

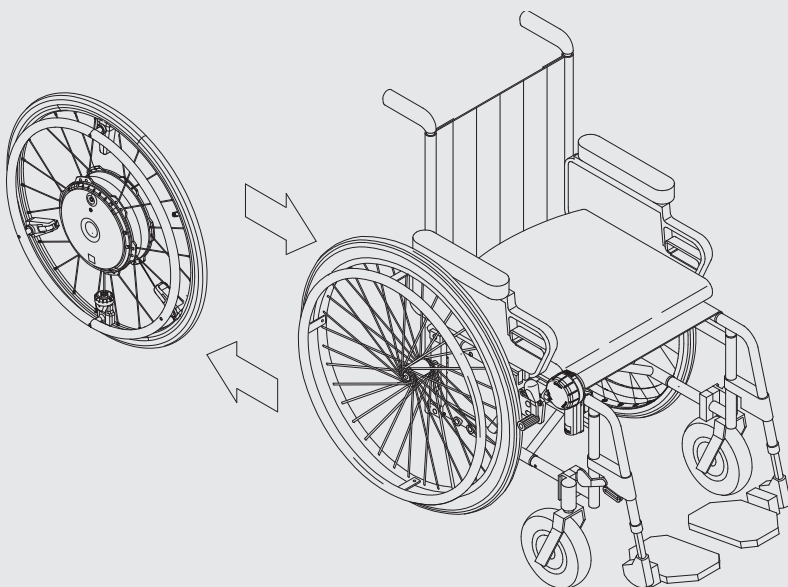
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KRAFT, DIE AUS DEN
RÄDERN KOMMT.

E-MOTION

Information for Therapists and DME Dealers
Programming Guide · Model M25 / M25 DuoDrive

EN



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Service Center (Germany)
Monday to Thursday from
8.00 a.m. to 6.00 p.m.
Fridays from
8.00 a.m. to 4.00 p.m.

Contact us by
Phone (0800) 9096-250
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1. Introduction

By means of e-motion wheels, you can make it far easier for wheelchair users with limited strength or limited hand function to move around in a manual wheelchair. Accordingly, e-motion wheels extend the range of mobility and have an essentially therapeutic benefit as the wheelchair users are actively in motion, but do not overexert themselves and their musculoskeletal system.

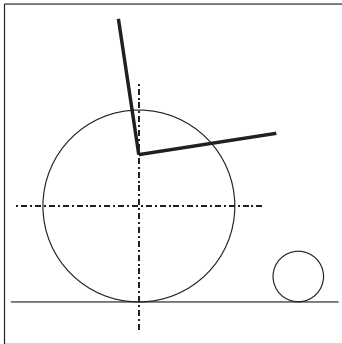
! Please read the e-motion operating manual before starting to make the adjustments!
Familiarise yourself with the functional elements and safety instructions!

2. Adjusting the wheelchair

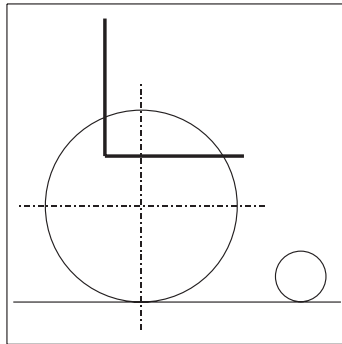
When using a wheelchair, an optimal adjustment of the driving characteristics is very important. Basically, e-motion wheels do not restrict or hardly restrict the use and adjustment options of a manual wheelchair.

At the beginning of the mobilisation of a wheelchair user, for example, the seat can be set with a large tilt. At the same time, you can also adjust for different body proportions. This is crucial for an effortless propelling movement and a good posture. If you are uncertain, please also refer to the operating manual of the wheelchair being used for the ideal settings.

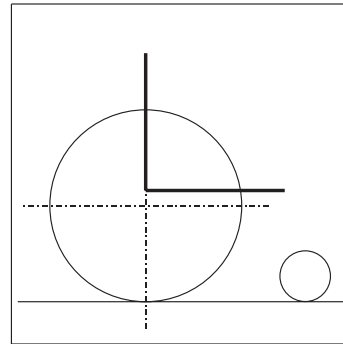
Examples:



Large seat tilt –
for mobilisation



Forward wheel position –
for greater manoeuvrability



Low seat height –
for toe propelling

i Three different wheel sizes (22", 24", 25") are available for e-motion wheels and can accordingly be used optimally for different body sizes.

When using e-motion wheels, the maximum permissible camber (see the following table) depending on the weight of the person must be observed.

Wheel size M25	Max. weight of person 1° camber	Max. system weight 1° camber	Max. weight of person 3° camber	Max. system weight 3° camber
22"	125 kg	165 kg	80 kg	120 kg
24"	150 kg	190 kg	100 kg	140 kg
25"	150 kg	190 kg	100 kg	140 kg

Wheel size M25	Max. weight of person 6° camber	Max. system weight 6° camber	Max. weight of person 9° camber	Max. system weight 9° camber
22"	60 kg	90 kg	40 kg	70 kg
24"	60 kg	100 kg	40 kg	80 kg
25"	60 kg	100 kg	40 kg	80 kg

3. Getting started with e-motion

- When starting, choose a flat floor with a smooth surface, such as stone, PVC or parquet floor. Avoid high-pile carpets, as the fibres of a carpet usually increase the rolling resistance and make manoeuvring with the wheelchair more difficult.
- Switch on the e-motion wheels and activate "Learning mode" via the ECS remote control or a licensed smartphone app.
- To do this, press the button on the ECS remote control to select the assistance level for at least 3 seconds, until the "Learning mode" icon (see graphic below) appears in the display or select the "Learning mode" via the "ECS" menu in the e-motion smartphone app.



("Learning mode" icon)

- For more information on handling the ECS remote control, refer to the ECS remote control operating manual.

In particular, when changing from a purely manual wheelchair to one with active power, the driving characteristics of e-motion wheels are often somewhat unfamiliar to wheelchair users at the beginning. The "Learning mode" is particularly suitable for novice users who do not have any experience with e-motion power assisted wheels. This mode responds relatively slowly to the travel impulses from the push rim and provides only a slight amount of follow-up movement. In addition, the power assistance and the maximum assisted speed are limited.

Instead of "Learning mode", assistance level 1 in the "Soft" or "Standard" travel profile can also be used. Refer to Section 4.3.1 for further information on travel profiles

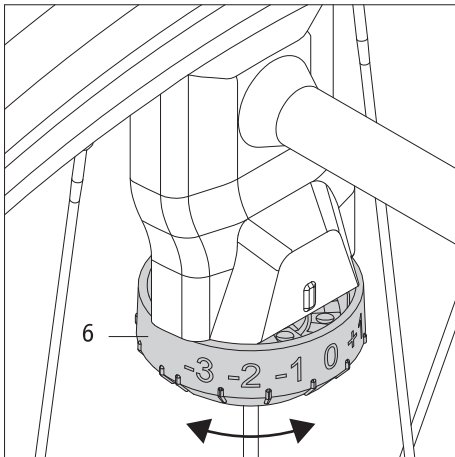
First exercise:

Moving straight forward – push both push rims smoothly with both hands at the same time, stop and then continue moving straight forward.



Make sure that the left and right push rims are pushed evenly. The push rims must only be operated relatively briefly and lightly. Please do not "yank" on the push rims or operate them for too long.

If the wheelchair user does not travel straight forward but slightly to one side, this indicates that there may be some imbalance (power difference) between the left and right side of the body and the push rim on one side needs to be pushed more often.



Each e-motion drive wheel is equipped with a sensor on the push rim that measures the propelling movement of the wheelchair user and provides electrical assistance. The mechanical sensitivity of the sensor can be set individually for each drive wheel. This is done by means of the adjustment wheel on the sensor that has a range from -3 to +3. Both adjusting wheels are set to "0" in the factory.

To reduce the resistance on one or both wheel sides, set the adjustment wheel of the corresponding wheel side between -1 and -3. The push rim can now be moved with less force.

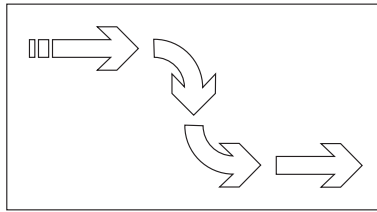
The values from +1 to +3 increase the resistance and accordingly the effort required to move the push rim and consequently to activate the travel sensor. In this way, an individual setting can be obtained that is ideal for the wheelchair user and ensures that the user is able to travel in a straight line.

If different sensitivity settings are selected, the supplied stickers "R" for the right-hand wheel and "L" for the left-hand wheel must be affixed, so that the wheels are not interchanged when they are removed and re-attached.

Once travelling straight forward, braking and delayed movement have been mastered, cornering and turning on the spot also need to be practiced.

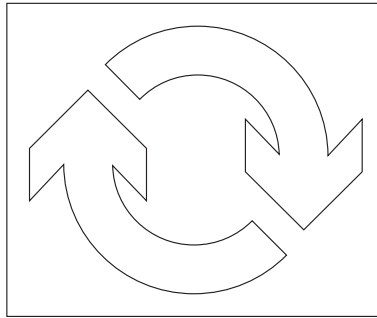
Second exercise:

Cornering/turning



Third exercise:

Turning on the spot



4. Using the e-motion Mobility App (Expert mode)

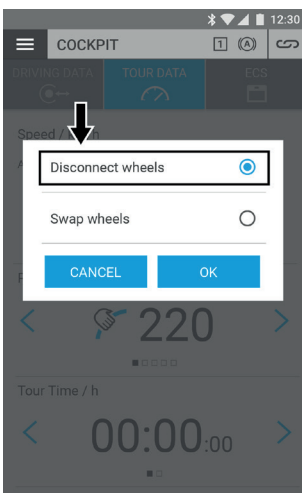
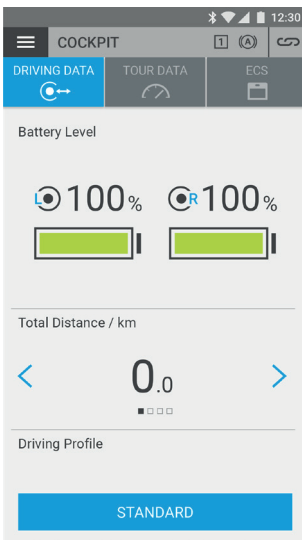
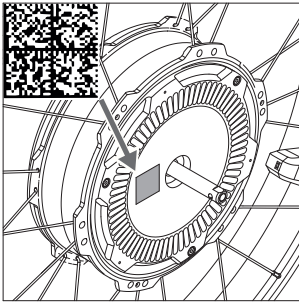
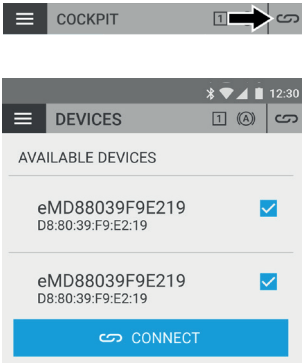
4.1 Downloading the smartphone app

Download the free e-motion Mobility App on your smartphone. The smartphone app is available for Android and iOS devices. The below QR codes will take you directly to the download.



4.2 Connecting to the e-motion wheels

- Switch on the e-motion drive wheels using the on/off button.
- Start the e-motion M25 Mobility app on your smartphone and make sure that your smartphone's Bluetooth® function is activated. Also make sure that the e-motion Mobility app has permission to access the Bluetooth® function and the camera on your smartphone.
- Press the connection icon in the app (top right corner of the screen) and select the option "Find e-motion wheels".
- Then select the two e-motion drive wheels that you want to connect and start the pairing process.
- The camera on your smartphone is started automatically.
- As described in the app, scan the QR code on the back of the left and right e-motion drive wheels, one after the other. Ensure that you are scanning the correct code. Each one has a separate sticker that contains only one code (see figure).
- If the scanning process for both codes was successful, you will now be asked to assign a PIN of your choice, with a minimum of four and a maximum of 10 digits. Afterwards, repeat the PIN to ensure that it was entered correctly and record this PIN for later purposes. The pin will be required in the future to start the app or to establish the connection.
- If you have forgotten the PIN, you can reset it at any time via the "Settings" menu item in the app. Then you have to scan the QR codes on the drive wheels again to reconnect to the app.
- In the operating manual for the e-motion Mobility app, we emphasise that the stickers with the QR codes should be removed after pairing with the smartphone and stored securely in the e-motion operating manual to prevent unauthorised access. As a result, the codes may no longer be on the wheels when used subsequently. If the codes can no longer be found or can no longer be read, please contact the Alber Service Centre.
- Once connected, the app's cockpit will display the current battery status.
- By pressing the connection button again, you can disconnect the connection to the e-motion wheels at any time.



4.3 Setting the travel parameters

4.3.1 General information

The e-motion wheels come with four preset travel profiles that wheelchair users can select without entering a PIN code. In “Expert mode”, individual settings can also be entered on the basis of these travel profiles. After successfully completing the programming, selecting the preset travel profiles is no longer possible.

4.3.2 Selecting a preset travel profile

Select one of the four preset travel profiles under the Travel mode menu item in the cockpit. Each travel profile includes settings for assistance level 1 and 2 respectively.

Travel profile “Standard” (factory setting)

For a broad range of people. The system responds moderately sensitively to manual propelling movements in assistance level 1 and provides significantly more motor assistance in level 2 as well as a higher top speed with a longer follow-up movement in response to less manual propelling movement for outdoor routes.

Travel profile “Soft”

Passive mode for less experienced or cognitively impaired people. The system responds with little sensitivity to manual propelling movements in assistance level 1 and 2 by providing little motor power and is easy to control at both levels due to the relatively short follow-up movement and relatively low speed.

Travel profile “Active”

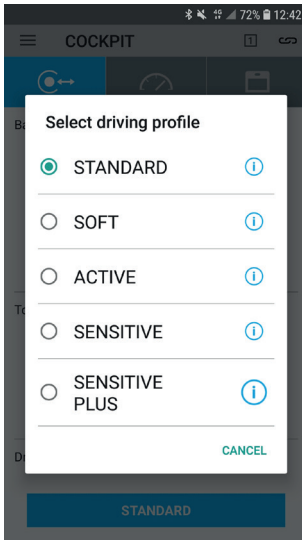
For active people with full hand function and/or relatively good arm strength. The system responds moderately sensitively to manual propelling movements in assistance level 1 by providing relatively low motor power. Level 2 provides a significantly longer follow-up movement with very high motor power and speed.

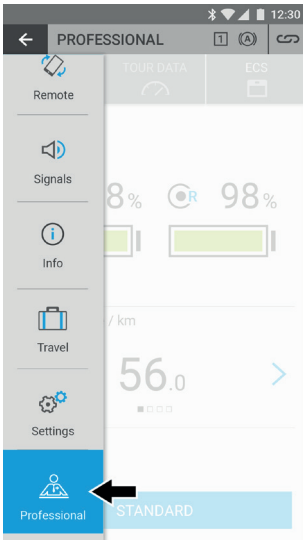
Travel profile “Sensitive”

For persons with limited hand function and/or relatively low arm strength. The system responds relatively sensitively to manual propelling movements by providing a high degree of motor power even at assistance level 1, but this can be easily controlled due to a relatively short follow-up movement. Level 2 provides even more motor assistance and a longer follow-up movement at a higher top speed.

Travel profile “Sensitive Plus”

For very weak wheelchair users with minimal arm or hand function (e.g. muscular dystrophy). Attention: The e-motion reacts very nervously and sensitively to slight impulses on the push rim in both assist levels. It might be necessary to adjust the torque in the professional section of the app or to adjust the sensor sensitivity on the drive wheel.



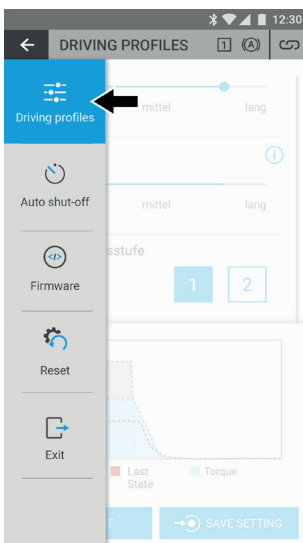
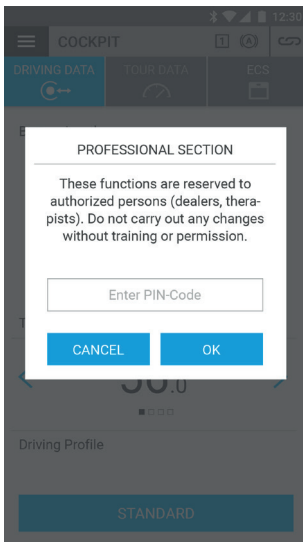


4.3.3 Enabling Expert mode

The Expert mode is in a part of the Mobility App that is protected by a separate PIN code. In this area, crucial settings in respect of the e-motion wheels can be changed that should only be carried out by authorised and trained specialist personnel.

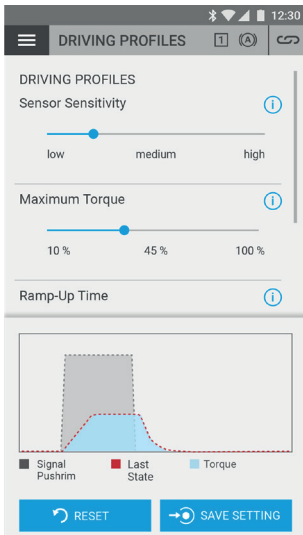
Changes made by unauthorised persons can have a negative effect on the driving characteristics of the e-motion wheels and may result in dangerous situations. Do not make any changes in Expert mode if you are not sure how this will affect the driving characteristics! Do not give the PIN code to third parties or unauthorised persons

Start the Expert mode in the app and enter the 12-digit PIN code:
\$A1Br-MtN25!

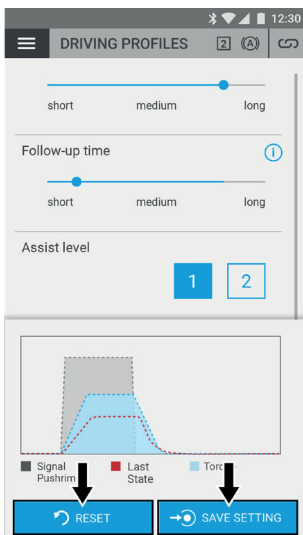


4.3.4 Customised programming of the travel parameters

In Expert mode, select the "Travel profiles" function to start setting the e-motion wheels



The settings of the connected e-motion wheels that are displayed now are always based on the travel profile previously set in 4.3.2 and can then be modified as required.



In the curve diagram in the lower part of the app window, the time curve of the torque as a function of the sensor impulse (grey) is displayed as a red line. As soon as a change is made to one of the travel parameters, another curve is displayed in blue, showing how the changed setting affects the torque.

It is now possible to either reset the changed values to the initial state using the "Reset" button (in this event, the additional blue curve disappears again completely) or transmit the values in real time directly to the connected e-motion drive wheels.

In which event, press the "Apply" button. In this event, the blue curve becomes a red curve and the changed values are permanently saved in the e-motion drive wheels.



The settings of the travel parameters can be made independently in respect of both assistance levels. In order to do so, select the appropriate assistance level in Expert mode using the relevant icon provided for this purpose.

The default values for assistance level 2 are for outdoor use and have more torque, a higher assisted speed and a longer follow-up movement.

In principle, however, each assistance level can be set independently of the other.

It is advisable to adjust the travel parameters while the wheelchair user makes use of e-motion power assistance and to vary the values step by step while using the wheelchair. This enables a fast, individual adjustment of the e-motion wheels in just a few steps so that they can ideally meet the needs and wishes of the wheelchair user.

i In Expert mode, the assistance level is changed automatically by selecting the buttons 1 or 2 so that the changes directly affect of the e-motion driving characteristics.

In everyday use, the wheelchair user needs to change the assistance level by means of the ECS remote control or the Mobility App with Mobility Plus Package.

One cannot change the assistance level on the wheels themselves. When switching off, the last active assistance level is automatically saved in both wheels and is reactivated the next time they are switched on again.

The following travel parameters can be adjusted in the Expert mode of the Mobility App:

Sensor sensitivity: 5 levels

Regardless of the adjustable mechanical sensitivity of the push rim sensor, the drive responds more quickly to initiated travel impulses at a low setting in the app.

For example, it may make sense to set the mechanical sensitivity of the sensor at a low level for people with little strength, but to leave the sensor sensitivity in the app at a low level so that the e-motion wheels do not react too nervously.

The setting of the sensor sensitivity in the app is always respectively applied to both e-motion wheels.

Torque: From 10% to 100% in increments of 1%

The torque describes the maximum force that the e-motion wheels build up during use. A higher torque is required especially when travelling uphill. However, if the torque is too high on a level surface this can cause the wheelchair to tilt backwards very slightly.

Please note that the maximum torque is built up in both directions, i.e. also when braking downhill. 100% in the app corresponds to a torque of 40 Nm per wheel. The setting of the torque is always respectively applied to both e-motion wheels.

Start-up time: 5 levels

The start-up time regulates how fast the torque is built up after a propulsion impulse. A short start-up time makes sense when travelling uphill, for example, but makes the e-motion power a little harder to control. A long start-up time results in the e-motion drive characteristics being more good-natured or sluggish.

The setting of the start-up time in the app is always respectively applied to both e-motion wheels.

Follow-up time: 5 levels

The follow-up movement regulates how long the motor of the e-motion wheels provide assistance after initiating a travel impulse. A long follow-up movement is recommended especially for longer distances and when travelling uphill outdoors, and has the advantage that the wheelchair user can be propelled relatively smoothly over a relatively long time. A relatively short follow-up movement should always be selected for indoors otherwise there is a risk of collisions occurring.

The setting of the follow-up time in the app is always respectively applied to both e-motion wheels.

Maximum assisted speed: 2 km/h to 6 km/h* in increments of 0.5 km/h

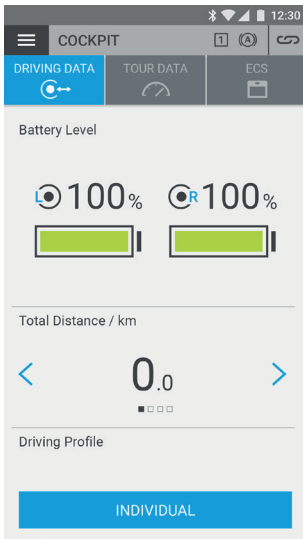
Independently of the torque, the maximum assisted speed regulates the speed at which the e-motion wheels provide the wheelchair user with motorised assistance. Although higher speeds than the set value are possible, the wheelchair users are obliged to supply the additional force required for this purpose themselves. Especially for inexperienced or cognitively impaired persons it may make sense to limit the maximum speed to a lower value.

! The e-motion wheels do not automatically slow down on downhill gradients, in which event the e-motion wheels are in freewheeling mode.

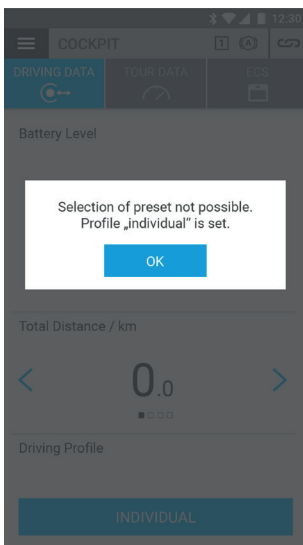
The setting of the maximum assisted speed in the app is always respectively applied to both e-motion wheels.

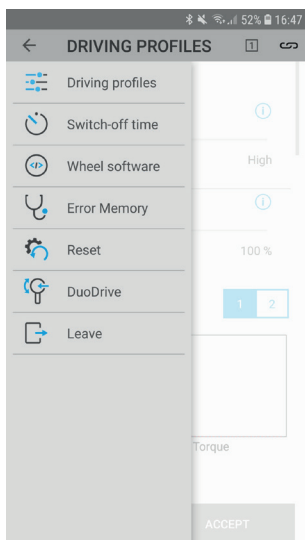
*The maximum assisted speed can be increased by purchasing the Mobility Plus Package on request from 6 km/h to 8.5 km/h. In Expert mode, you always have the option of limiting the speed to a lower value. In this event, the maximum assisted speed can no longer be increased by the efforts of the wheelchair user.

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i After successfully completing the programming, the travel profile "Individual" is displayed in the cockpit of the app. The user can now no longer select other travel profiles. To use the original travel profiles, a reset is required (see Section 4.3.6)





4.3.5 DuoDrive settings

Select this option to carry out settings for Cruise Mode.

If you have an e-motion DuoDrive or if the corresponding control unit has been connected to the drive wheels at least once before, the following setting options are displayed in Expert mode; they are not displayed on the e-motion M25 without control unit.

Control unit mounting side

The factory setting for the mounting side is on the right. Change this setting if the control unit is to be mounted on the left side of the wheelchair (in the direction of travel).

Note

If all parameters are reset to the factory settings, the default mounting side on the right will be restored as well.

Cruise speed increments

Here you can set the increments at which the cruise speed changes with each click of the rotary wheel. These settings apply to both directions of travel, i.e. for accelerating as well as for reducing cruise speed. You can select an increment from 0.1 km/h to 1.0 km/h. The factory setting is 0.3 km/h. Please note that the e-motion DuoDrive accelerates/brakes very quickly at a higher setting and may therefore be more difficult to control. Moreover, when navigating slopes with limited upper body stability, reducing the cruise speed too quickly can cause the wheelchair user to tip forwards out of the wheelchair.

Steering dynamics

Here you can set 5 sensitivity levels for the system's reaction to steering impulses on the push rims, depending on the current cruise speed:

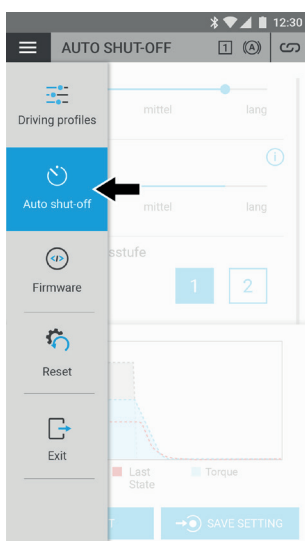
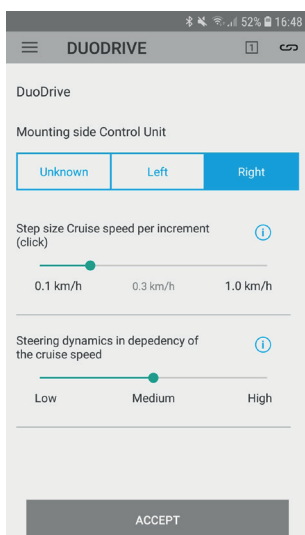
1 = As the cruise speed increases, the steering reacts less sensitively to steering impulses on the push rims, thus ensuring a high degree of directional stability; the effort required to steer tends to be somewhat higher.

5 = The steering continues to react relatively sensitively to steering impulses on the push rims, even at increasing cruise speed. The system can be steered with less force, but also becomes more unsteady.

Note

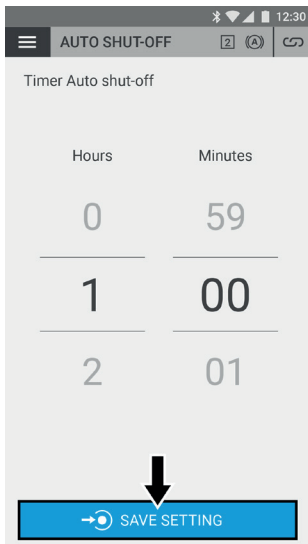
The maximum speed in cruise mode always depends on the maximum assisted speed that is currently set in the system. Depending on the setting, this can mean, for example, that a significantly lower maximum cruise speed can be achieved at assistance level 1 than at assistance level 2.

When at a standstill, the DuoDrive control unit is also used to switch back and forth between assistance level 1 and 2 by pressing twice on the side of the rotary wheel, in a similar fashion to the ECS remote control.



4.3.6 Setting the auto-off time

In Expert mode, select the menu item "Auto-off time"

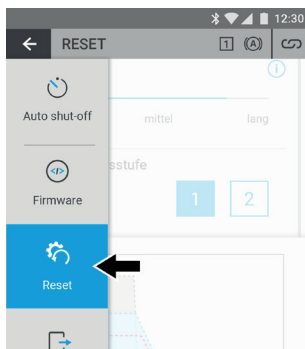


The auto-off time is set in the factory to 60 minutes. Using the app, this value can be individually set to a value between 5 minutes and 10 hours. Then press the “Apply” button to save. The auto-off time for both e-motion wheels is then saved permanently.



The e-motion wheels are in standby mode after an being switched off with auto-off and can be reactivated using the ECS remote control or smartphone app. After 72 hours without any activity, standby mode is cancelled and the wheels can then only be activated by pressing the on/off button on the wheel.

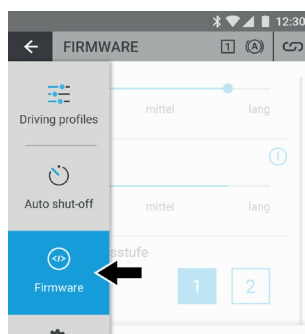
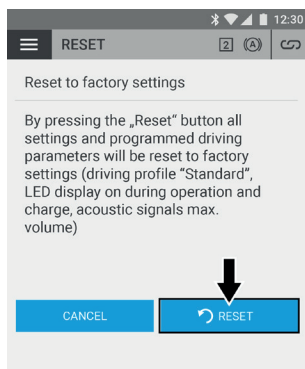
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4.3.7 Resetting

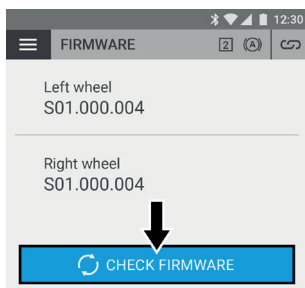
Certain parameters can be reset to the factory settings by means of the app. Select the menu item “Reset” in Expert mode and then press the “Reset” button
The following parameters will be reset to the factory settings

Parameter	Action on reset
Assignment of wheel side	Will be deleted
Travel profile	Standard – The profile “Individual” and the associated values, if available, will be deleted
Assistance level	1
Auto-off time	60 minutes
Buzzer volume	Maximum
LEDs in operation	On
LEDs when charging	On



4.3.8 Updating the wheel software via the app

If required, users can check for updates of the wheel software in Expert mode. Select the menu item “Wheel software” in Expert mode to do so.



The software versions of both drive wheels are displayed in the app. Press the “Check for firmware update” button to search for a new version of the wheel software. If there is no update available, the app will inform you of this. Alternatively, the app will guide you through the update process.



The e-motion Mobility App checks at regular intervals automatically whether a new version of the software (firmware) is available for the connected e-motion wheels. If a newer version is available, the user of the app will be given the opportunity to update the wheel software irrespective of whether they are in Expert mode. During the update process, the e-motion wheels cannot be used. An update usually takes no longer than a minute.

4.3.9 Replacing the wheels using the 48-hour mobility service

In the event of a defect on a drive wheel, the drive wheel can be exchanged by means of the 48-hour mobility service. This service is only available to customers in Germany.

Since replacement wheels are not individually programmed, all the settings and travel profiles should be calibrated preferably before the wheelchair is handed over to the user.

Nevertheless, if two drive wheels with different settings are connected to the Mobility App, then the factory setting will be set for both wheels for safety reasons and, in cases of doubt, a lower assisted speed as well.

5. Notes on shipping the e-motion batteries

The lithium-ion batteries integrated in the wheels may only be replaced by an authorised specialist dealer.

- Defective lithium-ion batteries must not be transported and must be disposed of locally.
- Observe the applicable regulations for disposal.
- In respect of used lithium-ion batteries, there are transportation regulations that apply.
- If required, Alber will provide you with information on the packaging and transportation, the packaging and labelling as well as the documentation. Please contact our customer service in this regard.



Alber has issued a 12-page information guide (PDF file) on transporting lithium-ion batteries. You can request this from Alber at any time. The file is also available to download in the Alber DIP.



Do not send batteries to Alber under any circumstances without first contacting the Alber Service Center.

6. Information on returning lithium-ion batteries

Please note the following with regard to processing of claims for lithium-ion batteries within the warranty period:

E-motion batteries are Class 9 hazardous materials. Please observe the country-specific regulations for safe shipping and contact the Alber representative in your country before shipping.

Ihre Alber-Vertretung / Your Alber representative / Votre représentation Alber /
Vostra rappresentanza Alber / Su representación Alber / Din Alber representant /
Din Alber-agenturene / Deres Alber-repræsentation / Tai Alber-piirijohtajalta /
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