive torque to allow deceleration.</p> <p>Product with parking brake option: the brake opens to allow rotation when the hand control is activated. It closes again to prevent rotation when the speed returns to zero.</p> |
| <p>“Motor brake, free wheel at stop” mode</p> | <p>Enables the wheel to be in “Motor brake” mode for deceleration assistance while the application is running and to switch to “Free wheel” mode one second after the motor has come to a complete stop.</p> |

⚠ For the parking brake to work as described above, the wheel software must be version C.0 or later.

i Dans les versions précédentes, le seul mode de fonctionnement est celui décrit dans le mode "Free wheel"

6.3 Acceleration

The wheel’s acceleration can be set by entering a value in seconds in in the field **Acceleration**.

ez-Config - ezW150 / ezW160

ez-Config - ezW150 / ezW160

ez-wheel The Electric Wheel Series 150 / 160

Login : ez-Wheel
Version E.1

Identity Configuration Advanced

3.0 km/h 3.0 km/h

3.0 km/h 3.0 km/h

Acceleration 2 seconds

Sleep timer 60 seconds
Start time limiter 0 seconds

Deceleration mode
 Motor brake
 Free wheel
 Motor brake, free wheel at stop

Change Direction
 Inversion
 Deceleration

Max speed mode
 Speed limiter
 Free wheel

Hand control reference :
ezARH / ezAAR
 Reverse

Out of Range Out of Range

100
50
0
-50
-100

Indicative Voltage

0.5 1.5 2.5 3.5 4.5 5.5

22104FC01B20 configured by N/A

Connect Download Open Config Save Config Save to Text

Figure 6 - Acceleration

-  Acceleration will be rapid if the value is low (0.5 seconds).
-  Acceleration will be slow if the value is high (10 seconds).
-  The maximum value is 10 seconds.
-  The minimum value is 0.5 seconds.

 If a value is incorrect, the value entered appears in red.

6.4 Direction change

The **Change Direction** box is used to adjust the behaviour of the wheel when the set direction is changed, with two modes available:

| | |
|------------------------------|---|
| « Deceleration » mode | The wheel decelerates to a complete stop, then accelerates again in the opposite direction |
| « Inversion » mode | The wheel provides the opposite force  Beware of the risk of jerking! |

6.5 Maximum speed mode

The field box **Max Speed Mode** can be used to set up the behavior of the wheel when the rolling speed exceeds the maximum speed value entered in ez-Config; two settings are available:

| | |
|-------------------------------|--|
| « Speed limiter » mode | Limits the rolling speed by applying a resisting torque from the motor |
| « Free wheel » mode | Tolerates the wheel to freely exceed the maximum speed without applying a resistance |

6.6 Start time limiter

The **Start time limiter** field enables the operator to set the assistance time during starting. If the control is activated beyond this time range, the wheel goes into the defined deceleration mode (free wheel or motor brake).

6.7 Time to sleep mode

In the **Sleep Timer** field, it is possible to enter a value in seconds corresponding to the waiting time between the absence of activity on the control and switching of the interface to the sleep mode.

Enter the value "0" to prevent the interface going into the sleep mode.

-  Changes to the system configuration settings should be made with due regard to safety rules.
-  The user will be held responsible for any configurations site using his/her password.

7. Control settings

This field box allows to adjust the operating parameters of the control that will be used to command the wheel. [Figure 8]

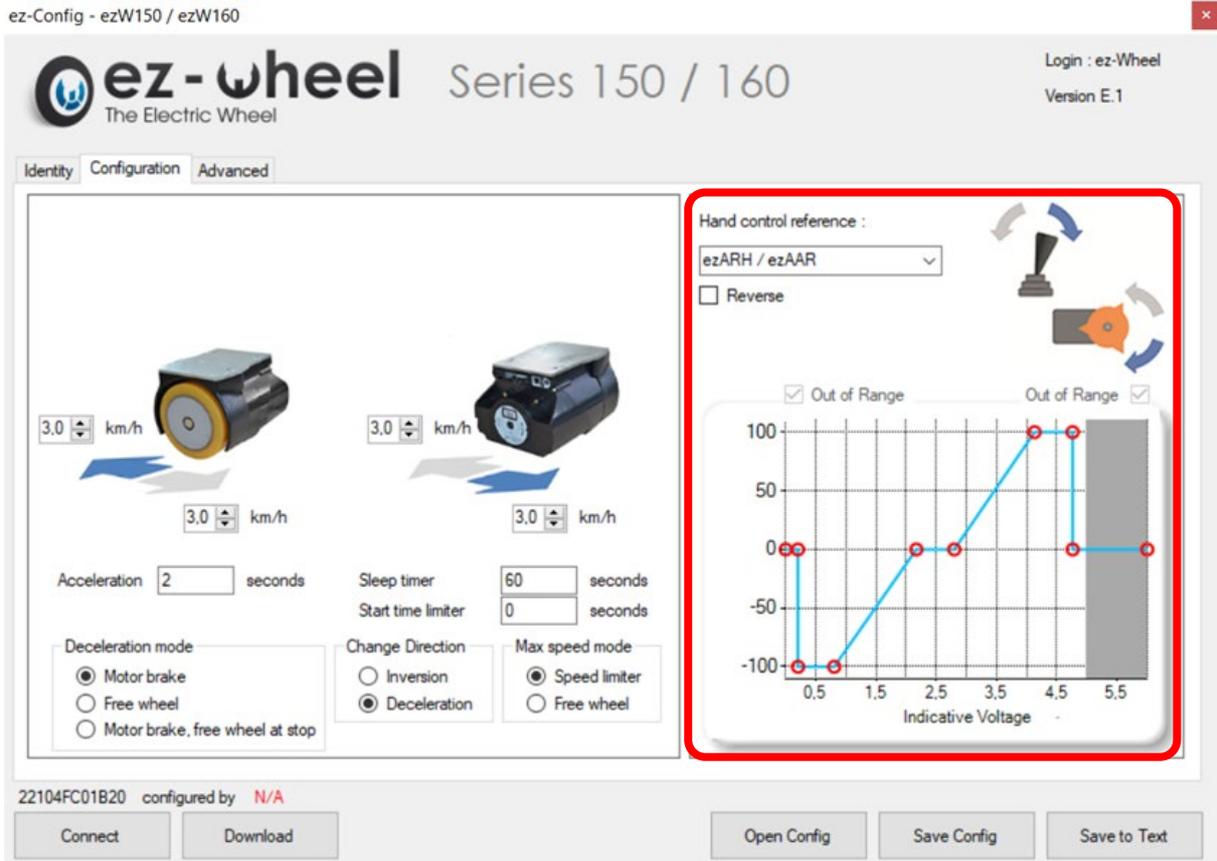


Figure 7 - control settings

7.1 Choice of control

The **Hand control reference** field is used to select an ez-Wheel® control reference in order to display its pre-recorded control curve. [Figure 9]

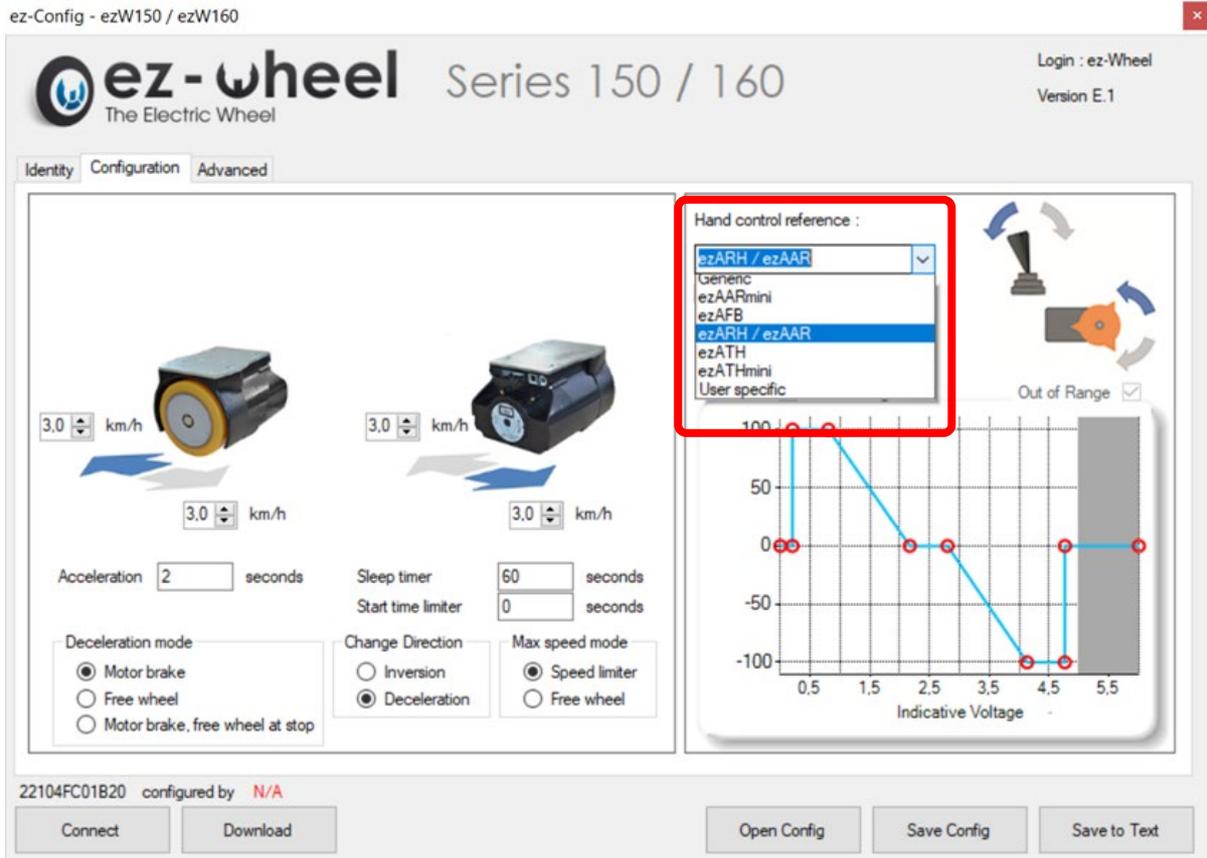


Figure 8 - Choice of actuator

- i** We recommend keeping the default values suggested for each actuator supplied by ez-Wheel.
- i** However, it is possible to change the controls operating ranges directly on the curve.

It is possible to use two types of controls:

| | |
|-------------------------------|---|
| Unidirectional control | The wheel can only be driven in one direction |
| Bidirectional control | The wheel can be driven forward or reverse |

7.2 Unidirectional choice

- **Select « User Specific » in the field *Hand controls reference***
- **Move the cursor to position the control curve according to the box 1**

The wheel can turn only in one direction, the control ranges will be configurable between 0 and 5V though the following control Field 2 [Figure 10].

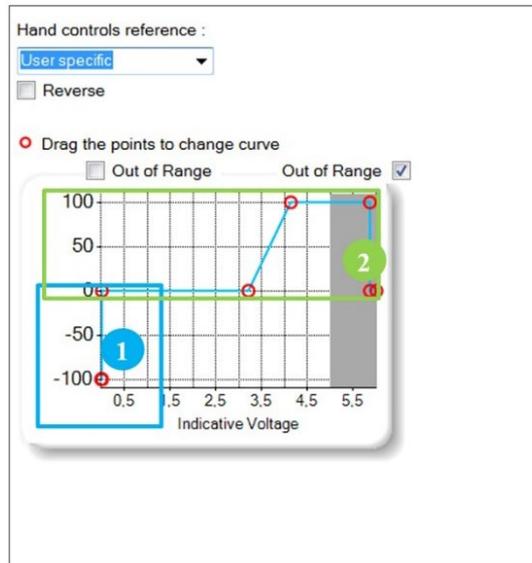
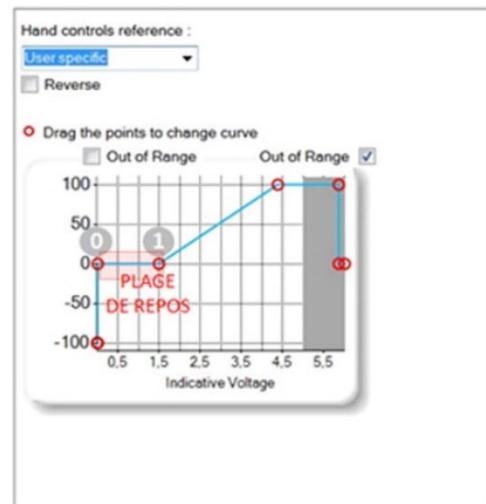


Figure 9 - Unidirectional control

3 ranges can be adjusted/set:

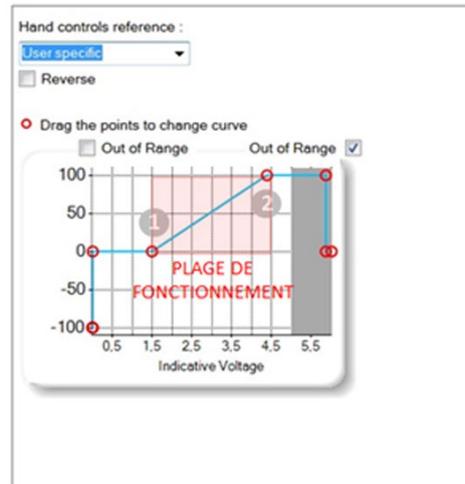
The rest (or "safety") range

Defined between the cursors 0 and 1.
The command must exceed this value (defined by cursor 1) to actuator the wheel.



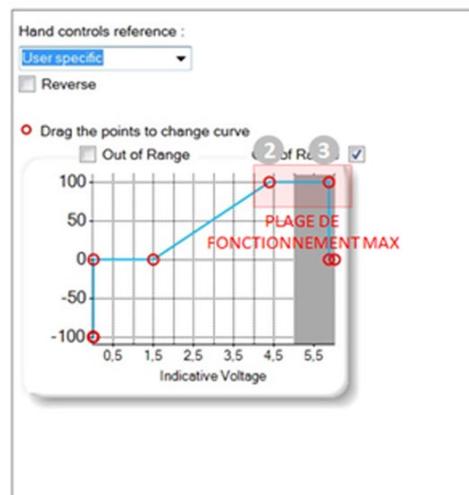
The control operating range

Defined between cursors 1 and 2.



The "max. Operation" range

Defined between cursors 2 and 3.



Cursor 2 defines the maximum parameter value for the control.

- ⚠ It is impossible to connect a bi-directional control using the settings of a uni-directional control even in a single direction because the signals used on the interface connector are different.

7.3 Bi-directional choice

The wheel can rotate in both directions; the control tab will be the following:

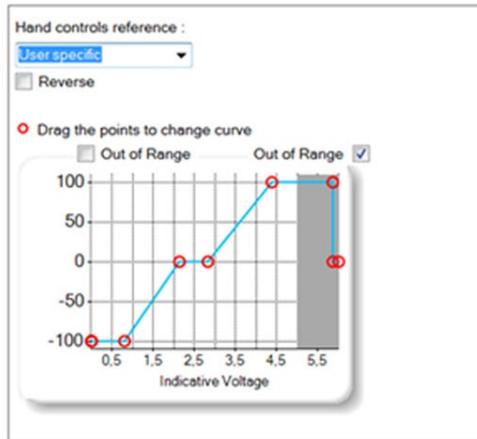


Figure 10 - Bi-directional choice

The adjustment principle is the same as for a uni-directional control, with in addition, the possibility of adjusting the control independently in both directions of rotation of the wheel. Control is always 0-5V, with a safety position value approximately 2.5V (wheel stopped).

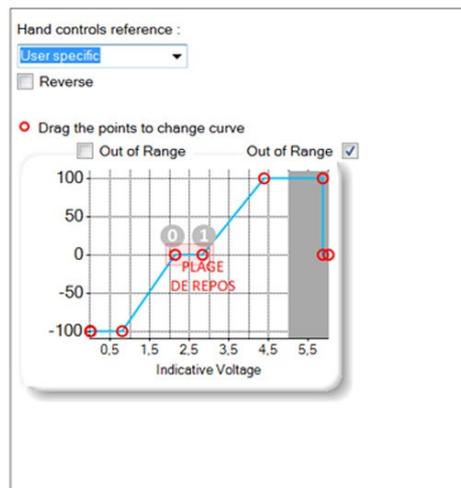


Figure 11 - Rest of safety range

⚠ To ensure correct operation, make sure that the control's quiescent voltage (centre position) is within the set voltage range.

7.4 Out of range

The "Out of range" field is used to set a voltage limit for the control. When the applied voltage reaches this limit, the control gives a zero setpoint to the wheel. [Figure 13.]

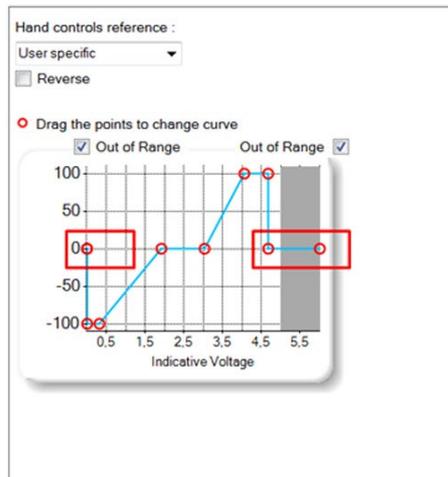


Figure 12 - Out of range

This function can be used, for example:

- 1. With special controls which have a voltage range different from 0-5V.**
⚠ The voltage must nevertheless remain in the range of 0-5V.
- 2. To detect a potential control cable open circuit (zero voltage applied).**
⚠ If the "Out of range" boxes are unchecked the control will continue to give a maximum value to the wheel [figure 14] in both directions of operation.

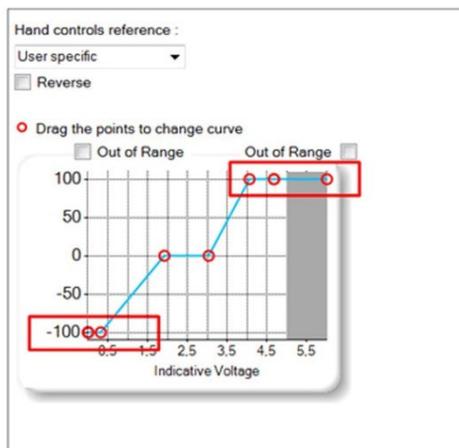


Figure 13 - Out of range function not available

7.5 Reverse

The box **Reverse** allows to switch the way the wheel functions and thus to set the maximal speed both ways.
⚠ It all depends on which side the wheel was installed at first.

8. Advanced tab

The **Advance** tab provides access to advanced functions for defining 3 parameters:

- **Option connector** behavior
- **Button** type and the remote **display** on the machine

- The behavior of the wheel when the **charger** is connected

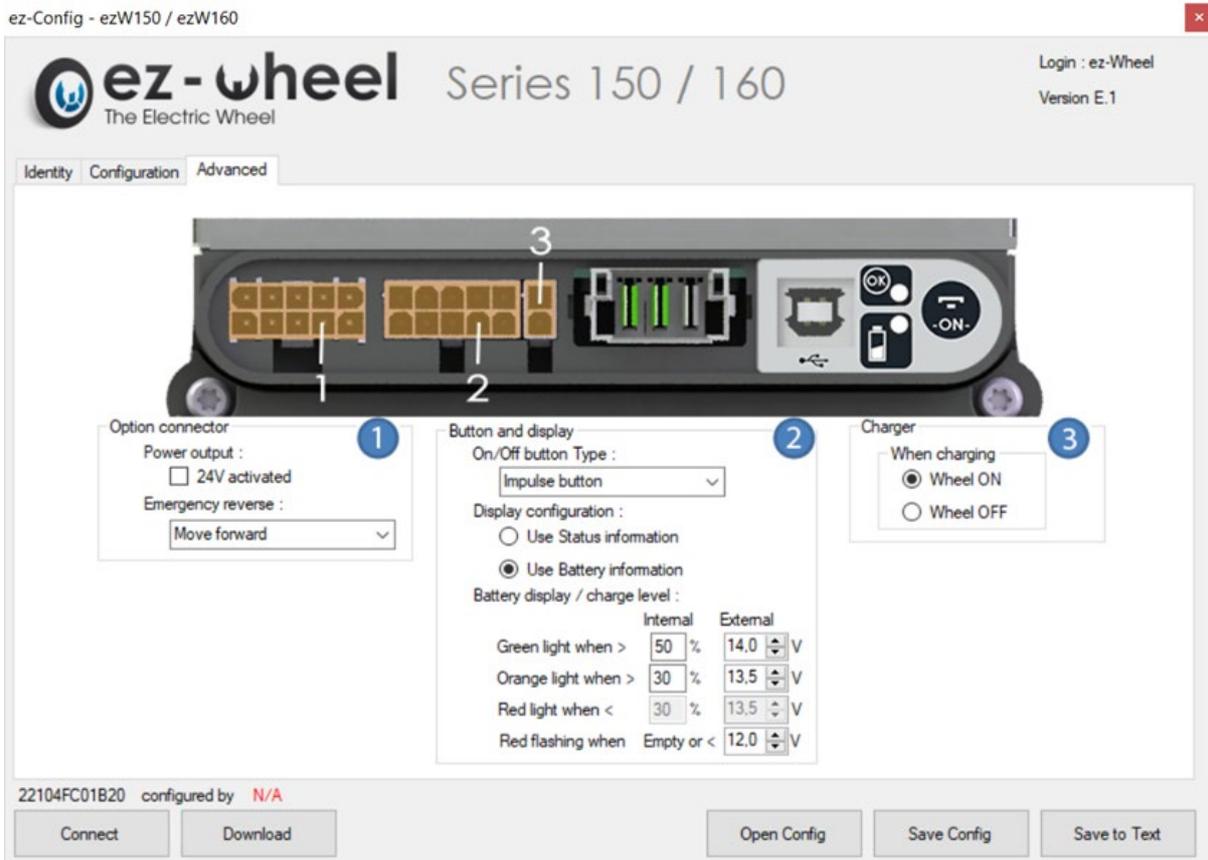


Figure 14 - « Advanced » tab

8.1 Connector option

The **Option connector** tab allows to activate a 24 V discharge path with “1” connector.

- **Contact your reseller to get the electrical details of the interface.**

8.2 Button and display

This field allows to choose the button type and the remote display on the machine.

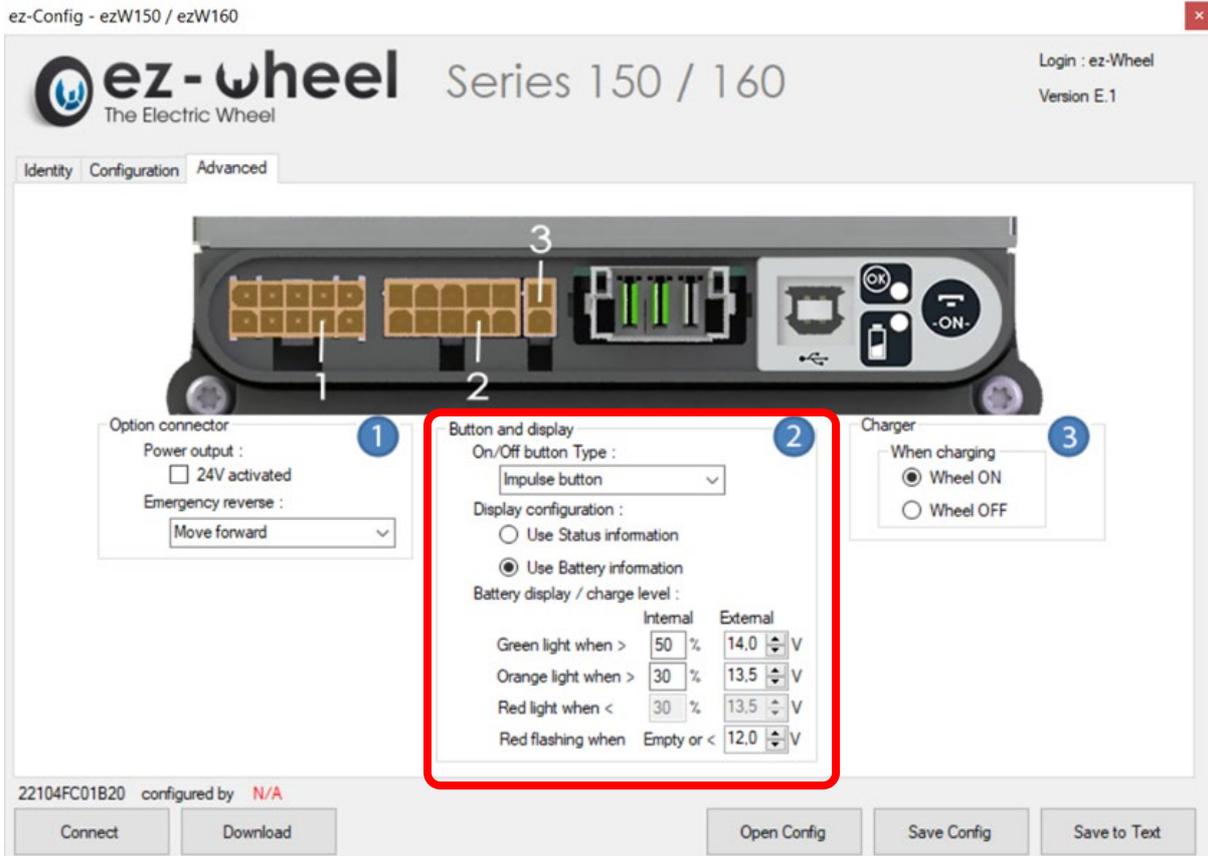


Figure 15 - Button choice

« **Impulsional button** »

It functions with mono-stable buttons.

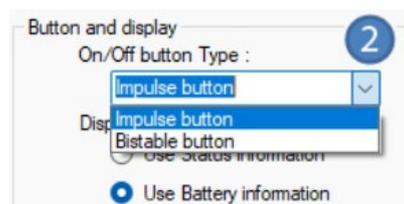


Figure 16 - Type of Button affiliated to the control

« **Bi-stable button** »

Fonctionne avec les boutons 2 positions.

« **Remote Display** »

If case of a display remoted on the device, choose the required LED: « status » or « battery ».

- i By default, the display shown is the battery
- i If you choose to remote the display of the wheel "status", the IHM label will be also displayed differently: the 2 leds (battery and status) will display the status



Figure 17 - Back of the Wheel ezw160M / ezw150I and IHM label

Battery level display

The field **Battery display** allows to define the LED color according to the battery level. Three levels are configurable, green, orange and red:

Battery display / charge level :

| | Internal | External |
|---------------------|------------|----------|
| Green light when > | 50 % | 14,0 V |
| Orange light when > | 30 % | 13,5 V |
| Red light when < | 30 % | 13,5 V |
| Red flashing when | Empty or < | 12,0 V |

If the product is powered by an internal battery:

- i** The field “Orange light” must be between 10 and 30%
- i** The field “Green light” must be between 30 and 70%
- i** A gap of 10% must be respected between the field “green light” and “orange light”.

If the product is powered by an external battery:

The following points should be taken into consideration:

- If present, the state of charge displayed by the external battery and that on the remote display are not linked. It is the level indicated on the external battery that is authoritative.

- When current is drawn (as a result of using the product), the voltage of the external battery drops, which may cause a one-off switch between two display colours.
- If the voltage falls below the empty battery threshold ("Red flashing"), the product switches off.
- If the battery is empty, the wheel will stop by braking. The motor will then be inoperative until restarted with a battery voltage above the empty battery threshold.

NB: For wheels without the parking brake option, the product will remain in motor brake mode as long as the wheel is powered by the battery. To switch to freewheel, disconnect the battery. For wheels with the parking brake option, the product will remain braked until restarted with a battery voltage above the empty battery threshold.

To make the best use of this function, we recommend the following:

-  Configure the display so that it is green when the battery is full, and the control is not in use.
-  Space the different thresholds sufficiently apart to prevent the display switching through the 3 colours (green, orange, red) during voltage drops caused by drawn current peak.
-  Configure the empty battery threshold ("Red flashing") so that it is not reached prematurely. For example, 18V or lower for 24V NiMH batteries.

Below is an example of configuration:

| Battery display / charge level : | | Internal | External |
|----------------------------------|------------|----------|----------|
| Green light when > | 50 % | 25,0 V | |
| Orange light when > | 30 % | 21,5 V | |
| Red light when < | 30 % | 21,5 V | |
| Red flashing when | Empty or < | 17,8 V | |

-  The values must be adapted to your application by testing and calibrating.
-  The voltage level of the external battery given by the remote display (green, orange, red) is indicative only: the real state of charge of the batteries is available on the external batteries supplied by ez-Wheel.
-  By default, this function is deactivated by applying voltage thresholds lower than the battery's operating voltage. This means that the remote display always remains green.

Connected charger

The field **Charge** enables to define the engine behavior of the wheel when the charger is plugged to the wheel and powered, defines the behavior of the engine of the wheel, two modes are available:

- Wheel ON: Engine of the wheel is activated
- Wheel OFF: Engine of the wheel is deactivated

Appendices

Summary of ez-Config software versions

| ez-Config® Version | Release date | Content |
|-------------------------------|-------------------------|---|
| E.1 | August 2023 | <ul style="list-style-type: none"> • Added external battery voltage thresholds to drive remote battery level display • Obsolete parameters removed • Visual update |
| D.2 | July 2021 | <ul style="list-style-type: none"> • Addition of Emergency Reverse direction configuration • Visual update |
| D.1 | February 2019 | <ul style="list-style-type: none"> • Added versioning of product electronics • Configuration of maximum speed in km/h only |
| D.0 | - | <ul style="list-style-type: none"> • Original version |