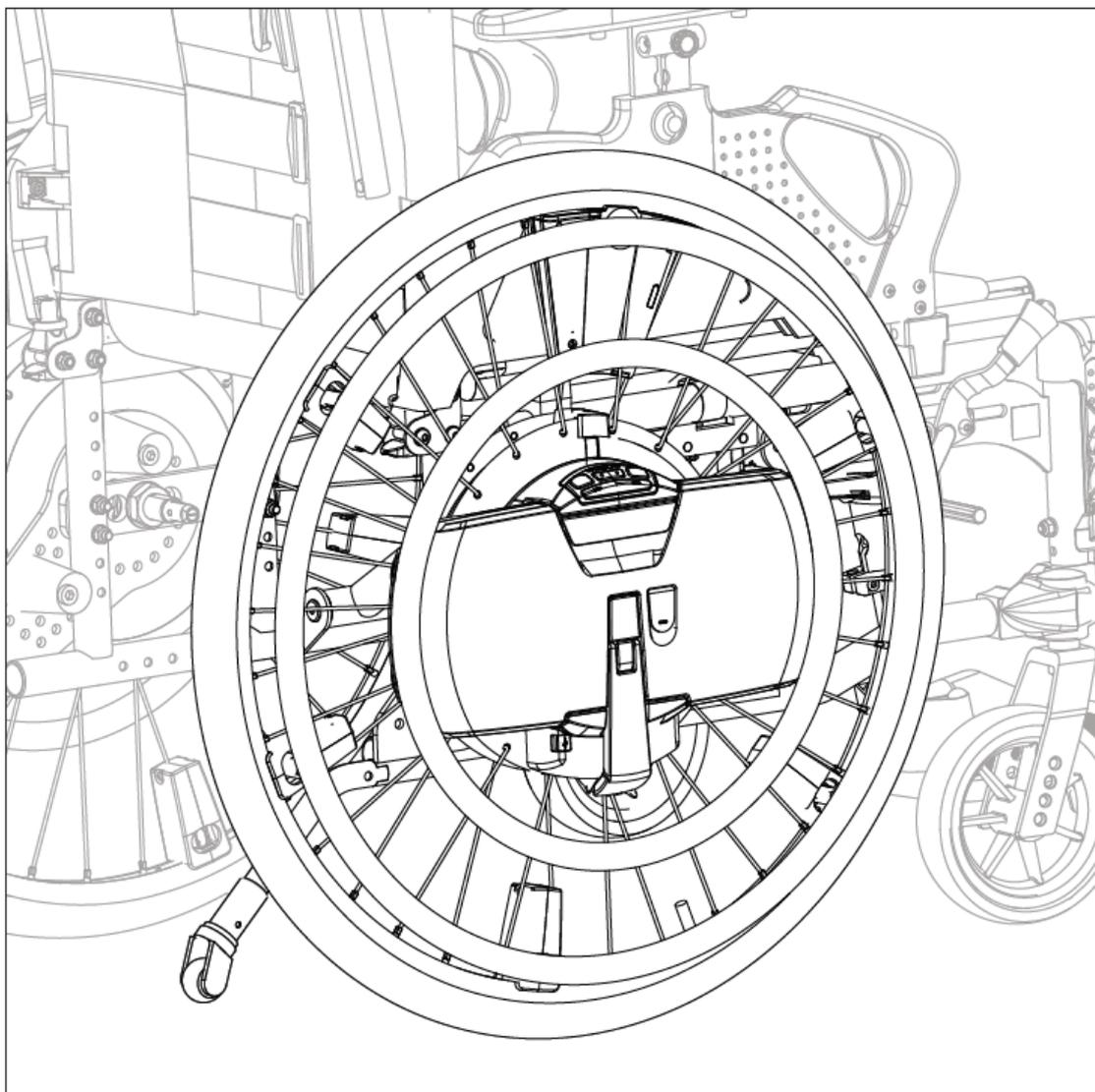


# PowerTalk 2 user manual



# WheelDrive

PowerTalk is a product by:

Indes BV  
Pantheon 28  
7521 PR Enschede  
PO box 265  
7500 AG Enschede  
The Netherlands  
T +31 (0)53 4803920

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# 1 Table of contents

1	Table of contents.....	2
2	Introduction.....	3
3	Connection .....	4
4	Interface .....	5
5	Tabs .....	8
5.1	Overview .....	8
5.2	Activity .....	9
5.3	Usage .....	10
5.4	Values.....	10
5.5	Settings .....	12
5.5.1	Driving behaviour.....	12
5.5.2	Save and Load settings.....	14
5.5.3	General settings .....	15
5.5.4	System info .....	16
5.5.5	Battery .....	17
5.6	Counters.....	18
5.7	Log.....	20
6	Trouble shooting .....	21
7	Distribution and authorization list.....	21
8	Revision list.....	21
9	PowerTalk2 documentation .....	21

## 2 Introduction

PowerTalk 2 is a PC application that enables communication with products equipped with an esense controller. Esense controllers are generally used to provide intuitive drive support to a broad range of heavy mobile care products. The WheelDrive is one of them.

PowerTalk 2 is also a service tool which gives the user an overview of system settings, sensor and parameter values, firmware versions, counters, log information and so on.

The WheelDrive generation 2018 is compatible with PowerTalk 2.

The software runs on Windows 10, Windows 7 and Windows XP

For correct installation please refer to the PowerTalk 2 installation instruction:

*E1409\_yyyymmdd\_PowerTalk 2 installation\_rx.xx*

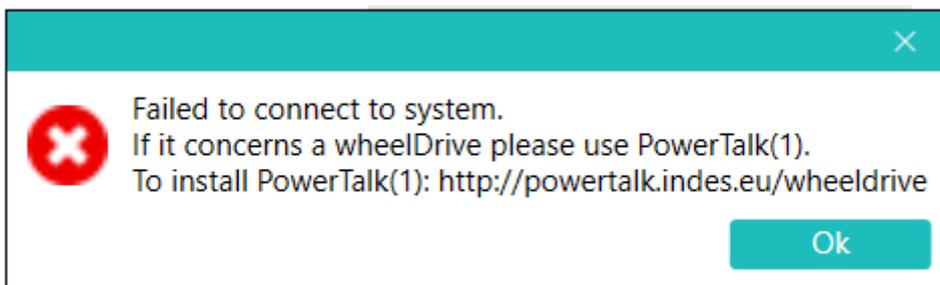
For detailed information about all parameters that are displayed or can be set please refer to the "parameter list":

*E1801\_yyyymmdd\_WheelDrive Gen 2018 parameter list\_Rx.xx\_YYY*

### Notes:

PowerTalk 2 is compatible with WheelDrives (of generation 2018) with serial numbers from: 201810RW5001 and 201810LW5001.

When a WheelDrive of generation 1 is connected to PowerTalk 2, a pop-up box will be displayed showing that PowerTalk 1 should be used:



When connecting a WheelDrive generation 2018 to PowerTalk 1, it is not possible to make a connection. PowerTalk 1 will not show a pop-up box.

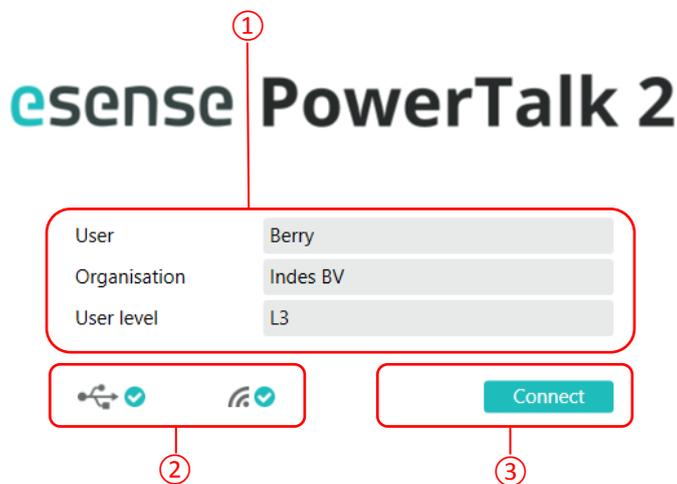
### 3 Connection

Connect the WheelDrive with a USB cable (mini to normal) to your pc and switch on the WheelDrive.



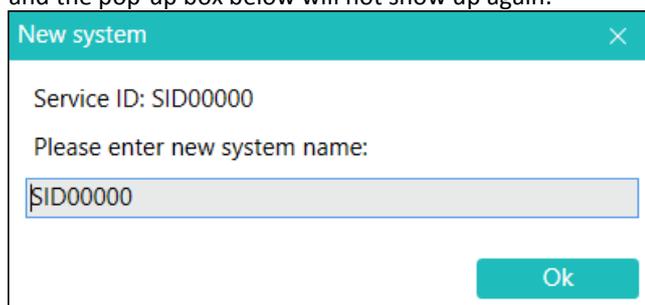
Start PowerTalk.

When PowerTalk updates are available, you will be asked to update the software. A start-up screen will be opened.

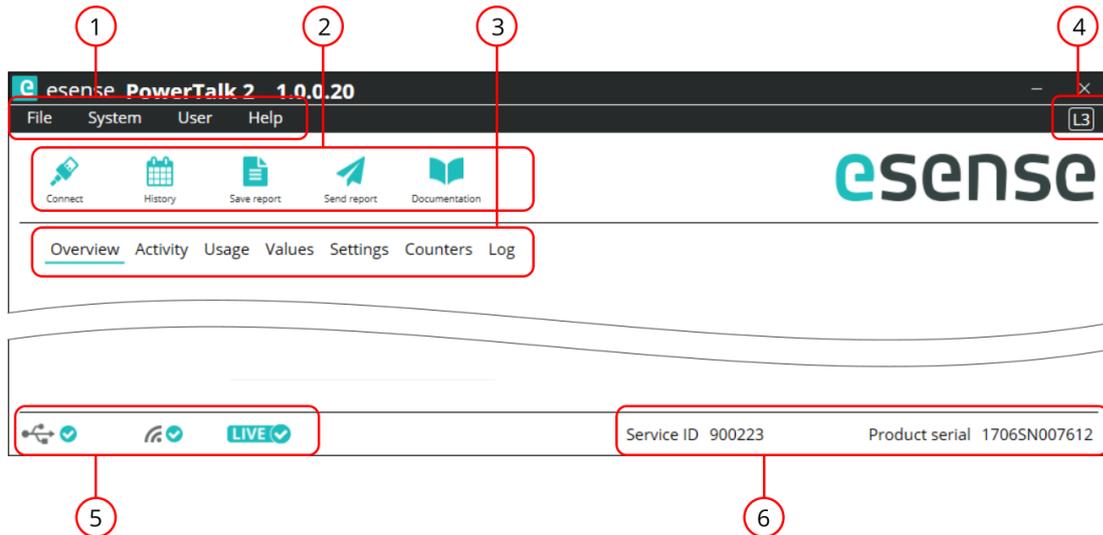


- ① This field gives information about the registered user of PowerTalk and the applicable User Level. Functionality of PowerTalk 2 depends on User Level and the esense system configuration. The highest User Level described in this manual is L3. When a setting is only available in level 3 or level 4, this will be indicated by: [L3] or [L4]
- ② This field gives information about the USB connection status (left) and the WIFI connection (right)
- ③ By pressing this button, you connect the WheelDrive to PowerTalk

Note: When connecting a new WheelDrive to PowerTalk for the first time, you will be prompted to fill in a new system name. The information that PowerTalk collects during the session will be stored on the local hard disk of the pc that is connected and this name will be used. When the same WheelDrive is connected again, the information will automatically be stored and the pop-up box below will not show up again.



## 4 Interface



- ① This field indicates the pulldown menus that can be used for below operations:  
**File**

### **Connect**

Use to manually connect to the WheelDrive when automatic connection failed or when the connection was lost.

### **Open history**

Every time a connection is made with the same product a history of reports is build up on your pc-environment. When connected to a system and there are multiple reports present you can select one of this stored report. Note: when a report is selected you are no longer "LIVE".

### **Import system**

Use to import a system file (containing multiple reports of 1 system) into your own pc-environment.

### **Open system**

Opens a system file stored on your own pc-environment. With this you are able to view reports of a system without connecting to the system. Note: when you open a system you are not "LIVE".

### **Export system**

Use to share your system file with others. Select a system and store the system file (\*.pts) on a location.

### **Delete system**

Removes a system file from your pc-environment.

### **Save report**

Use to save the systems report to a location. The report is stored in html format. You can view the report with any browser.

### **Send report**

Sends manually the report of your system to Indes. Used when service is requested from Indes.

### **Exit**

Use to quit the program.

### **System**

#### **Set system type [L3]**

Use to select the system type that you want to connect to PowerTalk if you have different systems that you want to analyse.

#### **Set system ID**

Use to set some system identification values.

3 parameters can be used to fill in custom information:

Product type [L4] , Facility (e.g. location of product) , Location (e.g. detailed location)

**Sync system time**

Use to synchronise the system time with your computer time.

**Set periodic check [L3]**

Use to set the next periodic check after service.

**Reset**

Use to perform reset actions on your system.  
It is possible to reset to factory defaults in 2 ways:

**Reset driving settings**

When "RESET\_DRIVING" is entered, all the custom settings become a copy of the normal settings and the default select profile is normal

**Factory reset [L3]**

When "FACTORY\_RESET" is entered, same settings as "RESET\_DRIVING" plus below values will be set:

These counters will be set to 0: max speed, Assist and Drive rim distances, foil errors, hall errors And "auto off time" = 15 min, "beeps" = on, "Facility" = empty box, "Location" = empty box, "LOG" =clear

A "FACTORY\_RESET" can be used when the WheelDrive transfers to a new end-user.

**User**

**Change user**

Use to change PowerTalk user information and to use a different license file

**Language**

Use to change the language of PowerTalk interface. Dutch or English is available.

**Autoconnect**

Use to skip the login screen. When set, PowerTalk2 will automatically connect to your system. The setting is stored in the application, user independent.

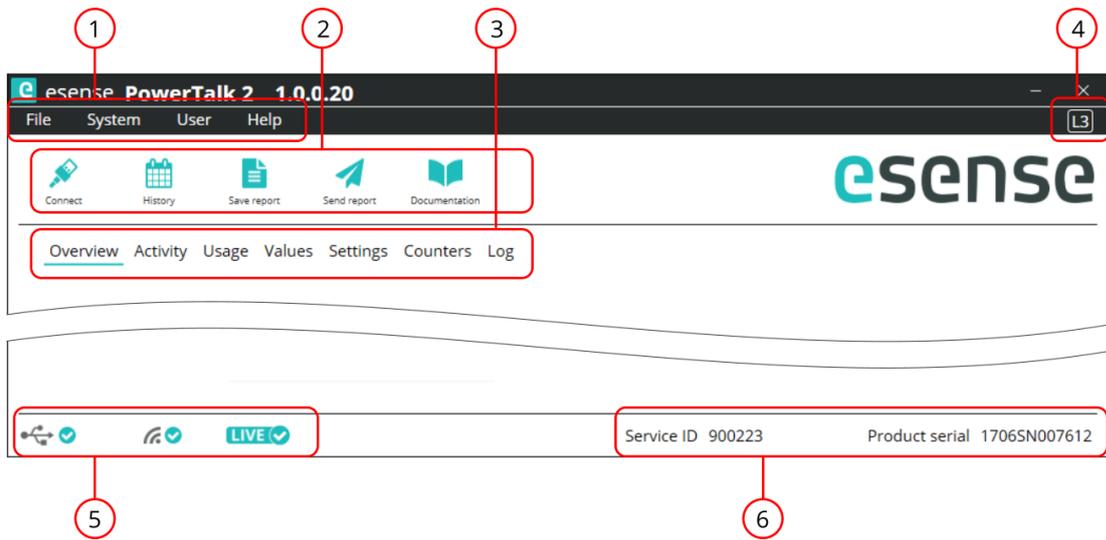
**Help**

**Documentation**

Use to find more documentation about products that can be connected to PowerTalk. **New WheelDrive special web-link will be available in future.**

**About**

Displays the PowerTalk software version and the installation domain.



② These buttons are shortcuts to the most used menu items as described in ①

③ The tabs displayed in this field are explained in chapter 5.

④ This field displays the actual user level.

⑤ The icons in this field display the connection status of:

Left icon: USB connection to the WheelDrive

Middle icon: Internet connection

Right icon: PowerTalk displays information from the connected system

Note: When the WheelDrive is connected to PowerTalk and an internet connection is available, a status report will automatically be send to Indes.

⑥ This field displays the Service ID and the Product serial number of the system connected. These are unique numbers for each system.

## 5 Tabs

### 5.1 Overview

The overview tab gives a global summary of information from the connected WheelDrive. This information is not adjustable and described below.

The screenshot shows the 'Overview' tab of the WheelDrive interface. The navigation bar includes: Overview (selected), Activity, Usage, Health, Values, Settings, Counters, Log, and Terminal. The main content is divided into several sections:

- System** (Callout 1):

System type	200 - WheelDrive
Service ID	SID12345
Product type	Quicky
Product serial	2018RW05000
Production date	28-9-2018
Facility	Indes
Location	Engineering
- Force sensor** (Callout 4):

Assist rim sensor	0
Drive rim sensor	0
- Battery** (Callout 5):

Capacity	3800 mAh
Charge	99 %
Status	Idle
- Components** (Callout 2):

	Hardware	Software	Status
User Interface	WD1-P2-4	WD-UI 3.34	
Battery		V2.03	
Controller	WD2-P1-5	2.172	!
- System time** (Callout 6):

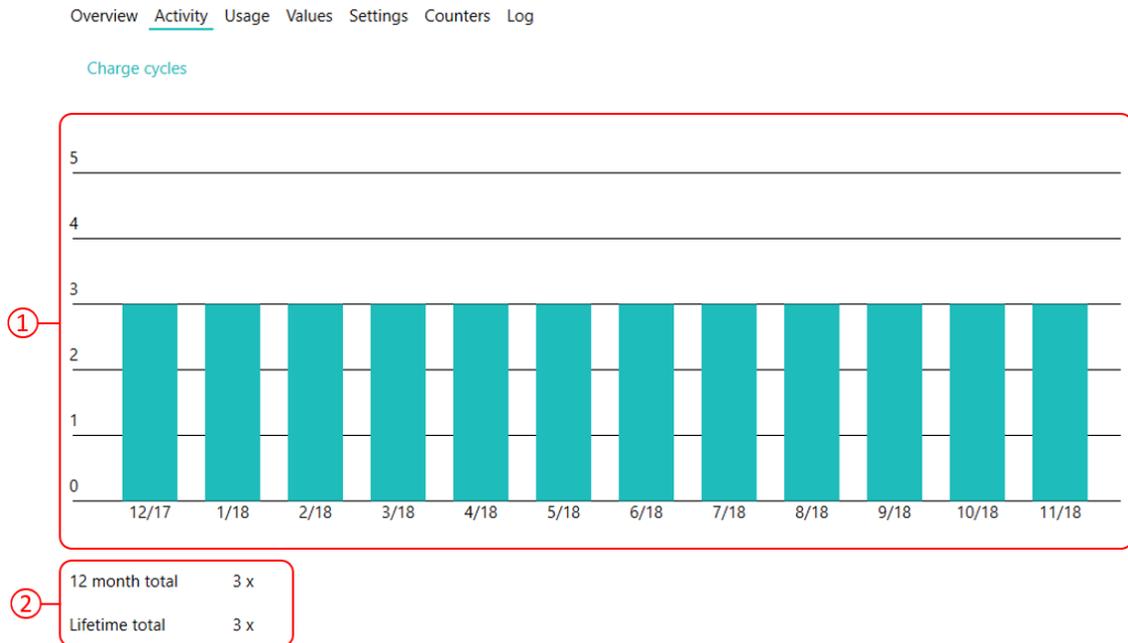
Date and time	30-10-2018 10:53:08
---------------	---------------------
- Periodic check** (Callout 7):

Next date	24-10-2019
-----------	------------

- ① This field gives system information.
- ② This field gives all hardware and software information of User Interface, Battery pack and Controller.
- ③ This field gives information about the availability of new software versions. By clicking on the “!” symbol, a new software version can be installed on the system. You will be asked if you want to install the new available software version.  
**Warning:** it is not possible to go back to previous software versions once the installation has been started. Disconnecting the WheelDrive during update session will result in an unusable system. Please make sure that internet connection is stable during update process and your pc has enough power.
- ④ This field gives the real-time values of Assist rim sensor and Drive rim sensor. The values for a sensor in rest are “0”.  
Maximum values Assist rim: Forward = 200, Backward = - 100  
Maximum values Drive rim : Forward = 400, Backward = - 400
- ⑤ This field gives information about the battery pack connected to the WheelDrive. The maximum capacity is 3800 mAh.
- ⑥ This field gives date and time from the WheelDrive internal clock.  
The clock will be automatically synchronized when it deviates for more than 1 minute.
- ⑦ This field shows when the next periodic check needs to be executed.

## 5.2 Activity

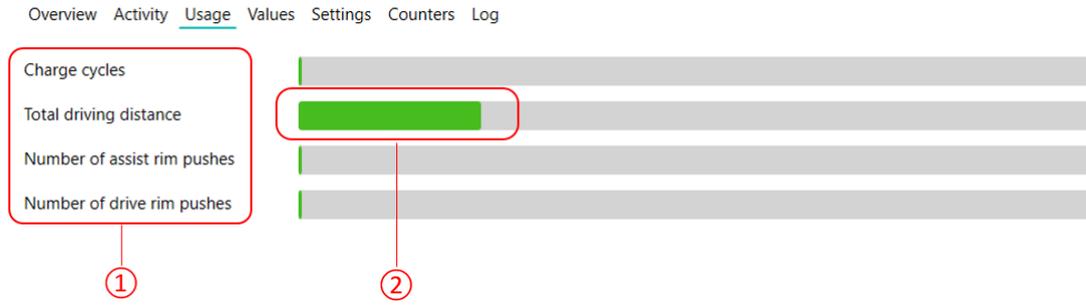
The Activity tab gives graphical information about the charging cycles.



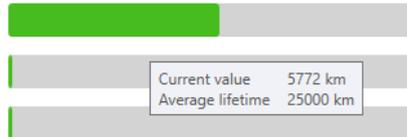
- ① This field shows a charging cycle graph with on vertical axis the number of charging cycles and on the horizontal axis the charging months. In this specific graph it becomes clear that in December of 2017 the battery was charged 3 times and in the months after that, the battery was not charged. The graph only displays full charging cycles, meaning that partial cycles are not counted.
- ② This field shows the number of charge events over the last 12 months and over the total lifetime of the battery pack.

### 5.3 Usage

The usage tab gives information about the system usage, related to the expected life-time.



- ① This field gives the usage of the battery pack in charging cycles, the total driven distance with both rims and the number of pushes with Assist and Drive rim.
- ② This field graphically displays the usage of counters mentioned above and related to the expected life-time.  
When pointing with the cursor over the green or grey rows, detailed information is displayed, e.g.:



### 5.4 Values

The “Values” tab gives information about the parameter values stored in the battery pack and in the WheelDrive controller (driving behaviour).  
This information can be used to analyse the battery and system status.

Detailed information about the parameter values can be found in this document:  
E1801\_yyyymmdd\_WheelDrive Gen 2018 parameter list\_Rx.xx\_yyy

Overview Activity Usage Values Settings Counters Log

Controller	Value	Remark	More
<ul style="list-style-type: none"> <li>⊕ Battery               <ul style="list-style-type: none"> <li>⊖ Info</li> <li>⊖ Battery current</li> <li>⊖ Battery voltage</li> <li>⊖ Battery temperature</li> </ul> </li> <li>⊕ Driving behaviour               <ul style="list-style-type: none"> <li>⊖ Drive</li> <li>⊖ System Info</li> </ul> </li> </ul>			

Example:

Overview Activity Usage Values Settings Counters Log

Controller	Value	Remark	More
<b>Battery</b>			
⊖ <b>Info</b>			
Last 10 cutoff reasons	0000000038	See documentation	
⊖ <b>Battery current</b>			
Battery current	0 mA	- Discharging, + Charging	
Absolute remaining capacity	2467 mAh		
Relative remaining capacity	64 %		
⊖ <b>Battery voltage</b>			
Battery voltage	26199 mV		
⊖ <b>Battery temperature</b>			
Battery temperature	296 K	C = K - 273	
<b>Driving behaviour</b>			
⊖ <b>Drive</b>			
Current speed	0 km/h		
Actual speed mode	1		
⊖ <b>System Info</b>			
Handle detection	0	pos. value - Handle closed, neg. value - Handle open	
System temperature	18 Celcius		
Sensorbox battery voltage	0 mVolt		
BMS comm. status	0	0 - OK, 1 - offline, 2 - error	
Controller battery voltage	26250 mVolt		
Controller battery current	00 mA		

## 5.5 Settings

The default factory setting is the most common settings profile that suits most users, but several settings can be personalized for users with special needs or wishes. These customizable settings are: Driving behavior, Automatic switch off time, Beeps ON/OFF and Speed Limit. This chapter explains how to adjust and write these settings.

### Note:

The Left and Right wheel needs to be set individually, but settings from one wheel can be saved and load to the other wheel.

Overview Activity Usage Values Settings Counters Log

Controller	Setting	Remark	More
<ul style="list-style-type: none"> <li>Driving behaviour</li> <li>General settings           <ul style="list-style-type: none"> <li>General Settings               <ul style="list-style-type: none"> <li>Automatic switch off: 15 min. Range 1 - 200 min, default 15 min.</li> <li>Beeps ON/OFF: 0 1 - ON, 0 - OFF</li> <li>Wheel Left/Right: R L(ef), R(ight)</li> <li>Speed Limit: 15 km/h Range 1-15 km/h, default 15 km/h</li> </ul> </li> <li>System info               <ul style="list-style-type: none"> <li>System Info                   <ul style="list-style-type: none"> <li>Firmware build date: 2018-11-02 18:11:05</li> <li>Manufacturer serial number: ???????????</li> </ul> </li> </ul> </li> <li>Battery</li> </ul> </li> </ul>			

### 5.5.1 Driving behaviour

Within this tab the settings related to driving behaviour can be made:

Overview Activity Usage Values Settings Counters Log

Controller	Setting	Remark	More
<ul style="list-style-type: none"> <li>Driving behaviour           <ul style="list-style-type: none"> <li>Driving settings               <ul style="list-style-type: none"> <li>Mode: 4   1- Gentle   2- Normal   3- Sport   4- Custom  </li> <li>Custom support level 1                   <ul style="list-style-type: none"> <li>Motor power: 2   1   2   3   range 1 - 6  </li> <li>Sensitivity assist rim: 2   2   2   3   range 1 - 6  </li> <li>Max. speed forward: 8   1   2   3   range 1 - 6  </li> </ul> </li> <li>Custom support level 2                   <ul style="list-style-type: none"> <li>Motor power: 3   1   3   4   range 1 - 6  </li> <li>Sensitivity assist rim: 5   3   3   4   range 1 - 6  </li> <li>Max. speed forward: 4   2   4   5   range 1 - 6  </li> </ul> </li> <li>Custom support level 3                   <ul style="list-style-type: none"> <li>Motor power: 4   1   4   5   range 1 - 6  </li> <li>Sensitivity assist rim: 4   4   4   5   range 1 - 6  </li> <li>Max. speed forward: 5   3   5   6   range 1 - 6  </li> </ul> </li> </ul> </li> <li>General settings</li> <li>System info</li> </ul> </li> </ul>			

Undo changes Write (3) Save settings Load settings

#### Explanation of graphical display changes.

- Green highlighted field: The field is changed compared to the last written setting.
- Red highlighted field: The field contains an incorrect value.
- Undo changes: The last written settings are filled in, all changes will be undone.
- Write: All changes are written to the wheel. Number behind write indicates the number of changes made before written.

## Pre-sets

The WheelDrive is provided with 3 preset's (Gentle, Normal and Sport) and the possibility to make custom settings.

Overview Activity Usage Values Settings Counters Log

Controller Setting Remark More

Driving behaviour

Driving settings

Mode

	1- Gentle	2- Normal	3- Sport	4- Custom
Motor power	1	2	3	range 1 - 6
Sensitivity assist rim	2	2	3	range 1 - 6
Max. speed forward	1	2	3	range 1 - 6
Motor power	1	3	4	range 1 - 6
Sensitivity assist rim	3	3	4	range 1 - 6
Max. speed forward	2	4	5	range 1 - 6
Motor power	1	4	5	range 1 - 6
Sensitivity assist rim	4	4	5	range 1 - 6
Max. speed forward	3	5	6	range 1 - 6

Undo changes Write Save settings Load settings

- ① This is the input field, used to set the “Mode”.  
By entering “1, 2, 3 or 4” you activate one of the modes explained below:

“1” = **Gentle:** Mode Gentle is suitable for people with low reaction speed who use the wheels mainly indoors. The values that belong to this mode are displayed in field ②

“2” = **Normal:** Mode Normal is the standard setting and suitable for most people  
The values that belong to this mode are displayed in field ③

“3” = **Sport:** Mode Sport is suitable for active people who often drive long distances outside or use it on hilly terrain regularly.  
The values that belong to this mode are displayed in field ④

“4” = **Custom:** Mode Custom makes it possible to create a personalized setting. There are 3 parameters to set per support level, the range is 1-6. The 3 custom support levels correspond with the 3 buttons on the User Interface.  
The values can be entered in field ⑤ and can only be written when the Mode is set to “4”.

Explanation of parameters:

**Motor power:**

The motor power is a combination of torque and acceleration. With a high value it becomes more powerful and the time to reach full power is shorter.

**Sensitivity assist rim:**

Determines the amount of assist rim displacement you need to apply to get support. With a high value, the movement starts with a little displacement of the assist rim; with a low value it starts later, after more displacement.

**Max. speed forward:**

This determines the max. speed you can reach with the **drive rim** on flat surfaces. The maximum speed is 6 km/u, corresponding with value 6.

### Steps to set driving behavior:

1. Go to tab Settings > Driving behaviour
2. Unfold all 4 sub menus within Driving behaviour.
3. Fill in the desired Mode under Driving Settings: Gentle, Normal, Sport or Custom
4. In case mode Custom is chosen: fill in all 9 input fields within Custom support level 1, 2 and 3.

**Note:** In case mode is NOT on custom ("4"), the values within custom support level 1,2 and 3 are ignored.

5. Write the settings to the wheel by pressing button Write on the bottom.
6. Do the same for the second wheel (see paragraph "save and load settings" for an exact copy of the settings to the second wheel).

### 5.5.2 Save and Load settings

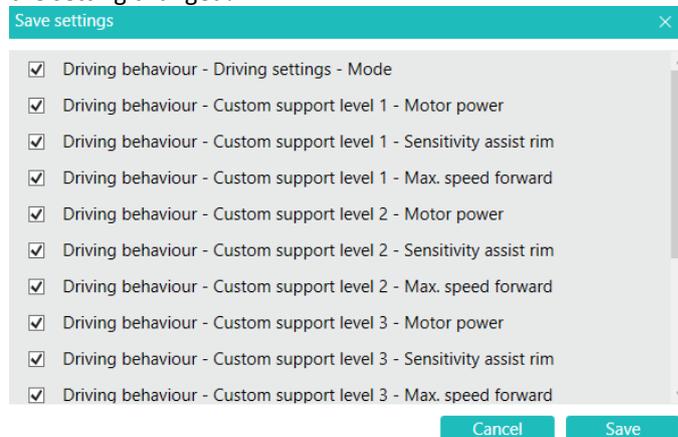
The values within tab Settings can be saved and loaded.



#### Steps to save:

1. Press Save settings
2. Select the settings you want to save.

**Warning:** Left/Right wheel setting is also in the list. Deselect if you do not want to get the setting changed!



3. Press save and select a location.

#### Steps to load:

1. Press load setting
2. Select and open a file
3. Write the settings to the wheel by pressing button Write on the bottom.

**Note:** All changed fields are highlighted green

### 5.5.3 General settings

Overview Activity Usage Values Settings Counters Log

Controller	Setting	Remark	More
Driving behaviour			
General settings			
General Settings			
Automatic switch off	<input type="text" value="15"/>	min. Range 1 - 200 min, default 15 min.	
Beeps ON/OFF	<input type="text" value="0"/>	1 - ON, 0 - OFF	
Wheel Left/Right	<input type="text" value="R"/>	L(ef), R(ight)	
Speed Limit	<input type="text" value="15"/>	km/h Range 1-15 km/h, default 15 km/h	
System info			
System Info			
Firmware build date	<input type="text" value="2018-11-02 18:11:05"/>		
Manufacturer serial number	<input type="text" value="????????"/>		
Battery			

4 general settings can be personalized:

**Automatic switch off time:** Determines after how many minutes the wheel switches off when not used.

**Beeps ON/OFF:** When selecting OFF, the wheel will not give any beeps. This also counts for warning beeps.

**Wheel Left/Right:** [\[L3\]](#) With this setting it is possible to re-configure the type of wheel. Normally this setting is only used in case a Left wheel is rebuilt into a Right wheel or vice versa.  
**Warning:** Make sure to configure the correct type of wheel.

**Speed Limit:** The WheelDrive can speed up to the value filled-in.

Steps to set general settings:

1. Fill in the desired values for
  - Automatic switch off time
  - Beeps ON/OFF
  - Speed Limit
2. Write the settings to the wheel by pressing button Write on the bottom.
3. Do the same for the second wheel. (see paragraph **“save and load settings”** for an exact copy of the settings to the second wheel).

## 5.5.4 System info

Overview Activity Usage Values Settings Counters Log

Controller	Setting	Remark	More
⌵ Driving behaviour			
⌵ General settings			
⌵ General Settings			
Automatic switch off	<input type="text" value="15"/> min.	Range 1 - 200 min, default 15 min.	
Beeps ON/OFF	<input type="text" value="0"/>	1 - ON, 0 - OFF	
Wheel Left/Right	<input type="text" value="R"/>	L(left), R(right)	
Speed Limit	<input type="text" value="15"/> km/h	Range 1-15 km/h, default 15 km/h	
⌵ System info			
⌵ System Info			
Firmware build date	<input type="text" value="2018-11-02 18:11:05"/>		
Manufacturer serial number	<input type="text" value="????????"/>		
⌵ Battery			

This field displays the system info.

**Firmware build date** Displays the production date of the firmware

**Manufacturer serial number** Displays the serial number of the motor controller

## 5.5.5 Battery

This field displays the battery settings. These settings are defined by the manufacturer and cannot be adjusted. The settings give general information about the battery and can be useful during service.

The complete list of battery settings is displayed below:

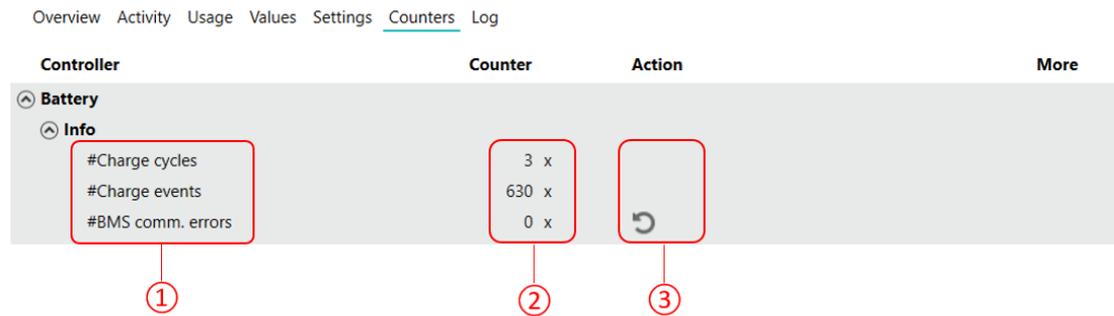
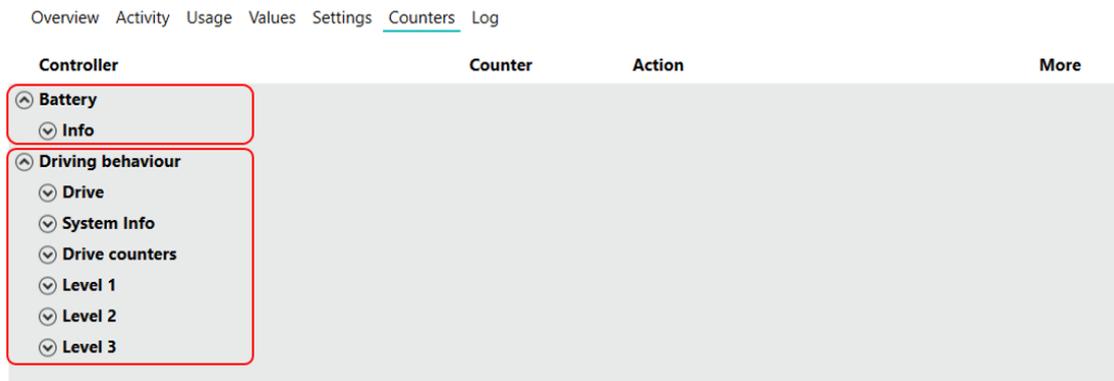
Overview Activity Usage Values Settings Counters Log

Controller	Setting	Remark	More
<b>⊖ Battery</b>			
<b>⊖ Info</b>			
Manufacture date	2107-08-23		
Manufacturer name	Green Digital Power-Tech		
BMS serial number	12530		
BMS device name	BMS NiMH-PCA018		
<b>⊖ Battery current</b>			
Design capacity	3800 mAh	3800 or 9000	
Full charge capacity	3800 mAh	see Design capacity	
Charge overcurrent cutoff	3500 mA	Default 3500 mA	
Discharge overcurrent cutoff	22000 mA	Default 22000 mA	
Discharge overcurrent cutoff reset	20000 mA	Default 20000 mA	
<b>⊖ Battery voltage</b>			
Design Voltage	24000 mV		
Battery full voltage	28000 mV	Default 28000 mV	
Battery empty voltage	21000 mV	Default 21000 mV	
Battery low voltage cutoff	20000 mV	Default 20000 mV	
Battery low voltage cutoff reset	22000 mV	Default 22000 mV	
Charge overvoltage cutoff	34000 mV	Default 34000 mV	
Charge overvoltage cutoff reset	30000 mV	Default 30000 mV	
<b>⊖ Battery temperature</b>			
Overtemperature cutoff	328 K	Default 328 K/ 55 C	
Overtemperature cutoff reset	0,3 K	Default 318 K/ 45 C	

## 5.6 Counters

In tab “counters” relevant built in counters for Battery and Driving behaviour can be displayed and some of them can be reset.

Detailed information about the parameter values can be found in this document:  
E1801\_yyyymmdd\_WheelDrive Gen 2018 parameter list\_Rx.xx\_yyy



- ① Field displays names of counters
- ② Field display the counter number
- ③ Field displays if a counter can be reset to zero. By clicking the arrow symbol, the values will be reset. [\[L3\]](#)

Note: These fields are also available for driving behaviour.

Counters related to driving behaviour are displayed below.

Controller	Counter	Action	More
⌵ <b>Driving behaviour</b>			
⌵ <b>Drive</b>			
	Maximum speed	7,9 km/h	↻
⌵ <b>System Info</b>			
	#Unexpected power off	36	↻
	#Assist rim pushes	1576	↻
	#Drive rim pushes	776	↻
	#Foil errors	116	↻
	#Hall sensor errors	17	
⌵ <b>Drive counters</b>			
	Total driving distance	5,772 km	
	Assist rim driving distance	0,59 km	↻
	Drive rim driving distance	1,017 km	↻
⌵ <b>Level 1</b>			
	Total driving distance	0,315 km	
	Assist rim driving distance	0,086 km	
	Drive rim driving distance	0,197 km	
⌵ <b>Level 2</b>			
	Total driving distance	0,142 km	
	Assist rim driving distance	0,063 km	
	Drive rim driving distance	0,073 km	
⌵ <b>Level 3</b>			
	Total driving distance	1,239 km	
	Assist rim driving distance	0,441 km	
	Drive rim driving distance	0,747 km	

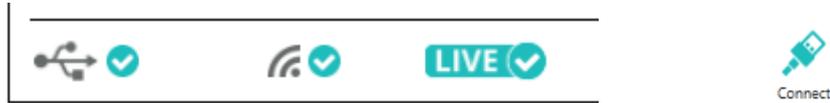
Reset actions are only available for [L3](#), except the “unexpected power off”.



## 6 Troubleshooting

When a connection to the WheelDrive fails, follow these steps:

- 1) Close PowerTalk
- 2) Remove USB cable from WheelDrive or PC.
- 3) Restart the WheelDrive
- 4) Reconnect the USB cable
- 5) Restart PowerTalk
- 6) If “USB” or “Live” icons below are not green, press connect button



## 7 Distribution and authorization list

Author	Department	Date	Approval
BMS	Indes BV	20181031	NWR

## 8 Revision list

Revision	Definition	Date
1.00	First release to Sunrise	20181109

## 9 PowerTalk2 documentation

### PowerTalk 2 installation manual

E1409\_yyyymmdd\_PowerTalk 2 installation\_ Rx.xx

### WheelDrive parameter list

E1801\_yyyymmdd\_WheelDrive Gen 2018 parameter list\_Rx.xx\_YYY

### PowerTalk 2 user manual

E1801\_yyyymmdd\_PowerTalk 2 manual WheelDrive\_ Rx.xx

All documentation is available in English.

PowerTalk is a product by:

Indes BV  
Pantheon 28  
7521 PR Enschede  
PO box 265  
7500 AG Enschede  
The Netherlands  
T +31 (0)53 4803920