

## Summary

| 1. ez-Wheel            | p.03 |
|------------------------|------|
| Company                | p.04 |
| Technology             | p.06 |
| Product features guide | p.08 |

| 2. Business Sectors      | p.09 |
|--------------------------|------|
| Industry                 | p.10 |
| Automotive               | p.12 |
| Food processing          | p.14 |
| E-Commerce / Retail      | p.16 |
| Medical / Pharmaceutical | p.18 |
| Public spaces            | p.20 |

| 3. Wheels     | p.22 |
|---------------|------|
| Series 300I   | p.24 |
| Series 300M   | p.26 |
| Series 300F   | p.28 |
| Series 150I   | p.30 |
| Series 160M   | p.32 |
| Series 10"    | p.34 |
| 4. ez-Config® | p.36 |

| 5. Product compatibility | p.38 |
|--------------------------|------|
| 6. Accessories           | p.40 |
| Smart controls           | p.40 |
| ez-Box®                  | p.44 |
| Wired hand controls      | p.46 |
| Wired switches           | p.48 |
| Batteries                | p.50 |
| Mechanical accessories   | p.52 |
| Chargers                 | p.54 |

| 7. Contact | p.56 |
|------------|------|
| 8. Index   | p.58 |











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2



## The most advanced range of electric wheels



#### **Concentrate of** technology

- ✓ integrated wheel drive
- ✓ patented technology
- √ award-winning



ez-Wheel®

#### **Modularity &** simplicity

- √ the only autonomous and universal drive wheel
- √ multiple applications
- √ wide range of accessories



#### **★★★** All-star Mobility

- ✓ prevents musculoskeletal disorders
- ✓ improves working conditions
- ✓ modernizes industrial tools

## The ez-Wheel® is a simple and efficient solution to quickly bring electric assistance to any rolling equipment or vehicles.

Applied to manual equipment, it can solve major issues for employees as well as for companies:

- reduces professional risk, especially MSD\*
- helps to reduce sick leave and offers an increase in productivity of up to +50%
- doubles the load for a fifth of the effort
- generates a return on investment in less than 1 year







<sup>\*</sup>Musculoskeletal disorders



#### A R&D-driven strategy

The company dedicates most of its resources to Research and Development into innovating methods. The ez-Wheel team's industrial experience ensures good assessment and management of the risk related to the delivery of innovative products to market. The product's embedded features correspond to those usually required by professionals in the field and the production process uses controlled and standardized methods.

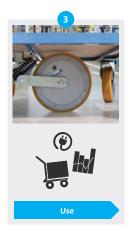
#### **Eco-design**

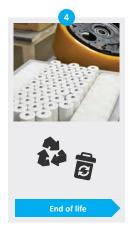
Our products have been developed following a life-cycle in which **production**, **use** and **end-of-life** conditions are taken into consideration from the **design phase**.

A lot of effort is made regarding the choice of components and the integration of mechatronics, with the intention of delivering to market reliable, powerful, sustainable and eco-friendly products, to satisfy your mobility issues.













#### Strong industrial partners

The production process is ensured by industrial partners selected on quality, competitiveness and local criteria, monitored by our quality/manufacturing departments and outside organizations.

Since 2012, ez-Wheel has been authorised to use the "ORIGINE FRANCE GARANTIE" quality label on its products.

Delivered by approved organisations (PRO France and Bureau Veritas) this certification is obtained by meeting precise tender specifications that validate the manufacturing origin of products in the French national territory.



# Implementation promoting the mechatronics innovation

Founded and located in Charente, a strategic location for electric motors and batteries in the Nouvelle-Aquitaine region, ez-Wheel benefits from geographical and economic advantages provided by a number of industrial players and SMEs implanted locally. The innovative technology of ez-Wheel is the result of recognized expertise and local know-how going back over 50 years.



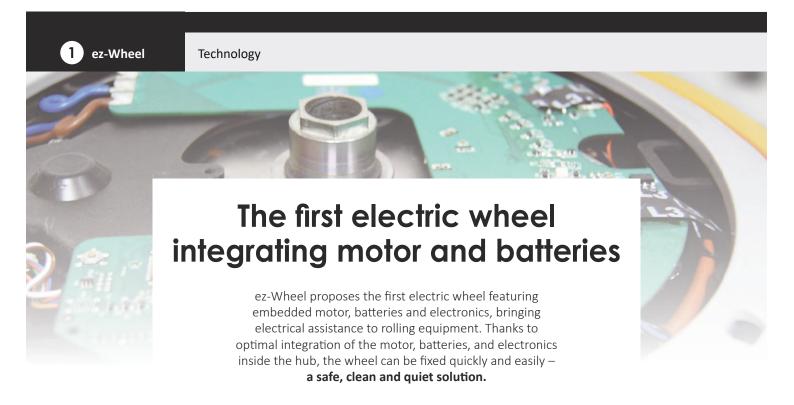






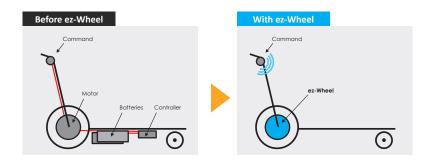






#### **Quick fitting**

ez-Wheel® wireless technology removes all the peripherals, wire sets and connectors from the chassis, making the integration of our solutions a fast and easy task compared to other alternatives.



## Designed to last

ez-Wheel® products are ready to operate in outdoor or indoor conditions, over an extended temperature range.

All the components including the battery are designed to withstand up to 7 years of operation without any maintenance required, confirmed by real returns on experience.

IP43
IP66
Protection Index

-20°C +60°C

Functional temperatures range

3Y. 7Y.

Maintenance period in years





## The solution fully integrates into a wheel all the functions of a conventional power train:

- √ high-end electric motor
- √ high energy and super long-life batteries
- ✓ power controller featuring state of the art motor control
- √ battery management
- √ wireless interface



Technology





#### Cover

All components of the autonomous wheel are contained in a robust and totally waterproof cover. The wheel is able to operate in the toughest environments.

#### Motor

The high torque and ultra-compact drive is ensured by a high-tech permanent magnet motor, and a mechanical reducer fully integrated into the wheel's architecture.



#### **Battery**

The energy embedded in the wheel is stored in a cutting-edge Ni-MH battery. Built to last, rocksolid and reliable, this technology is also one of the safest available on the market.

#### **Electronics**

The brain of the wheel is powered by two micro-controllers and two realtime operating systems. It enables wireless communication, battery management and full customization of the wheel's features.

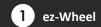
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#### HMI

The user interface is extremely simple. It includes the wheel's recharge connector, a diagnostic button, and lights indicating the wheel, battery level and wireless communication status.

BIBUS

7



# Product features guide Follow the guide!

Our products offer is developed for specific environments and needs. The following pictograms will help you quickly define the product's main characteristics.

Help guide Aid to comprehension





Solid objects greater than 1 mm Sprays of water at any angle up to 60°

Wireless communication





Limited ingress of dust Splash-proof from all directions

Serial Link communication





Dust-proof Water jets

Enables regenerative charging from wheel rotation





Dust-proof Powerful Water jets

Maintenance free Lifespan 3 to 7 years





Dust-proof High pressure and high temperature

Designed to run quietly





Hygienic design

Up to 1 ton moved





Non-slip tyre

Heavy load moved





Shockproof

Audible warning





High-pressure jet-cleaning

Internal or External battery





Stainless-steel





## **Business Sectors**

#### **Endless** possibilities

Power any rolling equipment dedicated to load handling or people transportation, quickly and easily.





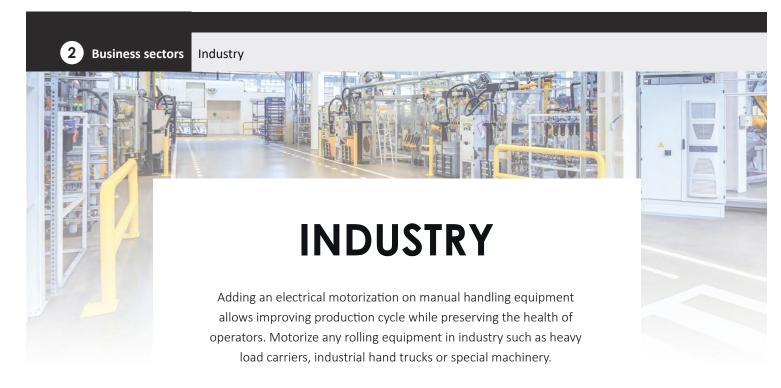












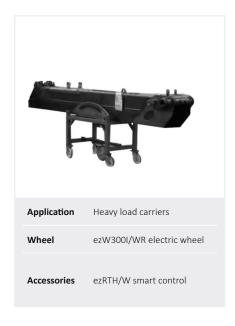


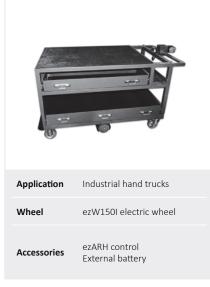


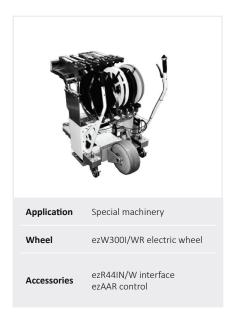




#### **Endless possibilities:**







## They trust us:











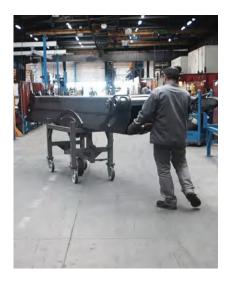


Industry

## Suitable for the Industrial sector

Up to 2 tons moved without effort!

ez-Wheel® self-propelled electric wheels are ideal for handling equipment and moving heavy loads.







#### ■ Up to 2 tons

Wheels can be paired to double the moved-load capacity. This platform has been fitted with 2 ezW300I/WR wheels and the load being moved is 2 tons.

#### **◄** Continuous conveying

The transfer carriage or carousel can easily be powered to ensure repetitive motions. This example is fitted with 2 external batteries to allow for continuous use.

#### **▲** Wireless control

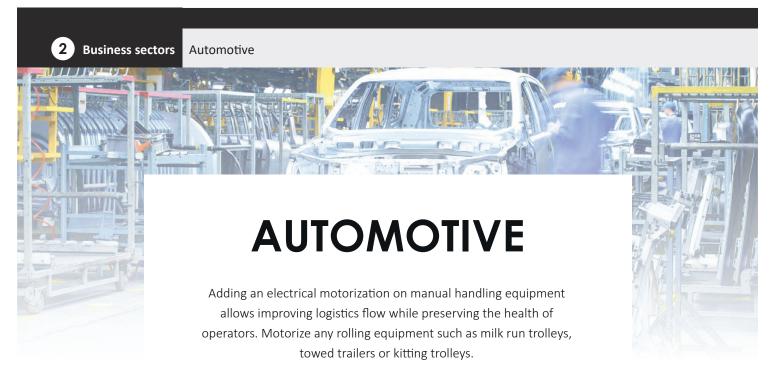
The ezW300I/WR wheel is made for heavy load/large dimensions travel assistance. Its Wireless control offers great freedom of the manual control.



#### ■ Special machinery

Most industrial special machinery can be fitted with ez-Wheel® electric wheels and accessories.







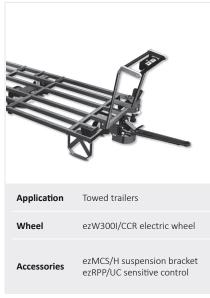






#### **Endless possibilities:**







## They trust us:













## Suitable for Automotive Industry

Ensuring continuous service

ez-Wheel® regenerative charging during towing feature is the perfect fit for towed material running 24/7.







# ■ Regen charge while towing ezW300I/WR and ezW300I/CCR electric wheels equipped with the « Regen » option can recharge themselves whilst being towed between the warehouse and the production line.

# ■ Moving platform Operators movements may be also assisted by electric wheel ez-Wheel®. This motorized platform is footcontrolled, allowing you to follow the overhead line movement.

#### **▲** Sensitive control

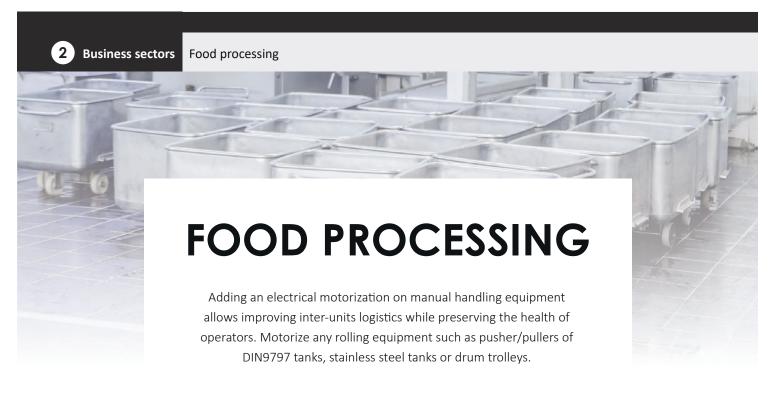
The ezRPP/UC push-pull sensitive control resulting from collaboration with a well-known automotive group, is perfect for manoeuvring on the shop floor.



#### **◄** Charging at workstation

ezW300I/CCR and ezW150I ez-Wheel® electric wheels, can be recharged on each back-to-workstation through recharge contacts. The built-in batteries are designed to go through many micro-charging cycles without any premature ageing risks.



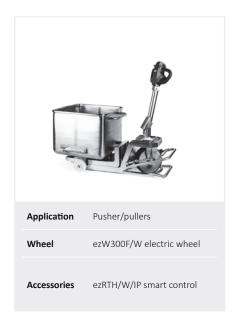


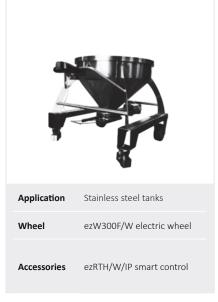


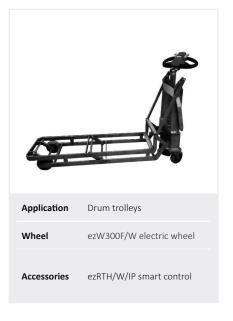




#### **Endless possibilities:**







#### They trust us:













Food processing

## Suitable for Food processing

Reinforced for serious tasks

ez-Wheel® sealed and waterproof products can operate in severe environments over a wide temperature range.







#### ■ Precise manoeuvre

The accurate motorization control allows precise positioning of machines. Here, a wine tank motorized by 2 ezW300F/W. Thanks to ez-Wheel® devices, the operator can easily position the tank above the fill access cover.

#### ◀ High pressure jet cleaning

The highest protection index IP69K and the stainless-steel cover of the ezW300F/W wheel allows high pressure jet cleaning, the robustness of the assembly being reinforced by the absence of connectors and fragile units.

#### **▲** Wireless

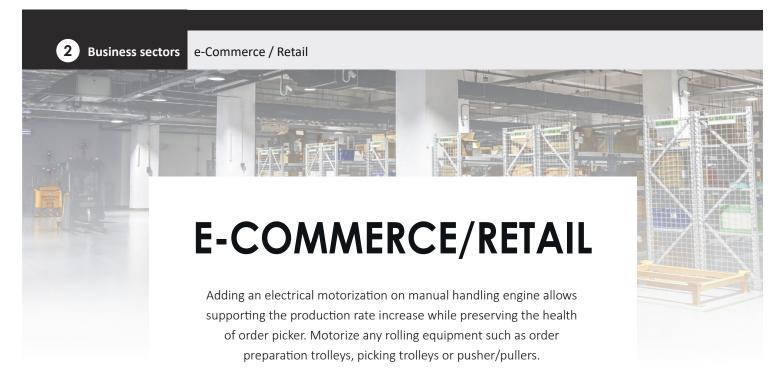
ezW300F/W wheel controlled by the ezRTH/W/IP tiller head offers a wireless solution without connector, perfect for demanding and wet environments.



#### ■ Production machinery

Even the most complex production machineries can be motorized by ez-wheel® electric wheels, thanks to its small dimensions and its standard form factor.









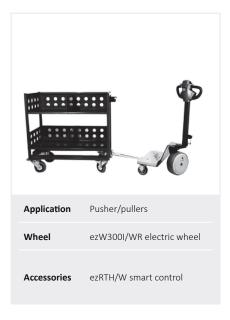




#### **Endless possibilities:**







#### They trust us:













## Suitable for e-Commerce & Retail

Flexible, time-saving solutions

ez-Wheel® solutions are ideal for picking trolleys and platform trucks designed for hundreds of starts and stops per working shift.







#### ■ Multiple starts and stops

The ez-Wheel® electric wheels are specifically developed to ensure thousands of successive picking trolley starts and stops, and offer acceleration and deceleration assistance, with automatic motor brake and free-wheel control.

#### ■ Low height

The ezW160M+ electric wheel compactness with its castor standards dimensions facilitates mechanical integration, either as original equipment or retrofitted from existing trolleys.

#### **▲** Full integration

The ezW160M+ wheels are easily integrated to control picking systems with other electronic components, such as these trucks fitted with Put-to-Light. The wheel is able to power the other components thanks to its on-board energy.

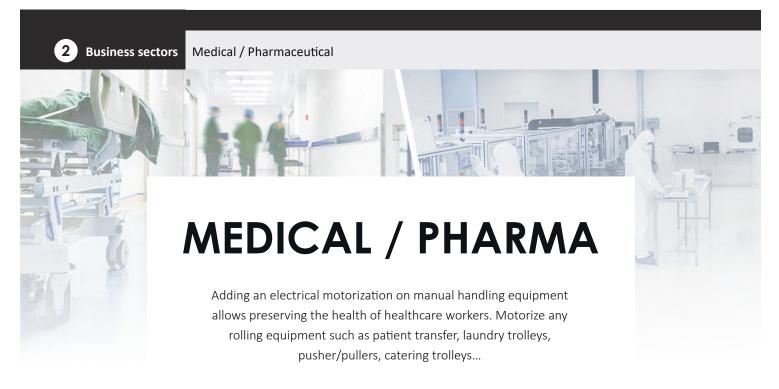


#### ■ Productivity gain

Motorization increases the carrying capacity and reduces the number of trips.

Here, a trolley's puller powered by the ezW300I/WR electric wheel moving a train of 4 preparation trolleys at the same time.





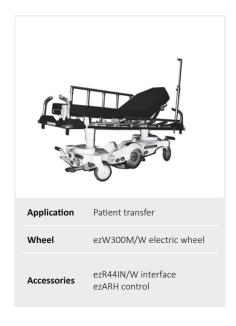




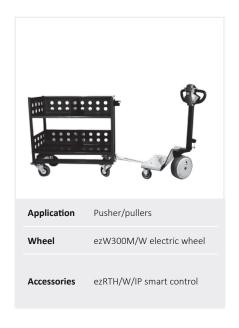




#### **Endless possibilities:**







## They trust us:













## Suitable for Medical & Pharma

Clean, reliable and helpful

#### Medical

ez-Wheel® self-propelled electric wheels are ideal to preserve the health of healthcare workers.







#### ■ Ability to climb slopes

The motorization offers a significant crossing torque, which allows a single person to climb slopes and access ramps without wasting time and effort.

#### **◄** Multi-purpose

Most trolleys in hospitals can be motorized by ez-Wheel® electric wheels, either by direct motorizing, or by combining them with a motorized puller.

#### ▲ Discreet & efficient

The ezW300M/W or ezW160M+ wheels are discreetly integrated to premium medical equipment, and their silent operation is highly appreciated by users.

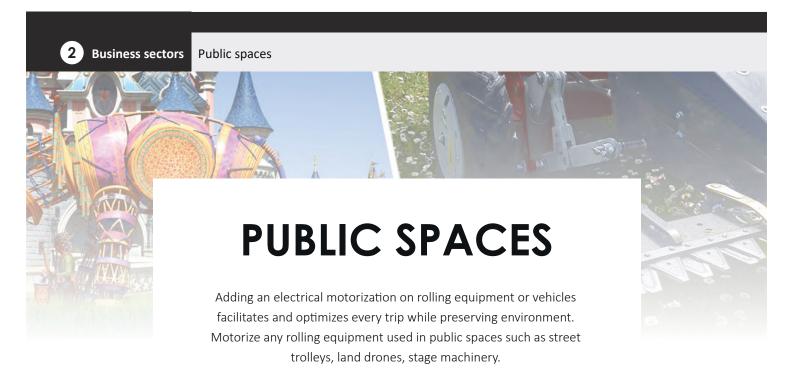
#### **Pharmaceutical**

ez-Wheel® pharma range is also made for clean-rooms / white rooms with the highest hygienic requirements.



#### ■ White and clean rooms

Thanks to its hygienic design and its special stainless-steel envelope, the ezW300M/W wheel can be used in a white and clean room.



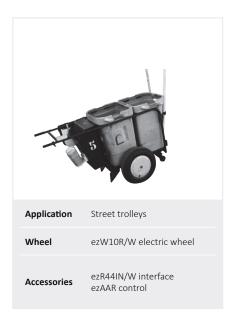


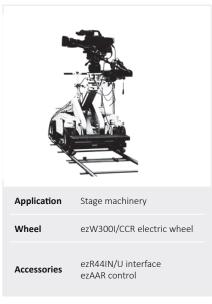


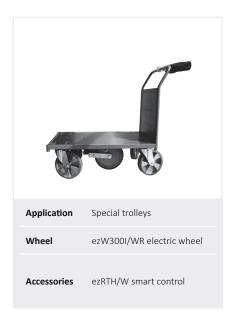




#### **Endless possibilities:**







### They trust us:









Public spaces

## Suitable for Public spaces

Even for the craziest ideas

ez-Wheel® products can be used outside on bitumen or turf, as well as uneven terrain. The ez-Wheel® range offers a solution for every mobility need.







#### ■ Manoeuvrability

These two ezW10R/W wheels driven by two ezAAR joysticks allow all complex manoeuvres and are hidden under the full costume.

#### ■ Ability to react

ez-Wheel® devices can motorize the most bulky equipment quickly and easily, so just a single person is required for this kind of manoeuvre.



The ezW300I/WR wheels can be used on spectacular parade floats, both indoors and outdoors.



ez-wheel.com

#### **◄** Multi-environments

The ezW300I/WR or ezW10R/W wheels can be used on maintenance and delivery equipment or even agricultural machinery.



21



Electric wheels

## **ELECTRIC WHEELS**













## ez-Wheel®

Electric wheel range



#### Series 300

## electric wheel Series 3001

Developed for industrial use



p.24

## electric wheel Series 300M

Developed for the medical environment



p.26

## electric wheel Series 300F

Developed for the food processing industry



p.28

#### Series 150/160

## electric wheel Series 1501

Developed for industrial use



p.30

## electric wheel Series 160M

Developed for the medical environment



p.32

#### Series 10"

## electric wheel Series 10"

Developed for the outdoors



p.34



## 3 Wheels

## electric wheel Series 3001

#### Developed for industrial use



All the components necessary for traction are built into the wheel: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.









- ø 300 mm
- 1000 kg moved
- IP54
- PU 80 sh.A flat profile



#### Ref. ezW300I/WR



#### Uses

- industrial handling tools
- towed rolling equipment
- trolley
- pusher/puller

#### **Technical features**

| Diameter              | 300 mm                  |
|-----------------------|-------------------------|
| Speed range           | 0 to 9 km/h             |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg |
| Nominal performance   | 12 daN at 6 km/h        |
| Maximum rolling speed | 12 km/h                 |
| Battery capacity      | 240 Wh                  |
| Wheel weight          | 17 kg                   |
| Function •            | Regen                   |
|                       |                         |

#### Ref. ezW300I/CCR



#### Uses

- $\bullet \ industrial \ handling \ tools \\$
- towed rolling equipment
- trolley

#### **Technical features**

| Diameter              | 300 mm                  |
|-----------------------|-------------------------|
| Speed range           | 0 to 9 km/h             |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg |
| Nominal performance   | 12 daN at 6 km/h        |
| Maximum rolling speed | 12 km/h                 |
| Battery capacity      | 240 Wh                  |
| Wheel weight          | 18 kg                   |
| Function ©            | Regen                   |
|                       |                         |



#### Regen feature

Enables the built-in battery to be recharged using the kinetic energy produced by the rotation of the wheel.

The wheel can be charged while rotating at a speed between 3 and 12 km/h, for instance during the towing phase of a trolley.

In this phase, the wheel switches into the charging mode automatically as soon as rotation is detected.

The wheel then presents a resisting (braking) torque and the braking energy recovered by the motor is injected back into the battery.

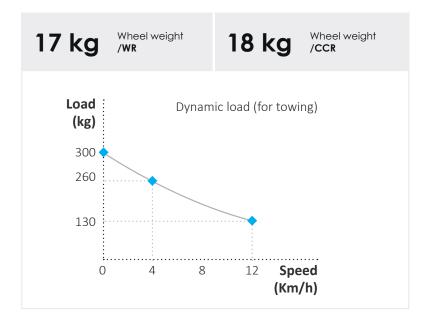
Regenerative charging is an exclusive function developed by ez-Wheel.





#### Weight

The robust assembly can withstand knocks and severe vibration and enables the wheel to carry some load.



#### **Conditions of use**

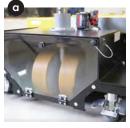
The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.



**Functional** temperatures range

Maintenance period in years

#### **Applications examples**





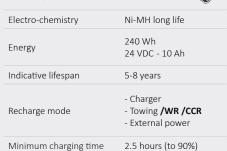


- a. Heavy duty platform
- b. Special machinery
- c. Heavy load carrier

#### **Components specifications**

| Motor               |  |
|---------------------|--|
| Technology          | BLDC PM                                    |
| Gearbox             | 1-stage helical                            |
| Indicative lifespan | 5000 h / 15000 km<br>1500 000 starts/stops |
| Nominal Speed       | 110 rpm (6,2 km/h)                         |
| Nominal power       | 200 W (S1)                                 |
| Peak Torque         | 52 Nm                                      |

| Battery |  |
|---------|--|
| et      |  |



#### Interface

|          | 7                                |
|----------|----------------------------------|
| Wired    | Serial                           |
| Wireless | LR WPAN 2.4 GHz<br>IEEE 802.15.4 |
|          |                                  |

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25

## 3 Wheels

## electric wheel Series 300M

#### Developed for the medical environment



All the components necessary for traction are built into the wheel: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.









- Ø 304 mm
- 1000 kg moved
- IP65
- 70 sh.A Polyurethane bomb profile



#### Ref. ezW300M/W



#### Uses

- medical devices
- pusher/puller

#### **Technical features**

| Diameter              | 304 mm                  |
|-----------------------|-------------------------|
| Speed range           | 0 to 9 km/h             |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg |
| Nominal performance   | 12 daN at 6 km/h        |
| Maximum rolling speed | 12 km/h                 |
| Battery capacity      | 240 Wh                  |
| Wheel weight          | 17 kg                   |
| Option                | -                       |
|                       |                         |

#### Ref. ezW300M/W



#### Uses

- medical devices
- clean room material
- pusher/puller

#### **Technical features**

| Diameter              | 304 mm                                  |
|-----------------------|---|
| Speed range           | 0 to 9 km/h                             |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg                 |
| Nominal performance   | 12 daN at 6 km/h                        |
| Maximum rolling speed | 12 km/h                                 |
| Battery capacity      | 240 Wh                                  |
| Wheel weight          | 17 kg                                   |
| Feature ©             | Stainless-Steel<br>recharge per contact |
|                       |   |

÷ 5

FEATURE

#### Recharge per contact

Enables the built-in battery to be recharged by direct contact on wheel sides.

Only available on:

✓ stainless steel wheels





#### Weight

The robust assembly can withstand knocks and severe vibration and enables the wheel to carry some load.

17 kg

Wheel weight

300 kg Vertical load

#### **Conditions of use**

The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.

-20°C

Functional temperatures range

Maintenance period in years

#### **Applications examples**







- a. Emergency stretcher
- b. Stainless steel tank
- c. Pusher/puller

#### **Components specifications**

| Motor               |  |
|---------------------|--|
| Technology          | BLDC PM                                    |
| Gearbox             | 1-stage helical                            |
| Indicative lifespan | 5000 h / 15000 km<br>1500 000 starts/stops |
| Nominal Speed       | 110 rpm (6,2 km/h)                         |
| Nominal power       | 200 W (S1)                                 |
| Peak Torque         | 52 Nm                                      |

#### **Battery**

| Electro-chemistry     | Ni-MH long life          |
|-----------------------|--------------------------|
| Energy                | 240 Wh<br>24 VDC - 10 Ah |
| Indicative lifespan   | 5-8 years                |
| Recharge mode         | Charger                  |
| Minimum charging time | 2.5 hours (to 90%)       |

#### Interface

|          | 7                                |
|----------|----------------------------------|
| Wired    | no                               |
| Wireless | LR WPAN 2.4 GHz<br>IEEE 802.15.4 |
|          |                                  |



## electric wheel Series 300F

### Developed for the food processing industry



All the components necessary for traction are built into the wheel: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.













- Ø 304 mm
- 1000 kg moved
- IP69K
- 50 sh.A Polyurethane enhanced grip



#### Ref. ezW300F/W



#### Uses

- rolling equipment for harsh environment
- pusher/puller
- food processing material

#### **Technical features**

| Diameter              | 304 mm                                  |
|-----------------------|---|
| Speed range           | 0 to 9 km/h                             |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg                 |
| Nominal performance   | 12 daN at 6 km/h                        |
| Maximum rolling speed | 12 km/h                                 |
| Battery capacity      | 240 Wh                                  |
| Wheel weight          | 17 kg                                   |
| Feature •             | Stainless Steel<br>recharge per contact |
|                       |   |



#### Recharge per contact

Enables the built-in battery to be recharged by direct contact on wheel sides.





#### Weight

The robust assembly can withstand knocks and severe vibration and enables the wheel to carry some load.

17 kg

Wheel weight

300 kg Vertical load

#### Motor



**Components specifications** 

#### **Battery**

| Electro-chemistry     | Ni-MH long life          |
|-----------------------|--------------------------|
| Energy                | 240 Wh<br>24 VDC - 10 Ah |
| Indicative lifespan   | 5-8 years                |
| Recharge mode         | Charger                  |
| Minimum charging time | 2.5 hours (to 90%)       |

#### **Interface**

| Wired    | no                               |
|----------|----------------------------------|
| Wireless | LR WPAN 2.4 GHz<br>IEEE 802.15.4 |

#### **Conditions of use**

The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.

-20°C

Functional temperatures range

Maintenance period in years

#### **Applications examples**







- a. Mobile tank
- b. Pusher/puller
- c. Drum trolley

## 3 Wheels

## electric wheel Series 1501

#### Developed for industrial use



All the components necessary for traction are built into the housing: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.



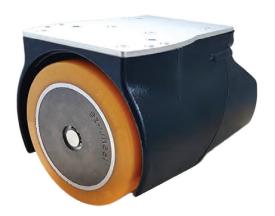








- Ø 150 mm
- 1000 kg moved
- IP43
- 92 sh.A Blickle® Extrathane flat profile



#### Ref. ezW150I



#### Uses

- industrial trolleys
- rolling equipment for factories
- mobile workstations and tools

#### **Technical features**

| Diameter              | 150 mm  |
|-----------------------|---|
| Speed range           | 0 to 5 km/h                                   |
| Peak pushing effort   | 35 daN<br>Moves 1000 kg                       |
| Nominal performance   | 15 daN at 4 km/h                              |
| Maximum rolling speed | 8 km/h  |
| Battery capacity      | 0 - 70 - 140 Wh                               |
| Wheel weight          | 10 kg   |
| Options •             | Parking brake <b>/B</b><br>Additional battery |



#### Parking brake

Electro-mechanical parking brake. Ref. **/B** 

Only available on:
✓ ezW150I



OPTION

## Additional battery Internal batteries.

Ref. ezB24V3AH/160

Delivered separately, to be installed in:

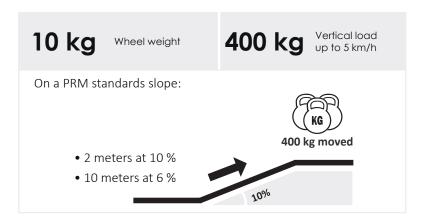
- ✓ ezW150I
- ✓ ezW160M+





#### Weight

Thanks to the reinforced cast iron housing and wheel hub, the Series 150 wheel can withstand knocks and severe vibration and enables the wheel to carry some load.



#### **Conditions of use**

The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.



#### **Applications examples**







- a. Conveyor transfer car
- b. Tool trolley
- c. Scissor lift trolley

#### **Components specifications**

| Motor               |  |
|---------------------|--|
| Technology          | BLDC PM                                    |
| Gearbox             | 2-stage helical                            |
| Indicative lifespan | 3000 h / 10000 km<br>1000 000 starts/stops |
| Nominal Speed       | 166 rpm (4,7 km/h)                         |
| Nominal power       | 170 W (S3, 15% duty cycle, 5 min max)      |
| Peak Torque         | 27 Nm                                      |

| Batl | er  | , |
|------|-----|---|
| Dau  | Lei | y |

| Dattery               | <b>V</b>  |
|-----------------------|---|
| Electro-chemistry     | Ni-MH long life   |
| Energy                | 70 Wh (1 battery)<br>24 VDC - 3 Ah<br>140 Wh (2 batteries)<br>24 VDC - 6 Ah |
| Indicative lifespan   | 2-3 years   |
| Recharge mode         | - Charger<br>- External power   |
| Minimum charging time | 1.5 hours (to 90%)  |

#### Interface

| Wired    | - Analog<br>- Serial / CAN<br>(upon request) |
|----------|--|
| Wireless | no   |

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31



## electric wheel Series 160M

#### Developed for the medical environment



All the components necessary for traction are built into the wheel: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.









- Ø 158 mm
- 750 kg moved
- IP66
- 70 sh.A Polyurethane flat profile



#### Ref. ezW160M+



#### Uses

- catering trolleys
- transfer chairs and beds
- rolling equipment for hospitals

#### **Technical features**

| Diameter              | 158 mm                 |
|-----------------------|------------------------|
| Speed range           | 0 to 5 km/h            |
| Peak pushing effort   | 27 daN<br>Moves 750 kg |
| Nominal performance   | 9 daN at 5 km/h        |
| Maximum rolling speed | 8 km/h                 |
| Battery capacity      | 0 - 70 - 140 Wh        |
| Wheel weight          | 6 kg                   |
| Options ©             | Additional battery     |
|                       |                        |



Delivered separately, to be installed in:

✓ ezW150I

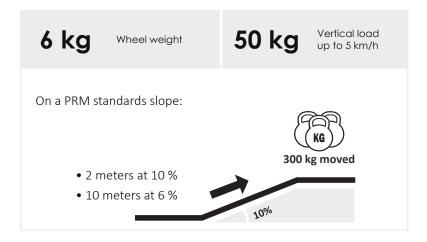
✓ ezW160M+





#### Weight

The robust assembly can withstand knocks and severe vibration. The wheel is designed to be installed as a fifth wheel with a suspension.



#### **Conditions of use**

The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.



#### **Applications examples**







- a. Transfer chair
- b. Hot & cold food cart
- c. Catering trolley

#### **Components specifications**

| Motor               |  |
|---------------------|--|
| Technology          | BLDC PM                                  |
| Gearbox             | 2-stage helical                          |
| Indicative lifespan | 2000 h / 5000 km<br>600 000 starts/stops |
| Nominal Speed       | 167 rpm (5 km/h)                         |
| Nominal power       | 130 W (S1)                               |
| Peak Torque         | 22 Nm                                    |
|                     |  |

| Battery |
|---------|
|---------|

| Ni-MH long life   |
|---|
| 70 Wh (1 battery)<br>24 VDC - 3 Ah<br>140 Wh (2 batteries)<br>24 VDC - 6 Ah |
| 2-3 years   |
| - Charger<br>- External power   |
| 1.5 hours (to 90%)  |
|   |

| rface |  |
|-------|--|
|       |  |
|       |  |

| Interface |                      |
|-----------|----------------------|
| Wired     | - Analog<br>- Serial |
| Wireless  | no                   |

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33



## electric wheel Series 10"

## Developed for the outdoors



All the components necessary for traction are built into the wheel: an electric gear motor, high energy and long-life batteries, a power controller ensuring optimum motor control, battery management and a control interface.







- ø 400 mm
- 150 kg moved
- IP54
- 10x4 road tyre



#### Ref. ezW10R/W



#### Uses

- delivery carts
- land drone

#### **Technical features**

| Diameter              | 400 mm              |
|-----------------------|---------------------|
| Speed range           | 0 to 15 km/h        |
| Peak pushing effort   | -                   |
| Nominal performance   | 250 W (S1 at 10m/h) |
| Maximum rolling speed | 18 km/h             |
| Battery capacity      | 240 Wh              |
| Wheel weight          | 14,5 kg             |
| Option                | -                   |
|                       |                     |
|                       |                     |





#### Weight

The robust assembly can withstand knocks and severe vibration and enables the wheel to carry some load.

14,5 kg Wheel weight 150 kg

Recommended maximum load per wheel on a 10% slope

#### **Conditions of use**

The wheel can be used inside or outside, over a wide range of temperatures. The components – including the battery – do not need any inspection or maintenance over the product's whole lifespan.

-20°C

Functional temperatures range

Maintenance period in years

#### **Applications examples**







- a. Street trolley
- b. Agricultural drone
- c. Motorized parade/float character

#### **Components specifications**

| Motor               |  |
|---------------------|--|
| Technology          | BLDC PM                                    |
| Gearbox             | 1-stage helical                            |
| Indicative lifespan | 5000 h / 15000 km<br>1500 000 starts/stops |
| Nominal Speed       | 240 rpm (18 km/h)                          |
| Nominal power       | 250 W (S1 at 10 Km/h)                      |
| Peak Torque         | 55 Nm                                      |

|                       | •                        |
|-----------------------|--------------------------|
| Electro-chemistry     | Ni-MH long life          |
| Energy                | 240 Wh<br>24 VDC - 10 Ah |
| Indicative lifespan   | > 5 years                |
| Recharge mode         | Charger                  |
| Minimum charging time | 3 hours (to 90%)         |

|     | _   |    |
|-----|-----|----|
| nte | rfa | 60 |

| птеттасе         |   |
|------------------|---|
| Wired            | -   |
| <b>W</b> ireless | Wireless (LR WPAN)<br>2.4 GHz<br>Based on IEEE 802.15.4 |





(Q000)



## ez-Config® software

#### Configure your wheel

ez-Config® is the core of the ez-Wheel® solutions.

Thanks to their open connectivity, wheels and hand controls are programmable and can be perfectly adapted to any situation.







#### **Environment**

Evaluate and understand the working place characteristics





#### Connection

Open ez-Config® and connect ez-Wheel® devices via a USB port





#### Configuration

Configure wheels and accessories Save parameters



English interface



Windows compatibility 7 and above



Offline support

#### Available versions:

| Ref. ez-Config/300     | Configuration software suitable for: | <ul><li>✓ Series 300</li><li>✓ Series 10"</li><li>✓ Smart controls</li></ul> |
|------------------------|--------------------------------------|--|
| Ref. ez-Config/150-160 | Configuration software suitable for: | ✓ Series 160<br>✓ Series 150   |



### Features specifications:

This set of intuitive features have been developed and adapted thanks to years of return on experience and meet every user's demands.

## KM/H

### **Speed definition**

Define the speed of the wheel. Forward and Backward speed can be differentiated.



### **Direction change**

Adjust the behaviour of the wheel during a change in the set direction. 2 modes are available: «Deceleration» and «Inversion».



### Max speed mode

Set up the behaviour of the wheel when the rolling speed exceeds the maximum speed value entered in ez-Config®.



### **Acceleration time**

Set up the acceleration time according to your needs. e.g. slow for patient moving, fast for picking trolley.



### **Deceleration mode**

Choose the deceleration behaviour when releasing the hand control. e.g. motor brake resistance, free wheel to continue rolling.



### Start time limiter

Limit the motor drive time for each start. When the hand control is released the wheel goes back to the selected deceleration mode.



### **Auto stand-by**

Enter a value in seconds corresponding to the waiting time between the absence of activity on the hand control and switching back to stand-by.



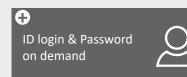
### **Inputs Outputs**

Configure external interfaces for the displays, buttons, external supply...



Free of charge software







## ez-Wheel® devices

High level of compatibility

ez-Wheel® products have been developed to be integrated into many applications in various environments.

Hundreds of accessories combinations are possible thanks to the high level of compatibility!

Wheels and accessories are designed to ensure a plug-and-play compatibility. ez-Wheel's catalogue features a full range of wireless controls and predefined cables, ready to use.



**BIBUS** 





## Product compatibility

|                             | •                       |                               |                         |                         | 0                                 | 65                                | 0                       |
|-----------------------------|-------------------------|-------------------------------|-------------------------|-------------------------|-----------------------------------|-----------------------------------|-------------------------|
| Controls compatibili        | ezW300I/WR              | ezW300I/CCR                   | ezW300M/W               | ezW300F/W               | ezW150I                           | ezW160M                           | ezW10R/W                |
| ezRTH/W                     | Wireless                | Wireless                      | Wireless                | Wireless                | No                                | No                                | Wireless                |
| ezRPP/UC                    | Wireless                | ezUCxM                        | No                      | No                      | No                                | No                                | No                      |
| ezR44IN/W                   | (Wireless               | Wireless                      | (Vireless               | <b>F</b>                | No                                | No                                | Wireless                |
| ezR44IN/U                   | No                      | with ezACxM-UC/Box and ezUCxM | No                      | No                      | No                                | No                                | No                      |
| Wired control ezAxxx        | +<br>ezACxM-UC/Box      | +<br>ezACxM-UC/Box            | +<br>ezACxM-UC/Box      | +<br>ezACxM-UC/Box      | with ezACxM-BD/160                | with<br>ezACxM-BD/160             | +<br>ezACxM-UC/Box      |
| ezARH-BD                    | No                      | No                            | No                      | No                      | with ezACxM-BD/160                | with<br>ezACxM-BD/160             | No                      |
| Switches compatibility      |                         |                               |                         |                         |                                   |                                   |                         |
| Switches ezSxxx             | +<br>ezACxM-UCB/<br>Box | +<br>ezACxM-UCB/<br>Box       | +<br>ezACxM-UCB/<br>Box | +<br>ezACxM-UCB/<br>Box | with ezACxM-BD/160                | with<br>ezACxM-BD/160             | +<br>ezACxM-UCB/<br>Box |
| ezSPBC-BD                   | No                      | No                            | No                      | No                      | with ezACxM-BD/160                | with<br>ezACxM-BD/160             | No                      |
| Emergency button<br>ezSExxx | No                      | No                            | No                      | No                      | Cable included                    | Cable included                    | No                      |
| Internal and Externa        | l batteries             |                               |                         |                         |                                   |                                   |                         |
| ezB24V3AH/160               | No                      | No                            | No                      | No                      | Cable included                    | Cable included                    | No                      |
| External battery            | No                      | with<br><b>Mascot1A8/BAT</b>  | No                      | No                      | with ezBCEXT/160 or ezBCEXMxM/160 | with ezBCEXT/160 or ezBCEXMxM/160 | No                      |

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39



## Wireless tiller head control

Bi-directional and ergonomic

Ensures a proper handling of equipment thanks to ergonomic shapes and well organised commands. The integrated wireless interface allows a simple and quick integration on rolling equipment.

### Other functions:

The interface remotely displays the battery level of the wheel and the system status. It is powered by its own internal battery.

Ergo Ergonomic control

Protection Index

### Which tiller head for which use?



- pusher/puller
- industrial hand trucks
- heavy load carriers

| lechnical features |  |  |
|--------------------|--|--|
| Functions          | On/Off button<br>Progressive accelerator |  |
| Protection Index   | IP54                                     |  |
| Communication      | Wireless                                 |  |
| Compatibility      | ✓ Series 300<br>✓ Series 10"             |  |
|                    |  |  |

### Ref. ezRTH/W/IP



- pusher/puller
- food processing machines
- outdoor applications

### **Technical features**

| Functions        | On/Off button<br>Progressive accelerator<br>Warning horn<br>Charge & USB plugs caps<br>Sealed inner components |
|------------------|--|
| Protection Index | IP65   |
| Communication    | Wireless   |
| Compatibility    | ✓ Series 300<br>✓ Series 10"   |









Stainless-Steel stopper under ezRTH/W/IP tiller head. To protect the charge connector against washing water jets.



ezRTH/W: an award-winning tiller head housing, combining ergonomics and robustness, fitted with the best control features from ez-Wheel.







## Push pull sensitive control

Bi-directional and sensitive sensor

Ensures a natural handling of equipment thanks to sensitive sensors, ergonomic shapes and intuitive use.

### Other functions:

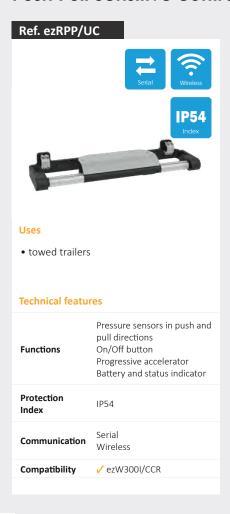
The interface remotely displays the battery level of the wheel and the system status. Its magnetic connector ensures a quick charger connection when coming back to the parking station.

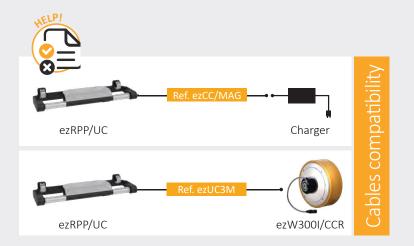




Magnetic connector for immediate and easy connection

### **Push Pull Sensitive control:**













ezRPP: an intuitive control bringing best practices in lean manufacturing, co-designed with automotive players, for automotive players.







## The ez-Box® interface

Control one or two wheels

### Wireless Communication /W

The wireless interface allows a simple and quick integration on rolling equipment.

### Serial Link Communication /U

The serial link is used in ez-Wheel solutions for insuring a wired communication recommended for noisy environments or wireless restricted areas.

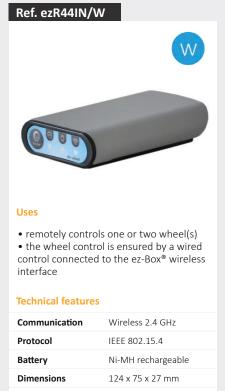


Displays the battery level of the wheel and the system status



Panel or tube mount

### ez-Box® interface:



✓ Series 300

✓ Series 10"



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Compatibility



# Which box for which use?

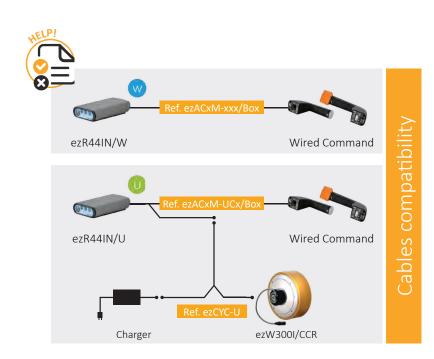
- √ √ Highly recommended
  - ✓ Compatible
  - **X** Not recommended

| W  |             |
|--|-------------|
| Wireless (LR WPAN) 2.4 GHz<br>Based on IEEE 802.15.4 | Serial link |

| Environment informations            | Wireless communication | Serial link communication |
|-------------------------------------|------------------------|---------------------------|
| White RF noise environment          | X                      | $\checkmark\checkmark$    |
| Wireless restricted areas           | X                      | ✓ ✓                       |
| Agro/pharma environment (300M/300F) | <b>√</b> √             | х                         |
| Humid environment                   | $\checkmark\checkmark$ | X                         |
| Two wheels system                   | <b>√</b> √             | ✓                         |











## Wired hand controls

Wired and Bi-directional



Ref. ezAARmini

### Mini joystick

This finger operated mini joystick can control the speed in both directions (forward and backward). It can be mounted at the end of a tube, or on a panel.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ez-Box®        | Ref. ezACxM/Box    |
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |



Ref. ezAAR

### **Joystick**

The joystick can control the speed in both directions (forward and backward). It can be mounted on a panel and is suitable for tough environments.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ez-Box®        | Ref. ezACxM/Box    |
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |



Ref. ezARH

### **Rotating handle**

The ezARH controls the speed in both directions (fwd and bck) with the thumb. The handle features an ergonomic and very rugged design.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ez-Box®        | Ref. ezACxM/Box    |
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |



Ref. ezARH-BD

### Rotating handle with button and display

The ezARH-BD controls the speed in both directions (fwd and bck) with the thumb. The handle features an ergonomic and very rugged design. The second handle is equipped with a battery display and a start button.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |







Ref. ezAFB

### **Forward & Backward control**

This simple button control is suitable for a basic forward and backward operation (non-progressive).

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ez-Box®        | Ref. ezACxM/Box    |
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |

### Tiller head

The ezATH command is a tiller head type control. It ensures a proper handling of equipment thanks to ergonomic shapes and well organized commands. It can control the speed in both directions (forward and backward). For safety, the control includes a belly button.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ez-Box®        | Ref. ezACxM/Box    |
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |



Ref. ezATH







## Wired switches

### Standard switches



Ref. ezSONF-B

### Switch On/Off Button

The ezSONF-B is a bistable toggle switch, to start and stop the system.

| Suitable for:    | Cable required      |  |
|------------------|---------------------|--|
| ✓ ez-Box®        | Ref. ezACxM-UCB/Box |  |
| ✓ Series 150/160 | Ref. ezACxM-BD/160  |  |



Ref. ezSKEY-B

### **Switch Key Button**

The ezSKEY-B is a bistable key switch, to secure the start of the system.

| Suitable for:    | Cable required      |
|------------------|---------------------|
| ✓ ez-Box®        | Ref. ezACxM-UCB/Box |
| ✓ Series 150/160 | Ref. ezACxM-BD/160  |



Ref. ezSPBC-BD

### **Switch Push Button Colour**

The ezSPBC-BD is an impulse push button featuring a status or battery level LED display.

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ Series 150/160 | Ref. ezACxM-BD/160 |



Ref. ezSEMRxM/160

### **Switch Emergency**

The ezSEMRxM/160 is an emergency push button, to disconnect the motor power on Series 150/160 wheels.

| Suitable for:    | Cable required |
|------------------|----------------|
| ✓ Series 150/160 | Included       |



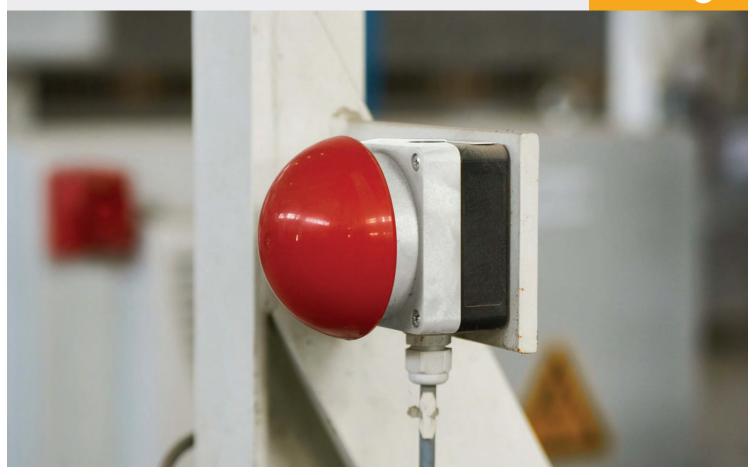
Ref. ezSERBxM/160

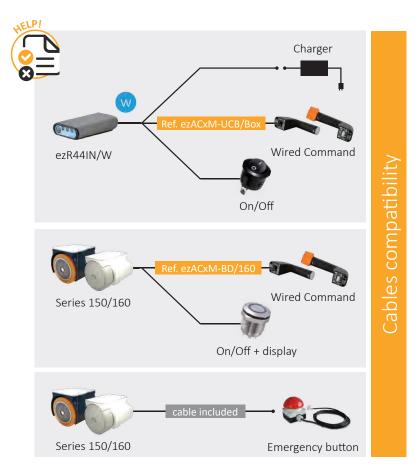
### **Switch Emergency Reverse Button**

The ezSERBxM/160 is an emergency reverse button, to secure an operator trapped between the tiller head and an obstacle.

| Suitable for:    | Cable required |
|------------------|----------------|
| ✓ Series 150/160 | Included       |











## Internal battery

For Series 150 & 160



Ref. ezB24V3AH/160

### **Internal batteries**

Ni-MH 24 VDC - 3 Ah - Extra energy for continuous use

| Suitable for:    | Cable required |
|------------------|----------------|
| ✓ Series 150/160 | No             |

## **External batteries**

For continuous use



Ref. ezB24V6AH/L

### **External battery with handle**

Ni-MH 24 VDC - 6 Ah - Long life

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ezW300I/CCR    | Ref. Mascot1A8/BAT |
| ✓ Series 150/160 | Ref. ezBCEXMxM/160 |



Ref. ezB24V9AH

### **External battery with handle**

Ni-MH 24 VDC - 9 Ah

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ezW300I/CCR    | Ref. Mascot1A8/BAT |
| ✓ Series 150/160 | Ref. ezBCEXMxM/160 |



Ref. ezB24V15AH

### **External battery with handle**

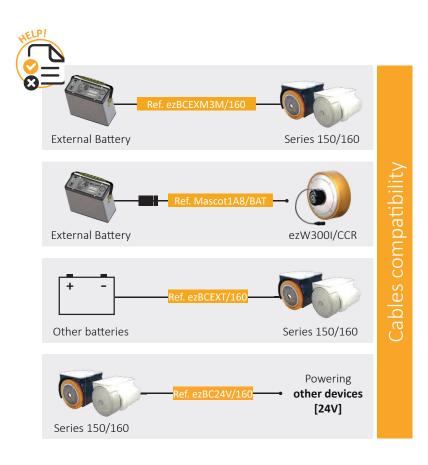
Ni-MH 24 VDC - 15 Ah

| Suitable for:    | Cable required     |
|------------------|--------------------|
| ✓ ezW300I/CCR    | Ref. Mascot1A8/BAT |
| ✓ Series 150/160 | Ref. ezBCEXMxM/160 |

**BIBUS** 

50







## Suspension bracket

Mechanical accessories for Series 150/160



Ref. ezMCS/160

### **Heavy Duty suspension bracket**

The suspension bracket ezMCS/160 features a suspension for height compensation. The ground contact is optimal and the charge on the wheel stays stable, ensuring a good grip for the torque transmission.

✓ Series 150/160



Ref. ezMCS/L/160

### **Compact suspension bracket**

The compact suspension bracket ezMCS/L/160 features a suspension for height compensation without increasing footprint. This suspension is suitable for medium loads, up to 500 kg.

✓ Series 150/160



Ref. ezMCS/L/160+

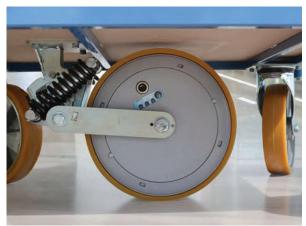
## Horizontal suspension bracket with stronger spring force (+)

The suspension bracket ezMCS/L/160+ features a suspension for height compensation. This model is preferred for heavier loads, between 500 and 1000 kg.

✓ Series 150/160



ezMCS/L/160+ on a Series 160 wheel



ezMCS/H on a Series 300 wheel



52



## Suspension bracket

Mechanical accessories for Series 300



Ref. ezMCS/H

### Horizontal suspension bracket

The suspension bracket ezMCS/H features a suspension for height compensation. The ground contact is optimal and the charge on the wheel stays stable, ensuring a good grip for the torque transmission.

✓ Series 300



Ref. ezMCS/H/CC

### Horizontal suspension bracket

The suspension bracket ezMCS/H/CC is a specific version of the ezMCS/H for the Series 300/CC wheels.

It includes collars to attach the wheel's cable output.

✓ ezW300I/CCR

## **Accessories**

Mechanical accessories for Series 300 & 10"



Ref. ezMAR

### **Anti-rotate ring**

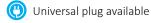
The ezMAR is used to block the rotation of the wheel's axis, ensuring the transmission of the motor torque to the chassis.

- ✓ Series 300
- ✓ ezW300I/CCR
- √ Series 10"



## ez-Wheel® Chargers

Adapted to ez-Wheel® devices







Ref. Mascot1A8

### Charger 1,8 Amp (1)

1,8 Amps charger XLR charge plug + EU power cord

| Suitable for:        | Cable required  |
|----------------------|-----------------|
| ✓ Series 300 et 10'' | cable included  |
| ✓ Series 150/160     | Ref. ezCCxM/160 |



Ref. Mascot1A8/IP

### Charger 1,8 Amp IP67 (1)



1,8 Amps charger IP67 XLR charge plug + EU power cord

| Suitable for:       | Cable required  |
|---------------------|-----------------|
| ✓ Series 300 et 10" | cable included  |
| ✓ Series 150/160    | Ref. ezCCxM/160 |



Ref. Mascot4A

### **Charger 4 Amp**

4 Amps charger XLR charge plug + EU power cord

| Suitable for:        | Cable required  |  |
|----------------------|-----------------|--|
| ✓ Series 300 et 10'' | cable included  |  |
| ✓ Series 150/160     | Ref. ezCCxM/160 |  |



Ref. Mascot1A8/160

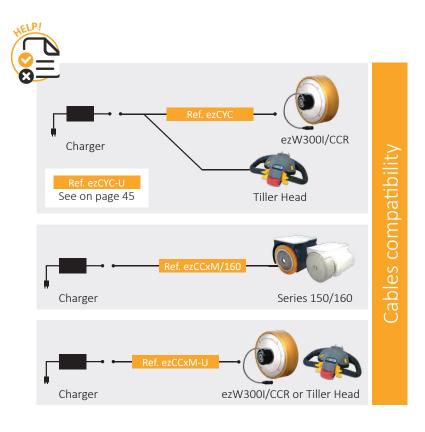
### **Embedded charger 1,8 Amp**

Charger for Series 150/160 (embedded) Molex charge plug + EU power cord

| Suitable for:    | Cable required |
|------------------|----------------|
| ✓ Series 150/160 | cable included |







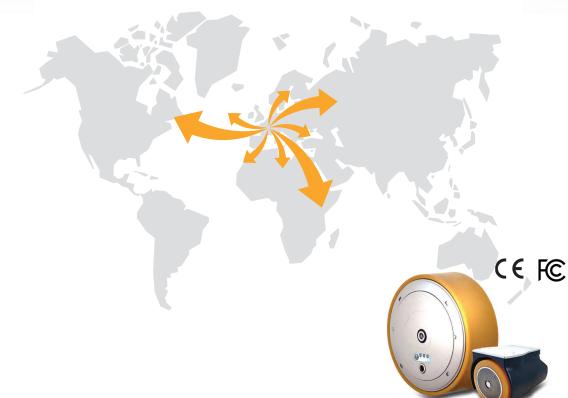




# A Worldwide Distribution network

ez-Wheel relies on a strong worldwide distribution network, highly-experienced and specialising in mobility and logistics needs.

### Contact our expert partners!





A strong and specific **expertise in motorization** 



Dedicated local product assistance



**Smart tools** for field support





## Who are you?

An end user, an integrator, a manufacturer?



End User





Visit our website **ez-wheel.com** heading **contact** 





Complete the **online form** 



Our sales network will get back to you and connect you with **local integration partners** 



Integrator





Visit our website **ez-wheel.com** heading **contact** 





Complete the **online form** 





Our sales network will provide you with all the necessary technical data to properly integrate our products

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57

# References Index

| Wheels     |               |          |        |   |               |   |                 | p.22 |
|------------|---------------|----------|--------|---|---------------|---|-----------------|------|
| ez-Wheel   | Wheel         | Diameter | Rubber |   | Communication |   | Function/option | p.22 |
| ez         | W             |          |        | / | W             |   | R               | p.24 |
|            |               |          | I      | / | CC            |   | R               | p.24 |
|            |               | 300      | M      | / | W             |   |                 | p.26 |
|            |               |          | F      | / | W             |   |                 | p.28 |
|            |               | 150      | I      | / |               |   | В               | p.30 |
|            |               | 160      | M      |   |               |   |                 | p.32 |
|            |               | 10       | R      | / | W             |   |                 | p.34 |
| Software   |               |          |        |   |               |   |                 | p.36 |
| ez-Wheel   | Configuration |          |        |   |               |   | Compatibility   | p.36 |
|            | Config        |          |        |   |               | / | 300             | p.36 |
| ez         | Config        |          |        |   |               | / | 150-160         | p.36 |
| Smart cor  | ntrols        |          |        |   |               |   |                 | p.40 |
| ez-Wheel   | Remote        | Kind     |        |   | Communication |   | Function        | p.40 |
|            | R             | TH       |        | / | W             |   |                 | p.40 |
|            | R             | TH       |        | / | W             | / | IP              | p.40 |
| ez         | R             | PP       |        | / | UC            |   |                 | p.42 |
|            | R             | 44IN     |        | / | W             |   |                 | p.44 |
|            | R             | 44IN     |        | / | U             |   |                 | p.44 |
| Wired cor  | ntrols        |          |        |   |               |   |                 | p.46 |
| ez-Wheel   | Action        | Kind     | Detail |   |               |   |                 | p.46 |
| ez         | A             | ARmini   |        |   |               |   |                 | p.46 |
|            | A             | AR       |        |   |               |   |                 | p.46 |
|            | A             | RH       |        |   |               |   |                 | p.46 |
|            | Α             | RH       | -BD    |   |               |   |                 | p.46 |
|            | A             | FB       |        |   |               |   |                 | p.47 |
|            | A             | TH       |        |   |               |   |                 | p.47 |
| Wired swi  | tches         |          |        |   |               |   |                 | p.48 |
| ez-Wheel   | Switches      | Kind     | Detail |   | Size          |   | Compatibility   | p.48 |
|            | S             | ONF      | -В     |   |               |   |                 | p.48 |
| ez         | S             | KEY      | -В     |   |               |   |                 | p.48 |
|            | S             | PBC      | -BD    |   |               |   |                 | p.48 |
|            | S             | EMR      |        |   | xM            | / | 160             | p.48 |
|            | S             | ERB      |        |   | xM            | / | 160             | p.48 |
| Internal b | atteries      |          |        |   |               |   |                 | p.50 |
| ez-Wheel   | Battery       | Detail   | Detail |   |               |   | Compatibility   | p.50 |
| ez         | В             | 24V      | ЗАН    |   |               | / | 160             | p.50 |
| External b | atteries      |          |        |   |               |   |                 | p.50 |
| ez-Wheel   | Battery       | Detail   | Detail |   | Detail        |   |                 | p.50 |
| ez         | В             | 24V      | 6AH    | / | L             |   |                 | p.50 |
|            | В             | 24V      | 9AH    |   |               |   |                 | p.50 |
|            | В             | 24V      | 15AH   |   |               |   |                 | p.50 |







| Mechanic | cal accessories              |   |        |        |      |   |               | p.52       |
|----------|------------------------------|---|--------|--------|------|---|---------------|------------|
| ez-Wheel | Mechanical accessories       |   | Detail |        |      |   | Compatibility | p.52       |
| ez       | MCS                          |   |        |        |      | / | 160           | p.52       |
|          | MCS                          | / | L      |        |      | / | 160           | p.52       |
|          | MCS                          | / | L      |        |      | / | 160+          | p.52       |
|          | MCS                          | / | Н      |        |      |   |               | p.53       |
|          | MCS                          | / | Н      |        |      | / | СС            | p.53       |
|          | MAR                          |   |        |        |      |   |               | p.53       |
| Cables   |                              |   |        |        |      |   |               |            |
| ez-Wheel | Accessories                  |   | Size   | Detail |      |   | Compatibility |            |
| ez       | AC                           |   | xM     | -BD    |      | / | 160           | p.47/49    |
|          | AC                           |   | xM     | -UC    |      | / | Box           | p.45       |
|          | AC                           |   | xM     | -UCB   |      | / | Box           | p.45/47/49 |
| ez-Wheel | Charge Y cable               |   |        |        |      |   | Compatibility |            |
| ez       | CYC                          |   |        |        |      |   |               | p.55       |
|          | CYC                          |   |        |        |      | - | U             | p.45/55    |
| ez-Wheel | Charge cable                 |   |        |        | Size |   | Compatibility |            |
| ez       | CC                           |   |        |        | xM   | - | U             | p.55       |
|          | CC                           |   |        |        | xM   | / | 160           | p.55       |
|          | CC                           |   |        |        |      | / | MAG           | p.43       |
| ez-Wheel | Charge & communication cable |   |        |        | Size |   | Compatibility | p.43       |
| ez       | UC                           |   |        |        | 3M   |   |               | p.43       |
| ez-Wheel | Battery cable                |   | Detail |        | Size |   | Compatibility | p.51       |
| ez       | BC                           |   | 24V    |        |      |   | /160          | p.51       |
|          | BC                           |   | EXT    |        |      |   | /160          | p.51       |
|          | ВС                           |   | EXM    |        | xM   |   | /160          | p.51       |



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