Operating instructions

EBS V2 Operating Display Mini
with black / white dot matrix display
and integrated control element

Item no.: aelcdky-01

Table of contents

1 About this guide

These instructions are an integral part of the product. They contain important information and safety instructions. Therefore, keep the manual handy at all times and pass it on to third parties if you pass on the product! For the safe and successful commissioning of your EBS V2 Mini operating display, please be sure to read this manual and observe the safety instructions!

2 Scope of delivery

The scope of delivery of the display includes:

- EBS V2 operating display Mini with:
  - black / white dot matrix display
  - Integrated 3-way push-button / control element
  - in the 36 Volt version
  - Bracket for handlebars with 22.2 mm diameter
  - Item no.: aelcdky-01.

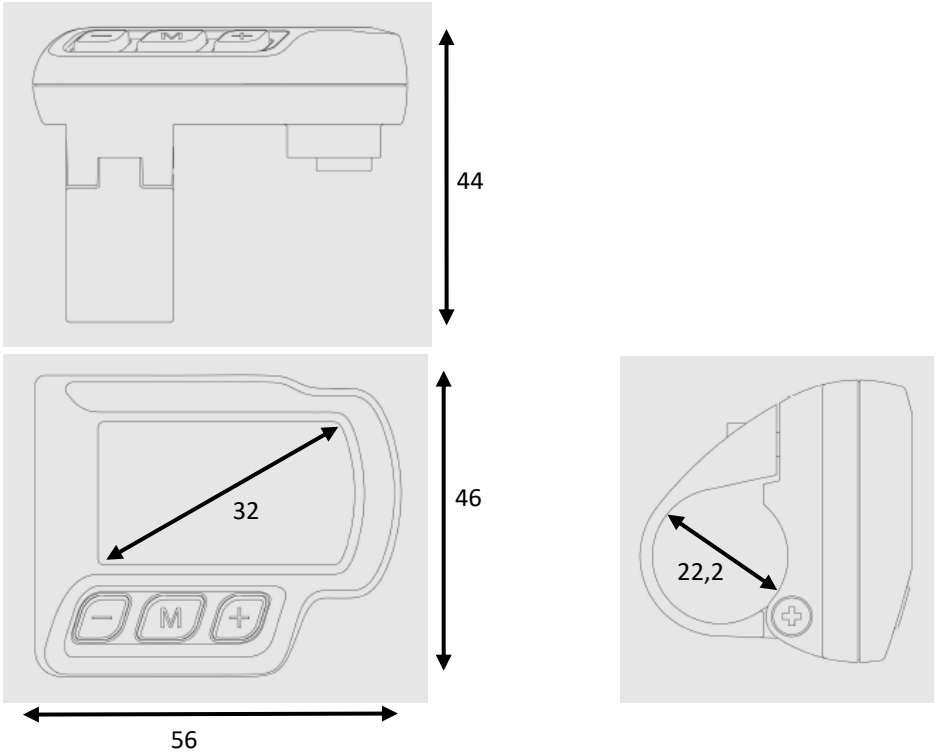
3 Appearance and size

3.1 Material and operating parameters

- The housing of the display is made of scratch- and break-resistant plastic.
- Operate the unit only within a temperature range of - 20°C to + 60°C.

3.2 Dimensions

- Display with integrated control element:



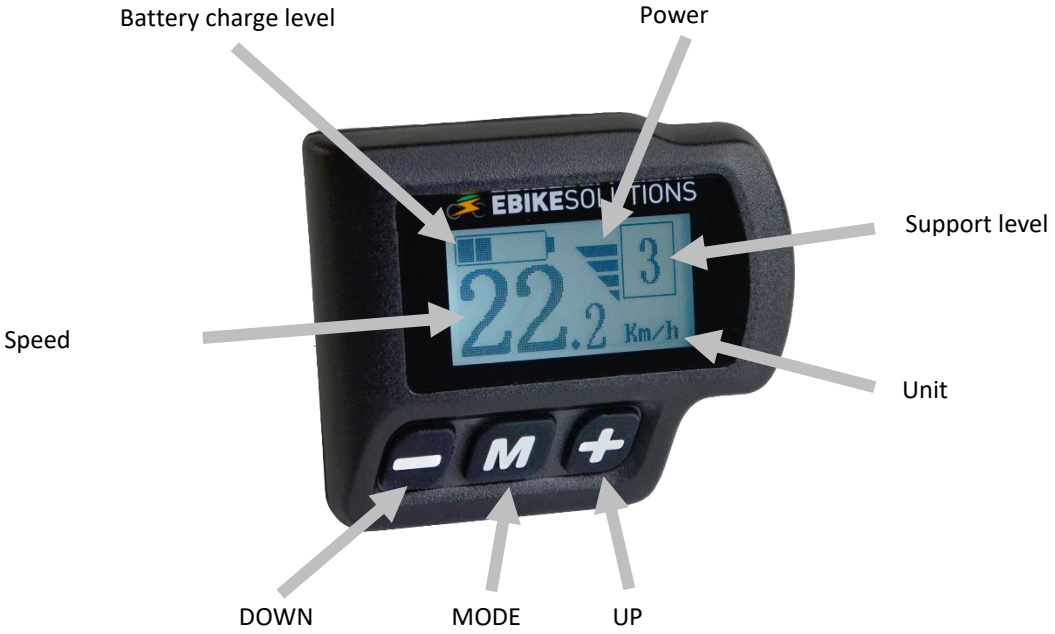
All dimensions in mm.

4 Function overview

4.1 Displayable values in driving mode

The display can give you information about:

- Battery charge level
- Current speed
- Maximum speed (MAX)
- Daily kilometres (TRIP)
- 6 km/h pushing aid (P)
- Error codes (ERR)
- active support level
- Average speed (AVG)
- Time since last switch-on (Ridtime)
- Total kilometres (ODO)
- Display lighting
- Graphic power display by means of bars



4.2 Control element

- The display is equipped with an integrated control element with 3 buttons:


... is referred to as **UP**.


... is referred to as **DOWN**.


... is referred to as **MODE**.

4.3 Quick start: Adjustable values

You can make the following settings on the display:

General settings within the so-called "General Settings" (chapter➔ 8.1):

Switch on the display, then press **UP** and **DOWN** simultaneously and hold for 2 seconds. The following parameters can now be called up with **UP** or **DOWN:**

- TRIP: 1-Clear Trip Reset
- Distance and speed units: 2-Set Unit
- Impeller size: 3-Set WD
- Maximum speed with motor assistance: 4-set LS
- Battery status display and low-voltage cut-off: 5-Set Voltage

- After selecting one of the parameters, briefly press **MODE.**
- Change the parameter value by means of **UP** or **DOWN.**
- To save the stored value and exit the menu, press and hold the **MODE** button for 2 seconds.

Advanced settings within the so-called "Specific Settings" (chapter➔ 8.2):

Switch on the display, then press **UP** and **DOWN** simultaneously and hold for 2 seconds. Then press **UP** and **DOWN** again simultaneously and keep them pressed for 2 seconds. The following parameters can now be called up with **UP** or **DOWN:**

- Number of support levels and current level setting per support level: 1-Power Set
- Maximum current: 2-Current Set
- Number of magnets in the PAS disc: 3-Assistant num
- Number of spoke magnets: 4-speed sensor
- Start-up delay: 5-Slow Start
- Backlight: 6-Backlight Set
- Power-on protection password: 7-Password Set (with password "1212").

- After selecting one of the parameters, briefly press **MODE.**
- Change the parameter value by means of **UP** or **DOWN.**
- To save the stored value and exit the menu, press and hold the **MODE** button for 2 seconds.

Reset to the display manufacturer's factory settings (chapter➔ 8.3):

Switch on the display, then press **MODE** and **UP** simultaneously and hold for 2 seconds. Select "YES" with **UP** or **DOWN.** Then press **MODE** for 3 seconds and keep it pressed.

5 Display mounting on the handlebar

- Locate a suitable mounting location for the display on the left or right side of the handlebar. Ideally, the display should be mounted between the handlebar grip and the brake.

  Tip: We offer various optional handlebar adapters for mounting the display in our web shop. You can find them by searching for "handlebar adapter" in the PRODUCT SEARCH field on our website http://www. ebike-solutions.com.

- Unscrew the fastening screw on the display completely using a 3 mm Allen key.
- Unfold the clamp on the display and place it around the handlebar. Make sure that the **DOWN** button points to the left when viewed in the direction of travel.

- Align the display so that you can read it easily later when driving and so that you do not have to take your hand off the handlebar grip to operate the display buttons safely while driving.
- Replace the screw you have just removed and tighten it carefully with the Allen key. Caution: Do not over-tighten the screw!
- The result is as follows:
  - Display mounting on the left-hand side of the handlebar:

  - Display mounting on the right-hand side of the handlebar:

- **Now make sure that the power supply is switched off before connecting the display to the overall system (cable distributor) via the display connection cable.**
- To connect the display to the overall system (cable distributor), please observe the explanations in the assembly instructions of your conversion kit.
- Then check again that the display is correctly connected to the cable distributor.

6 Setting the display before the first ride

The display is already pre-configured. Nevertheless, you have *to* enter various default values in the display once before the first ride. This concerns, for example, the tyre diameter of your wheel or the maximum speed with motor assistance.

The display then "works" with these default values you have set.

In addition, you ***can*** carry out fine-tuning via the display in order to adapt the behaviour of your conversion set even better to your needs. These setting options, however, intervene very deeply in the programming. Therefore, before customising these parameters, you should always follow the instructions in chapter (➔ **8**).

In the following we will show you how to store the appropriate values for your bike in the display.

Please observe the regulations of the StVZO or the legal requirements regarding the maximum permitted speed in your country.

6.1 Switch on display

Before you can configure the display individually, you must switch it on.

To switch on the display, proceed as follows:

- Switch on the power supply (battery).
- Press and hold the **MODE** button for 1 second:

  The display switches on:

Note: For better readability, the display entries in the coloured online version of this manual have been coloured blue. In reality, however, these entries are black and white.

6.2 Adjusting wheel size and maximum speed with motor assistance

To correctly store the correct wheel size and maximum speed with motor assistance in the display before the first ride, proceed as follows:

- Switch on the display (chapter➔ **6.1**).
- Press and hold both **UP** and **DOWN** buttons simultaneously for 2 seconds:

  The display changes to settings mode. You can recognise this by the following display entry:

- Press **UP** twice to call up the entry "3-Set WD":

- Press **MODE** briefly and the display jumps to a wheel size such as "28 INCH", with the number highlighted in dark:

Note: The value with a dark background is the currently selected value.

- With **UP** or **DOWN you** can switch between the individual options (here impeller sizes) if required.

  The following can be selected: 08", 09", 10", ..., 26", 700 C, 28", 29", ..., 32". The value "700 C" is suitable for road bikes.

- Once you have selected the appropriate value for your wheel, briefly press **MODE** to confirm:

  The display confirms a successful saving process with the message "OK! The display then returns to the setting mode shown above. "3-Set WD" is stored again.

- Press **UP** briefly to highlight "4-Set LS":

- Press **MODE** briefly and the display will jump to a speed value such as "25 Km/H", with the number highlighted in dark:

- If you are riding a pedelec and the value "25 Km/H" is stored, briefly press **MODE** to confirm: The display acknowledges this with "OK!" and then jumps back to "4-Set LS":

- If you ride a pedelec and a value other than "25 Km/h" is stored, you must select the entry "25" via **DOWN** or **UP**:

  Press **DOWN to** decrease the displayed value, press **UP to** increase it.

- If the entry "25" is stored, press **MODE** briefly to confirm:

  The display acknowledges this with "OK!" and then jumps back to "4-Set LS":

- Press and hold **MODE** for 2 seconds:

The display returns to the normal display mode, your settings are now stored.

- **Always observe the regulations of the StVZO or the legal requirements regarding the maximum permitted speed in your country!**

- The maximum speed with motor assistance is set to 25 km/h at the factory. In Germany, Austria and Switzerland, the maximum permitted speed with motor assistance for pedelecs is 25 km/h. Accordingly, you must set and save the maximum speed with motor assistance via **DOWN** or **UP.**
- If you exceed the set maximum speed while driving, the system switches off the propulsion. The motor assistance is switched on again as soon as you drive slower than the set speed.
- A support speed with a motor greater than 25 km/h can be set via the display. Please refer to the information in (chapter➔ **8.1.4**).

  If motor assistance is provided at speeds greater than 25 km/h, your bike is not a pedelec!

Now the display is configured and ready for the first ride (chapter➔ 7)!

Tip: You can make the adjustments described in chapter (➔ **8**), but you do not have to.

7 Operating the display while driving

7.1 Switching on and off

- Make sure that the power supply (battery) is switched on.
- If the display is switched off (the display does not show any values), press and hold the **MODE** button until the display switches on. This process takes about 1 second:

- To switch the display off again, press and hold the **MODE** button for a good 1 second until the display goes out:

When switched off, the system consumes practically no power. However, you should make it a habit to switch off the battery when you are not using your electric bike. If you forget to do this, the display will switch itself off after approx. 10 minutes.

7.2 Display of current speed, TRIP TRIP, ODO, Ridtime, AVG and MAX, Ridtime, AVG and MAX

In driving mode, you can use the **MODE button to** display different speed, distance or time information in an endless loop.

To view this display information, proceed as follows:

- If the display is switched off, switch it on (chapter➔ **7.1**).
- The display of the current speed is preset. As soon as you start driving, the display is filled with the corresponding speed value:

- Press **MODE** briefly to display the total distance travelled since the last reset of the short distance counter "TRIP" instead of the current speed:

Tips:

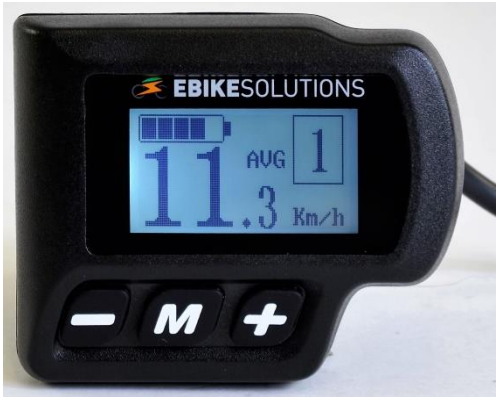
- The following applies to all display values of the infinite loop mentioned in this chapter (➔ **7.2**):
  If you do not press **MODE** again within 5 seconds, the display will return to the current speed.
- "Ridtime", "AVG" and "Max" are reset to "0" when the display is switched off.
- The short distance counter "TRIP" is not automatically reset to "0". To reset it to "0", proceed as described in chapter (➔ **8.1.1**).

- Press **MODE** briefly to display the total distance travelled since mounting your display "ODO" instead of "TRIP":

Tip: "ODO" is only displayed when the vehicle is stationary. As soon as you start driving, "ODO" can no longer be called up via the **MODE** button.

- Press **MODE** briefly to display the total display switch-on time "Ridtime" since the last time the display was switched on instead of "ODO":

- Press **MODE** briefly to display the average speed "AVG" since the last time the display was switched on instead of "Ridtime":



- Press **MODE** briefly to show the maximum speed "MAX" instead of "AVG" since the last time the display was switched on:

- Press **MODE** briefly to display the current speed again instead of "MAX".

7.3 Choice of support level

The system comes with 5 "support levels" from the factory.

The default setting after switching on is level "1". Here the motor support is at its lowest, provided you have not overwritten the factory settings. The higher the level, the more powerful the motor support.

To select the support levels, proceed as follows:

- If the display is switched off, switch it on (chapter➔ **7.1**).
- Briefly press the **UP** button once to increase the support level by one at a time. This is shown accordingly in the display:

- Briefly press the **DOWN** key to decrease the level by one at a time:

- At level "0" the motor assistance is switched off.

  Nevertheless, the display shows values such as the current speed at level "0". The pushing aid can also be activated at level "0".

On longer climbs or steep stretches, you should ride with at most a medium support level or with at most medium currents so that the system does not switch off the motor support too often for thermal reasons.

7.4 6 km/h pushing aid

The display is equipped with a sliding aid.

- If the display is switched off, switch it on (chapter➔ **7.1**).
- Press and hold the **DOWN** button:

  After a good 1 second, the pushing aid is activated. The bike now accelerates and travels on level ground at approx. 6 km/h without pedalling as long as you keep the button pressed. If you release the **DOWN button**, the push aid is deactivated.

  You can recognise an activated push aid by the entry "P" in the display:

Tip: The pushing aid is also active in level 0.

7.5 Dim the display lighting and switch on again

The display is equipped with a display illumination. This is always on after the display is switched on.

To dim the display lighting, proceed as follows:

- If the display is switched off, switch it on (chapter➔ **7.1**):

  The display illumination is also switched on.

- Press and hold the **UP** button for a good 1 second until the display illumination is dimmed.

  Tip: You cannot switch off the display illumination completely; it is only dimmed.

- Press and hold the **UP** button again for a good 1 second until the display illumination is switched on again.

7.6 Power display in bar form

The display is equipped with a power indicator in bar form. The more power the system is currently "delivering", the more bars you can see in the display:

- Momentary high performance of the drive:

- Momentary low power of the drive:

7.7 Battery charge indicator

The display is equipped with a battery charge level indicator (bar graph). This provides you with information about the charge status of your drive battery while you are riding.

- If the display is switched off, switch it on (chapter➔ **7.1**).
- The display shows the battery charge level in six steps via a battery symbol.

  If all bars in the battery symbol are filled, the battery is (almost) fully charged.

  If none of these bars are visible any more and the frame of the battery symbol in the display is also flashing, the battery is almost empty and the motor is switched off. This prevents the battery from being further discharged and damaged. Recharge the battery as soon as possible.

The bar display varies depending on the load, i.e. it may display fewer bars under load than at standstill. This is due to technical reasons and does not represent a malfunction!

Battery charge indicator:

Full battery => => Battery is getting emptier => => =>

=> => => => => => Frame flashes,
Battery is almost empty

8 For experienced users: making individual settings via the display

The display offers you the possibility to make very profound changes to the programming of the system.

Tried and tested values are stored in the display at the factory. Adjusting these stored values can have a negative effect on the behaviour of your conversion kit.

Therefore, please only make changes to the preset values if you are really sure of the consequences of your actions.

Observe the legal regulations for pedelecs at all times when making your settings!

Below we list the parameters that you can change individually if required. The setting options are divided into 3 categories:

- General settings, the so-called "General Settings" (chapter➔ **8.1**)

  You can store your individual settings for the following parameters in this area:

  - 1-Clear Trip: Resetting the short trip counter "TRIP
  - 2-Set Unit: Distance and speed units
  - 3-Set WD: Impeller size
  - 4-Set LS: Maximum speed with motor support
  - 5-set voltage: battery status display and low-voltage cut-off

- Advanced settings, the so-called "Specific Settings" (chapter➔ **8.2**)

  You can store your individual settings for the following parameters in this area:

  - 1-Power Set: number of support levels and current level setting per support level
  - 2-Current Set: Maximum current
  - 3-Assistant num: Number of magnets in the PAS disc
  - 4-Speed Sensor: Number of spoke magnets
  - 5-Slow Start: Start-up delay
  - 6-Backlight Set: Backlight
  - 7-Password Set: Power-on protection password

- Reset to the display manufacturer's factory settings (chapter➔ **8.3**).

8.1 General Settings, "General Settings

Use the following procedure to access the various parameters within the "General Settings":

- Switch on the display.

- Press and hold both **UP** and **DOWN** buttons for 2 seconds:

  The display changes to the "General Settings" overview:

  Tip: You can move from the 1st to the 2nd image by pressing **UP** four times.

- Press **UP** or **DOWN to** select a parameter in the list. The currently selected parameter is marked with a dark bar:
  - Press **UP to** go to a list entry with a higher number or to move down the list.
  - Press **DOWN to** go to a list entry with a smaller number or to move up in the list.

8.1.1 1-Clear Trip: Resetting the short trip counter "TRIP

With this function you can reset the trip meter / short distance counter "TRIP" to "0". The short trip counter counts up the distance travelled until you manually reset the display to "0":

- Call up "1-Clear Trip" as described in chapter (➔ **8.1**) and confirm with a short press on **MODE**.

- Use **UP** or **DOWN to** select between "YES" (= reset "TRIP") and "NO" (= do not reset "TRIP"):

  The factory setting is "NO":

- If you want to reset "TRIP", select "YES" and briefly press **MODE** to confirm:

  The display briefly shows "OK!" and returns to the "General Settings" display:

- If you do not want to reset "TRIP", select "NO" and briefly press **MODE** to confirm:

  The display returns directly to the "General Settings".

Tips:

- If you do not want to change any more parameters within the "General Settings", press and hold **MODE** for 2 seconds:

  This will exit the current screen, your settings will be saved. You will be taken directly back to the display in normal driving mode!

-To exit the settings screen without saving new data, press and hold the **DOWN** button for 2 seconds:

You leave the settings screen without saving.

-If you do not press any button within 2 minutes in this setting mode, the setting mode is exited:

Your settings will not be saved.

8.1.2 2-Set Unit: Distance and speed units. speed units

With this function you determine whether "km" and "Km/h" (metric system) or "Mile" and "MPH" (British system) are shown for the speed and distance units in the display:

- Call up "2-Set Unit" as described in chapter (➔ **8.1**) and confirm by briefly pressing **MODE**.

- Use **UP** or **DOWN to** select between "KM" (= metric system) and "Mile" (= British system):

  The factory setting is "KM":

- If you want to use the British system, select "Mile" and press **MODE** briefly to confirm:

  The display briefly shows "OK!" and returns to the "General Settings" display.

- If you want to use the metric system, select "KM" and briefly press **MODE** to confirm:

  The display briefly shows "OK!" and returns to the "General Settings" display.

Tip:

- If you do not want to change any more parameters within the "General Settings", press and hold **MODE** for 2 seconds:

  This will exit the current screen, your settings will be saved. You return directly to the display in normal driving mode!

8.1.3 3-Set WD: Impeller size

With this function you store the wheel size of your bike in the display. This setting is responsible for the correct display of the speed and distance values in the display. Various wheel sizes are available for selection:

- Call up "3-Set WD" as described in chapter (➔ **8.1**) and confirm by briefly pressing **MODE**.

- With **UP** or **DOWN you can** choose between various wheel sizes. You can choose from the following:

  08", 09", 10", ..., 26", 700 C, 28", 29", ..., 32".
  The value "700 C" is suitable for road bikes.

  The factory setting is "28 INCH":

- Once you have selected the wheel size that suits your bike, briefly press **MODE** to confirm:

  The display briefly shows "OK!" and returns to the "General Settings" display.

Tip:

- If you do not want to change any more parameters within the "General Settings", press and hold **MODE** for 2 seconds:

  This will exit the current screen, your settings will be saved. You will be taken directly back to the display in normal driving mode!

8.1.4 4-Set LS: Maximum speed with motor support

With this function you can store the maximum speed with motor support in the display.

Notes:

-Always observe the regulations of the StVZO or the legal requirements regarding the maximum permitted speed in your country!

- The maximum speed with motor assistance is set to 25 km/h at the factory. In Germany, Austria and Switzerland, the maximum permitted speed with motor assistance for pedelecs is 25 km/h. Accordingly, you must set and save the maximum speed with motor assistance for pedelecs via **UP** or **DOWN.**
- If you exceed the set maximum speed while driving, the system switches off the propulsion. The motor assistance is switched on again as soon as you drive slower than the set speed.
- If motor assistance is provided at speeds greater than 25 km/h, your bike is not a pedelec!
- The achievable speed with motor assistance depends in particular on the motor type and the battery type:

  Depending on the motor and battery combination, there is a maximum technically possible speed, which can also be above 25 km/h. On the other hand, a display setting of e.g. 40 km/h does not mean that the system will also support up to 40 km/h. This maximum conceivable speed with motor assistance depends in particular on the motor and battery combination, and not (only) on the display setting. This is due to technical reasons and does not represent a malfunction!
- **Observe the legal requirements for pedelecs at all times! Set the maximum speed with motor assistance for pedelecs to 25 km/h!**

To set the maximum speed with motor assistance in the display, proceed as follows:

- Call up "4-Set LS" as described in chapter (➔ **8.1**) and confirm with **MODE**.

- Use **UP** or **DOWN to** select the speed between "12 km/h" and "40 km/h":

  The factory setting is "25 Km/H":

- Once the desired speed is selected, briefly press **MODE** to confirm:

The display briefly shows "OK!" and returns to the "General Settings" display.

Tip:

- If you do not want to change any more parameters within the "General Settings", press and hold **MODE** for 2 seconds:

  This will exit the current screen, your settings will be saved. You will be taken directly back to the display in normal driving mode!

8.1.5 5-Set Voltage: Battery status display and Undervoltage cut-off

With this function you store the voltage thresholds for the bar display as well as the undervoltage cut-off:

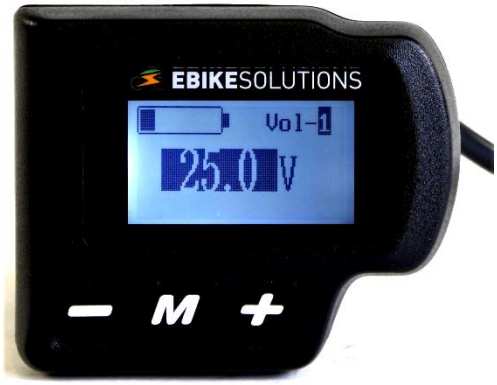
- Call up "5-Set Voltage" as described in chapter (➔ **8.1**) and confirm by briefly pressing **MODE**:

  The display changes to "Vol-1", a bar display with 1 battery segment and a volt number with a dark background:

- Use **UP** or **DOWN to set the** voltage value up to which 1 battery segment should still be visible in the display. If the battery voltage falls below the value listed under "Vol-1", the empty frame of the battery display flashes in the display and the motor is switched off.

  The display manufacturer's factory setting for "Vol-1" is "30.0 V". If you reset the display to the factory settings of the display manufacturer (chapter (➔ **8.3**)), 30.0 V is stored again:

EBS delivers the display with a "VOL-1" value equal to "25.0 V". You should also store this value again after resetting the display to the factory settings of the display manufacturer:



Once you have selected the appropriate voltage value (voltage values between 20.0 V and 60.0 V are possible), briefly press **MODE** to confirm:

The display changes to "Vol-2", a bar display with 2 battery segments and a dark volt number.

- Use **UP** or **DOWN to set the** voltage value up to which 2 battery segments should still be visible in the display. Briefly press **MODE** to confirm.

- Proceed in the same way for "Vol-3", "Vol-4" and "Vol-5":

  "Vol-5" corresponds to the battery voltage up to which all bars are shown in the display.

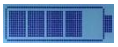
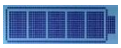
- If the desired value for "Vol-5" is stored, briefly press **MODE**:

  The display briefly shows "OK!" and returns to the "General Settings".

- Press and hold **MODE** for 2 seconds and you will return to normal display mode.

The following table shows the voltage values stored by the display manufacturer or by EBS for LiIo drive batteries with 36 V nominal voltage.

Please note that the values stored by EBS are overwritten after resetting the display to the factory settings of the display manufacturer (chapter➔ **8.3**) and must then be stored again:

Bar display	Ref.	Factory setting in volts	EBS setting in volts
	Vol-1	30,0	25,0
	Vol-2	33,5	34,1
	Vol-3	36,0	35,7
	Vol-4	37,4	37,2
	Vol-5	39,2	38,8

8.2 Advanced settings, " Specific Set

Proceed as follows to access the various parameters within the "Specific Settings":

- Switch on the display.
- Press and hold both **UP** and **DOWN** buttons for 2 seconds:

  The display shows the overview "General Settings":

- Press and hold both **UP** and **DOWN** buttons again for 2 seconds:

  The display changes to the "Specific Set" overview:

Tip: The above display entries can be called up by briefly pressing the **UP** key several times.

- Press **UP** or **DOWN to** select a parameter. The currently selected parameter is marked with a dark bar:
  - Press **UP to** go to a list entry with a higher number or to move down the list.
  - Press **DOWN to** go to a list entry with a smaller number or to move up in the list.

8.2.1 1-Power Set: Number of support levels and and current level setting for each power per support level

This function allows you to select the number of support levels of the system.

The choices are "0-3", "1-3", "0-5", "1-5", "0-7", "1-7", "0-9", "1-9".

The factory setting is "0-5":

In addition to 3, 5, 7 or 9 support levels, you can select whether level "0" should also be available or not. In level "0", data is shown on the display, but there is no support from the PAS sensor when you pedal.

Each stage is already preset at the factory with a certain support value as a percentage of the maximum current according to chapter (➔ **8.2.2**).

However, you can overwrite this percentage value for each individual level if necessary.

To set the number of assistance levels and the current level setting for each assistance level, proceed as follows:

- Call up "1-Power Set" as described in chapter (➔ **8.2**) and confirm by briefly pressing **MODE**.

- The display entry changes to "***Power Set***" with a dark background:

  The factory setting is "0-5":

- Use **UP** or **DOWN to select the** number of support levels from the above options.
- Once you have selected the appropriate number of steps (in the example "0-5" was selected), briefly press **MODE** to confirm:

  For example, the display now shows "5-1- 20%" with "20%" on a dark background. This means that stage 1 (of 5 stages) is operated with a pre-evaluation of 20% of the maximum current:

- Press **UP to** increase the percentage value (current value for level 1), **DOWN to** decrease it. Once you have selected the percentage value that suits you, briefly press **MODE** to confirm:

  The display now shows, for example, "5-2- 40%", with "40%" on a dark background.

- In the same way as described above, enter the desired percentage value for each of the remaining levels and confirm by briefly pressing **MODE**.

  If a percentage value for the last level is also set, press and hold the **MODE** button for 2 seconds:

  The display returns to normal display mode.

Excursus: Number of support levels and -strength and factory settings:

The following table provides information about the factory settings of the display manufacturer. It describes the relationship between the number of support levels and the respective support strength in the individual stages. The support strength is the percentage value of the maximum current:

SCA / cur	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Steps 0-3 / 1-3	50	74	92						
Steps 0-5 / 1-5	20	40	60	80	100				
Steps 0-7 / 1-7	40	50	60	70	80	90	96		
Steps 0-9 / 1-9	25	34	43	52	61	70	79	88	96

Their values:

SCA / cur	1	2	3	4	5	6	7	8	9
Steps									

Tip: If, for example, level 1 already provides too much support, you can assign a lower percentage value to this level. This can be useful, for example, if you are riding in a group in which not all riders have an electric bike.

8.2.2 2-Current Set: Maximum current

With this function, you can store the maximum current with which the system is to be operated. The set value is the reference point for the percentage settings from chapter (➔ **8.2.1**)).

You can choose between "7.0 A", "7.5 A", "8.0 A",..., "15.0 A", ..., "22.0 A".

The factory setting is "15.0 A".

Proceed as follows to set the maximum current:

- Call up "2-Current Set" as described in chapter (➔ **8.2**) and confirm by briefly pressing **MODE**.
- The display entry changes to "**Current Set**" with a dark background:

  The factory setting is "15.0 A":

- Use **UP** or **DOWN to** select the desired maximum current from the above options.
- Press **MODE** briefly to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

Tips:

- Test with lower currents, 13.0 A is also sufficient! This will protect the motor and the battery, and you will also extend the battery range.
- Although the system switches off the motor support in the event of overheating, you should still select a current stage with a maximum of 7 A for longer uphill rides, larger climbs and for motors with 250 watts rated continuous power and batteries with 36 V rated voltage.
- Many pedelec batteries are only designed for maximum currents of 15.0 A.

8.2.3 3-Assistant num: Number of magnets in the PAS disc

With this function you can store the number of magnets in the PAS disc.

The choices are "n-05", "n-06, ..., "n-09", "n-12" and "n-24".

The factory setting is "n-12".

- Call up "3-Assistant num" as described in chapter (➔ **8.2**) and confirm with a short press on **MODE**.
- The display entry changes to "*Assistant num*" with a dark background entry "n-12":

- If the magnetic disc of your EBS conversion set has 12 magnets, please leave it at the factory setting "n-12" and do not make any changes here. Then briefly press **MODE** to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to normal display mode.

In the event that the entry in the display does not correspond to the magnet number of the PAS disc, proceed as follows to adjust it:

- Call up "3-Assistant num" as described in chapter (➔ **8.2**) and confirm briefly with **MODE**.

- The display entry changes to "*Assistant num*" with a dark background entry:

- Use **UP** or **DOWN to** select the desired value from the above options.

- Press **MODE** briefly to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

8.2.4 4-Speed Sensor: Number of spoke-magnets

This function allows you to store the number of spoke magnets with which your system is equipped.

The choices are "n-01", "n-02", ..., "n-16".

The factory setting is "n-01".

Tip: For EBS conversion kits with 1 spoke magnet, leave the setting at "1".

If you do need to make a change, proceed as follows to make the setting:

- Call up "4-Speed Sensor" as described in chapter (➔ **8.2**) and confirm with a short press on **MODE**.

- The display entry changes to "*Speed Sensor*" with a dark background:

- Use **UP** or **DOWN to** select the desired value from the above options.

- Press **MODE** briefly to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

8.2.5 5-Slow Start: Start-up delay

With this parameter, you can vary within very narrow limits when the assistance should start after starting. The higher the value is selected, the later the system will support you when starting up.

In addition, you determine the time delay with which the system supports you again after a pedalling pause and renewed pedalling. The higher the value, the longer you have to pedal again after a pedalling break until the system supports you again.

0 sec.", "1 sec.", "2 sec." and "3 sec." are available for selection.

The factory setting is "0 sec.

Proceed as follows to make the setting:

- Call up "5-Slow Start" as described in chapter (➔ **8.2**) and confirm with a short press on **MODE**.

- The display entry changes to "**Slow Start**" with a dark background:

  The factory setting is "0 sec:

- Use **UP** or **DOWN to** select the desired value from the above options.

- Press **MODE** briefly to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

8.2.6 6-Backlight Set: Backlighting for the tung

In this function area you can set the brightness of the display illumination.

You can choose between "1", "2" and "3". The higher the value, the brighter the backlight.

The factory setting is "1".

Proceed as follows to make the setting:

- Call up "6-Backlight Set" as described in chapter (➔ **8.2**) and confirm by briefly pressing **MODE**.

- The display entry changes to "*Backlight Set*" with a dark background:

  The factory setting is "1":

- Use **UP** or **DOWN to** select the desired value from the above options.

- Press **MODE** briefly to confirm:

  The display briefly shows "OK!" and then jumps back to "Specific Set".

  Tip: If you do not want to make any more settings afterwards, press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

8.2.7 7-Password Set: Power-on protection-Password

In this function area, you can store a four-digit password that can protect against unauthorised switching on of the system. If the system is switched on, the correct four-digit password must then be entered. The system will not start without a password or with an incorrect password.

The factory setting when switching on the display is "no password required".

Proceed as follows if you want to store a switch-on protection password:

- Call up "7-Password Set" as described in chapter (➔ **8.2**) and confirm by briefly pressing **MODE**.

- The display entry changes to "*Password Set*" and the entry "P2:" with the dark background entry "0000":

- You must now enter the password "1212":
  - The first digit "0" flashes. Use **UP** or **DOWN to** select the digit "1":

- Press **MODE** briefly to confirm, the second digit flashes:

  Proceed for the second, third and fourth digit according to the described pattern and enter "1212":

- If the sequence of digits "1212" is entered correctly (the fourth digit is still flashing), briefly press **MODE** to confirm.

  The display changes to "*Password Set*" and the password activation screen "Disable/Enable", whereby "Disable/" has a dark background. "Disable/" means that no password is requested when switching on (factory setting):

- Use **UP** or **DOWN to** select "Enable" (because you want to enter a password in the future):

- Briefly confirm with **MODE**:

  The display changes to "*Password Set*" and the entry "P3:" with the dark background entry "1212". The first digit flashes:

- Now enter <u>your personal four-digit password</u> in the same way as described above. In our example this is "0307":

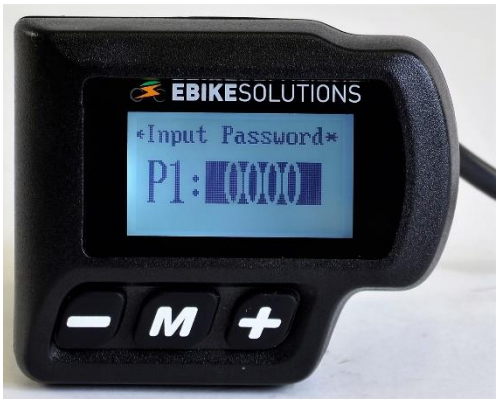
- Briefly confirm with **MODE**:

  The display jumps back to "Specific Set":

- Press and hold **MODE** for 2 seconds:

  The display jumps back to the normal display mode.

- The next time you switch on, the display will show "*Input Password*", "P1:" and four digits with a dark background. This prompts you to enter <u>your own four-digit password:</u>



- Proceed in the same way as described above to enter the digits and to change the digits:

  If the fourth digit is also entered correctly, confirm your entry by briefly pressing **MODE**:

  The display switches to the regular display mode.

  Tip: If you enter an incorrect password, the display remains in password mode. Now enter the correct password in another attempt.

If you would like to start the system again without entering a password, proceed as follows:

- Call up "7-Password Set" as described in chapter (➔ **8.2**) and confirm by briefly pressing **MODE**.

- Enter your four-digit password and confirm briefly with **MODE**.

- Use **UP** or **DOWN to** highlight the entry "Disable/" and briefly press **MODE**.

- Press and hold **MODE** for 2 seconds and you will return to the regular display.

Tips:

- Write down your new password!

  Your new password: _____

- If you want to store another password, you must first log in to the display with your previous password, i.e. not with the factory-set password "1212".

- After restoring the factory settings (chapter➔ **8.3**), your password is also deleted.

8.3 Reset to the factory settings of the display manufacturer

To reset the display to the <u>display manufacturer's factory settings, proceed</u> as follows:

- If the display is switched off, switch it on (chapter➔ **7.1**).

- Press and hold the **MODE** and **UP** buttons simultaneously for 2 seconds:

  The display changes to "*Factory Reset*", followed by "YES/NO", with "NO" highlighted in dark.

  The factory setting is "NO":

- Use **UP** or **DOWN to** mark the entry "YES".

- Press and hold **MODE** for approx. 3 seconds:

  The display briefly shows "OK!" and then jumps back to regular display mode. This resets your display to the factory settings of the display manufacturer.

Tips:

- The total odometer ("ODO") and the short trip counter ("TRIP") are <u>not</u> reset to "0" by resetting the display.

Values changed by you or EBS with regard to the battery status display (bar display) are reset to the display manufacturer's factory settings when the display is reset. The same applies to the current step values stored by EBS or by you. These are also reset to the factory settings of the display manufacturer.

Therefore, before resetting the display, write down the corresponding values so that you can store them in the display again afterwards.

- **After resetting to the factory settings, set all parameters again so that your bike complies with the legal requirements of a pedelec.**

  This applies in particular - but not exclusively - to the wheel size (chapter➔ 8.1.3) and the maximum speed with motor assistance (chapter➔ 8.1.4)!

9 Troubleshooting

9.1 Error message

The system indicates faults in the electronics via a flashing "ERR" message and an error code:

The display will not return to normal until the fault has been rectified. Until then, the system must no longer be used. If you cannot correct the fault yourself, please contact our customer service. You will find the contact information at the end of these operating instructions. Do not attempt to open or improperly manipulate the conversion kit or its components.

9.2 Error codes

Here you will find the most important **error codes** and ways to fix them.

Note: Only connect and disconnect components if the drive battery has been disconnected from the system first!

Error 21: Fault in the power supply

- Is the battery switched on and at least half charged?
- Check all plugs of the wiring for correct connection - also for possible corrosion.
- Does the connected battery have a nominal voltage of 36 volts? If necessary, check this with a multimeter from an electronics store.

Error 22: Fault in the throttle grip

- Is the throttle grip connector fully plugged into the cable switch connector?
- Are the contact pins of the throttle grip bent, broken or corroded?
- Does the error disappear if you remove the throttle grip from the system as a test?

Error 23: Motor phase fault

- Are the cables between the motor and the controller firmly plugged together? Check all plug connections, including those of any extension cable used.
- Check all plug connections for possible corrosion of the contact pins, including those of any extension cable used.
- Does the error disappear if you test disconnect the extension cable between the motor and the controller from the system and then connect the motor and controller directly to each other?
- Is the motor cable unusually warm at one point? Then there is probably a "partial phase connection", i.e. a short circuit of the motor supply cables. The internal insulation in the motor cable has probably been damaged by severe crushing or frequent kinking. In this case, the cable must be replaced. Do not continue to use the conversion kit and contact us via the returns form on our website and / or call customer service.

- **Error 24: Disturbance of the Hall signal from the motor**
- Are the cables between the motor and the controller firmly plugged together? Check all plug connections, including those of any extension cable used.
- Check all plug connections for possible corrosion of the contact pins, including those of any extension cable used.
- Does the error disappear if you test disconnect the extension cable between the motor and the controller from the system and then connect the motor and controller directly to each other?

Error 25: Fault in the brake cut-off switches (only if you have fitted brake cut-off switches / e-brakes)

- Does the error disappear when you test-disconnect the e-brakes from the system?
- If no: Do not continue to use the conversion kit and contact us via the returns form on our website and / or call customer service.

Error 30: Fault in the communication of the system

- Disconnect all electrical connections and check the cables and plugs for damage due to kinking or crushing.
- Check the contacts for corrosion and reconnect the cables.
- Make sure that the plugs are firmly seated and that the contact pins do not bend when plugged together.

10 Frequently asked questions

Why can't I switch on the display?

- Check the cable connection between the display and the controller.
- Check the cable connection between the controller and the battery.
- Is the battery actually switched on?
- Check the main fuse of the battery.

Why does my display go off again immediately after I switch it on?

- Your battery is probably flat, switched off or the plug is not connected.
- Check the plug connection and switch on the battery.
- If the battery is empty or has little charge left, charge it.

Why is my speed not displayed correctly or not at all?

- The spoke magnet may be twisted or it may not be in exactly the right position. At the lower end of the speed sensor there is an elevation with a cross. Fix the spoke magnet so that it moves past this cross at a distance of 2 - 3 mm with each wheel rotation.

Why does the motor get slower and slower the emptier my battery gets?

- This is a normal process because when the battery is discharged, the voltage drops and thus the motor speed decreases. Therefore, the motor turns faster with a full battery than with an almost empty battery.

My motor misfires or runs irregularly. What is the cause?

- The battery may be almost empty. Check the charge level of the battery and recharge it if necessary.
- Check that the control light of the pedal sensor flashes when the system is switched on and there is a crank movement in the direction of travel.
- Check the distance between the magnetic disc and the pedal sensor (PAS). If necessary, bring the magnetic disc and the sensor into the correct position as described in the conversion instructions (mounting the sensor).

My motor stops for a short time. What is the reason for this?

- Your battery is probably almost empty. Check the charge level of the battery and recharge it if necessary.

While driving, suddenly there is no more propulsion, but there is no error message and the display remains on. What is the reason for this?

- Due to high motor load, the motor temperature has risen sharply. To protect the motor, the system switches off the assistance. After a cooling phase, the motor power is available again as usual.

11 Safety instructions

Make sure that you do not damage the display and its individual parts, heat them or expose them to moisture over a long period of time. The cables and especially the plug connections must not be bent or crushed.

12 Customer service

If you have any questions or problems, our customer service will be happy to help you. You can find our service times on our website under the heading "About us / Contact".

Tel: +49(0)6221/87106-0
E-mail: info@ebike-solutions.com

13 Disposal

Do not dispose of electrical waste in household waste, but hand in the parts at a recycling centre near you or at Electric Bike Solutions GmbH.

Disposal of batteries and accumulators (according to Article 1, §18 and Article 2 of the Act on the Reorganisation of Product Responsibility for Batteries and Accumulators under Waste Law of 25 June 2009):

Our batteries for e-bike / pedelec drives contain rechargeable lithium batteries. If the rechargeable batteries can no longer be recharged, they must not be disposed of in household waste. Old batteries may contain harmful substances that can endanger the environment and health.

Please return the rechargeable batteries to retailers or to the recycling centres of the municipalities. The return is free of charge and required by law. Please only throw discharged batteries into the containers provided and tape off the terminals. All batteries and rechargeable batteries are recycled.

In this way, valuable raw materials such as iron, zinc or nickel can be recovered. Battery recycling makes a significant contribution to protecting our environment.

14 Imprint

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