# PRODUCTS GUIDE Complete range of electric wheel solutions





# ez-Wheel®

# The Electric Wheel

# Company

### ez-Wheel SAS is an innovative technology company founded in 2009.

Registered in France with a capital of 450,910€, our company develops a range of autonomous electric wheels, dedicated to the industry. Our solutions assist operators in moving heavy loads.

Located in Charente, in the heart of the Mechatronic Valley, ez-Wheel benefits from geographical and economical opportunities, with a strong network of local industrial players.

ez-Wheel innovative technology and industrial know-how result from the combination of well-known technologies and proven methodologies.



ez-Wheel's Head Office, St-Michel - FRANCE.

# Solutions

The technology proposed by ez-Wheel is the fastest, simplest and most advanced solution offering electric traction to mobile materials in all industries, including but not limited to: medical environment, food industry, and heavy load handling.

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 and wireless interface.

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 5 years of operation without any maintenance required.

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.



ez-Wheel's products range

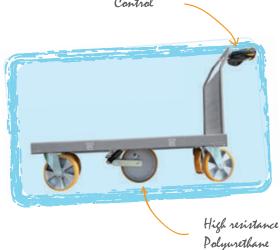
# The first electric wheel integrating motor and batteries



# ez-Wheel®

# Market Segments

Wireless Hand Control



# LOAD HANDLING

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

**SAFETY + PRODUCTIVITY** 

# **LOGISTICS**

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

# **EFFICIENCY + FLEXIBILITY**



High endurance built-in battery



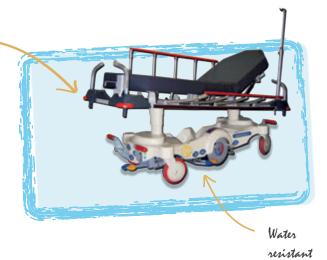
Grip

# FOOD PROCESSING

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

**COMPATIBILITY + RELIABILITY** 

Waser Resistant



# **MEDICAL**

**ez-Wheel** self propelled electric wheels are ideal to preserve the health capital of your staff.

**SAFETY + RELIABILITY** 

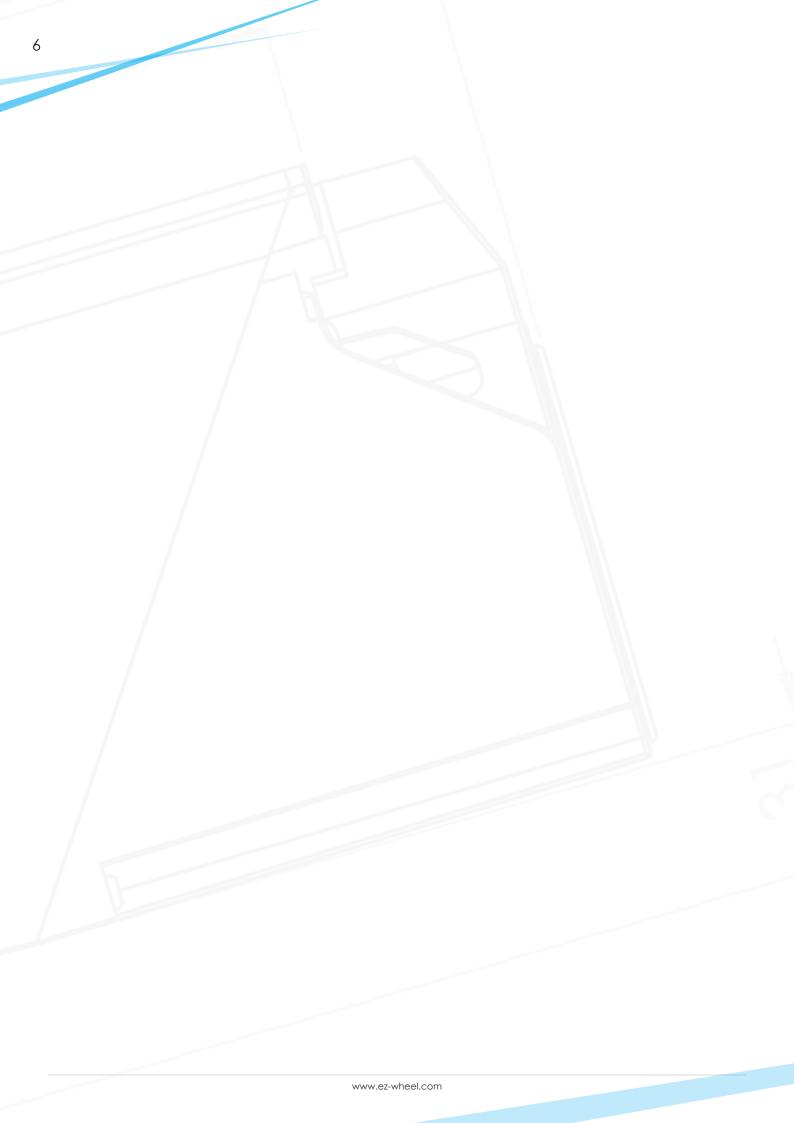
Versatile throttle control



# **OUTDOOR**

**ez-Wheel** products can be used outside on bitumen or turf, as well as chaotic terrain. ez-Wheel outdoor range offers a solution for each mobility need.

**COMPATIBILITY + ROBUSTNESS** 





# WHEELS

# Series 300

# The UNIVERSAL Series

The Series 300 electric wheels can be immediately installed on the chassis of any vehicles or wheeled equipment. No electrical connection is required as the wheel is self-powered by the built-in battery and can be remotely controlled.

## Series 300 Main specifications

Speed Nominal power Battery capacity Torque peak 0 to 12 km/h 200 W (S1 at 6 km/h) 240 Wh 55 Nm 35 daN of force



Ref. ezW300M

## Main specifications

Format/Diameter Type of tyre Suitable for

304 mm 70 sh. A polyurethane Hospital equipment Stretchers & Indoor mobile equipment



Ref. ezW300S

### Main specifications

Format/Diameter Type of tyre Suitable for 300 mm 65 sh. A polyurethane Logistics equipment Industrial trailer



Ref. ezW300F

### Main specifications

Format/Diameter 304 mm
Type of tyre Enhanced grip polyurethane
Suitable for Pusher/Puller in food processing industry



Ref. ezW300I

### Main specifications

Format/Diameter Type of tyre Option Suitable for 300 mm 80 sh. A polyurethane Regen Industrial hand trucks Logistics equipment



Main specifications

Characteristics Rotating contact with static cable connection

Available interfaces Charge plug Serial Link

Compatible with Regen Option

Wireless



### MAINTENANCE-FREE

All components are designed for a maintenancefree lifespan of up to 5 years. The very long-life batteries used in the wheel can sustain thousands of use and recharging cycles.



### QUIET

The motor technology and mechanical transmission are designed to run extremely quietly and vehicles fitted with them will not generate more noise pollution.



### UP TO 1 TON

With peak torque of 55 Nm, the electric motor develops a pushing force of 35 daN. It provides exceptional clearance capability and equipment fitted with the motor can carry loads of several hundred kg.



# **REGEN OPTION**

Regenerative charging is an exclusive function developed by ez-Wheel. It enables the built-in battery to be recharged with the wheel rotation cinetic energy.

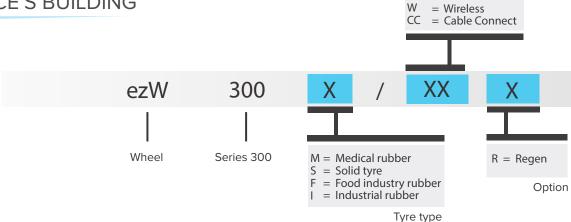
The wheel can be charged while rotating at a speed between 3 and 12 km/h, for instance during the towing phase of a trolley.

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.



Interface

# REFERENCE'S BUILDING



# **AVAILABLE WHEELS & OPTIONS**

Wheels/References	Designation - Series	Туре
ezW300M	Series 300 wheel	Medical rubber
ezW300S	Series 300 wheel	Solid tyre
ezW300F	Series 300 wheel	Food industry rubber
ezW300I	Series 300 wheel	Industrial rubber

### Available Versions/Options

/W	Wireless
/WR	Wireless + Regen
/CC	Cable Connect (wireless and serial link* included)
/CCR	Cable Connect + Regen (wireless and serial link* included)
	* See page 23

# Series 10"

# The ALL TERRAIN solution

### Ref. ezW10N

The nude hub can be fitted with any 4.00\*10" inflated tyre.



### Series 10" Main specifications

Format/Dialeter Speed Nominal power Battery capacity Torque peak

0 to 18 km/h 250 W (S1 at 6 km/h)

240 Wh 55 Nm

# Ref. ezW10R

The ezW10R is suitable for delivery carts, personnal carriers, urban pedestrian vehicles. The wheel is equipped with a road tyre 100-80-10.



The ezW10G is suitable for wheelbarrows, devils, easel trolley, storage carts. The wheel is equipped with a thread pattern tyre 120-90-10.

# Ref. ezW10T

The ezW10T is suitable for street clearing carts, urban vehicles. The wheel is equipped with a trailer type tyre 4.00\*10".



### Ref. ezW10A

The ezW10A is suitable for weeder, off-road machine, mobile equipment on chaotic surface. The wheel is equipped with an agriculture tyre 4.00\*10".

A Tyre solution

For each kind of ground

# WHEEL'S CHARACTERISTICS



### IMMEDIATE FITTING

The self-propelled ez-Wheel can be fitted immediately on any vehicle chassis or mobile equipment. No electrical connection is needed, since the wheel is self-powered by the built-in battery and driven by wireless communication.



### ALL TERRAIN SOLUTION

The high torque of the embedded motor allows running on any type of ground. With the water resistant and ruggedized envelope, it makes a perfect fit for severe outdoor environments.



### MAINTENANCE-FREE

All components are designed for a maintenancefree lifespan of up to 5 years. The very long-life batteries used in the wheel can sustain thousands of use and recharging cycles.

# REFERENCE'S BUILDING



ezW 10

Wheel

Series 10 inches

brake.

N = Nude hub

G = Ground tyre T = Trailer tyre

A = Agri. tyre

# D = Disc Brake R = Road tyre

Option

Interface

= Wireless

**DISC BRAKE** 

**OPTION** 

This option is a disc holder mounted on the

wheel. It is suitable for a standard 6 holes disc

The disc brake option allows dynamic braking

and secures your rolling material.

### Tyre type

# **AVAILABLE WHEELS & OPTIONS**

Wheels/References	Designation - Series	Туре
ezW10N	Series 10" wheel	Nude hub
ezW10R	Series 10" wheel	Road tyre
ezW10G	Series 10" wheel	Ground tyre
ezW10T	Series 10" wheel	Trailer tyre
ezW10A	Series 10" wheel	Agriculture tyre

### Available Versions/Options

/W	Wireless
/WD	Wireless + Disc brake holder

# Series 160

# The MODULAR Series

The Series 160 wheels incorporate motor and batteries in an extremely small footprint. The reduced height allows the wheels to be installed under very low chassis.

### Series 160 Main specifications

Speed Nominal power Battery capacity 0 to 5 km/h 70 W (S1 at 4 km/h) 70 Wh (1 battery) 140 Wh (2 batteries)

Torque peak 17 Nm 20 daN of force



Ref. ezW160I

### Main specifications

Format/Diameter Type of tyre Option

Suitable for

158 mm 70 sh. A polyurethane 0/1/2 batteries Brake Encoder Industrial hand trucks Roll carts Picking trolleys IP66
WAITER RESIST

Ref. ezW160M

### Main specifications

Format/Diameter Type of tyre Option 158 mm 70 sh. A polyurethane 0/1/2 batteries Brake

Suitable for Encoder
Medical beds
Service trolleys
Operating tables

# WHEEL'S CHARACTERISTICS



# REDUCED SPACE REQUIREMENT

The Series 160 integrates motor and batteries in an extremely compact format. The wheel is designed with reduced height to fit any low chassis. The robust housing protects all components from knocks and splashing.



### HIGH COMPATIBILITY

The self-propelled ez-Wheel can be fitted immediately on any vehicle chassis or mobile equipment. The wheel is self-powered by the built-in battery and controlled by wired communication.

# Encoder Option

The encoder option allows using advanced speed control features such as:

- Speed limiting Free wheeling Soft deceleration

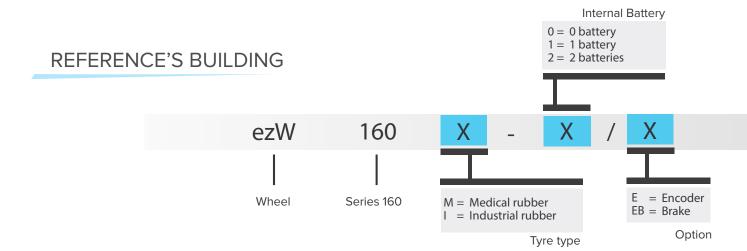


# • Brake Option

The brake option embeds an electromechanical parking brake that allows:

- Stopping the wheel Locking the system when not in use Immobilizing in case of emergency





# **AVAILABLE WHEELS & OPTIONS**

/EB

Wheels/references	Designation - Series	Туре
ezW160I	Series 160 wheel	Industrial rubber
ezW160M	Series 160 wheel	Medical rubber
Available Versions		
-0	For external battery	
-1	One internal battery	
-2	Two internal batteries	
Options		
/E	Encoder	

Encoder + Brake

# Series 200

# The POWERFUL

# POWERFUL PERFORMANT SIMPLE

Series 200 wheels are a concentration of power in an extremely small footprint for the handling of heavy loads in industry and automated machinery.

This electric wheel is dedicated to tough usage. Its performances manage easily heavy loads, repeated movements or continuous operation.

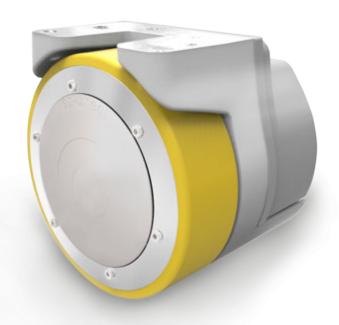
Series 200 wheels are adapted to:

- •Heavy load transportation •AGVs
- •Industrial vehicles as well as any mobile industrial equipment up to 1 ton moved

# Main specifications

Format/Diameter Type of tyre Pushing force Max vertical load Motor power Options

92 sh.A polyurethane 100 daN /moves 3t Support up to 1000 kg Motor deceleration Brake Wireless CAN bus Ext/Int battery



# Series 125

# The ULTRA COMPACT

# COMPACT SIMPLE UNIVERSAL

# 

This product has extremely reduced dimensions and provides an electric assistance solution for small mobile furniture or the transfer of patients in a hospital.

Series 125 wheels are adapted to:

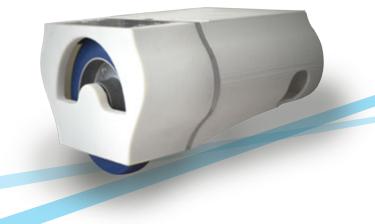
- •Mobile transfer equipment •Support of patients in a hospital environment (hospital beds, transfer chairs, hoists) and handling carts (for laundry, meals and medication).

The Series 125 meets the safety and hygiene requirements specific to hospitals.

# Main specifications

Format/Diameter Type of tyre Pushing force Max vertical load

70 sh.A polyurethane 11 daN / moves 300kg Support up to 100 kg



# ez-Config

# from ez-Wheel®

### ez-Config is the heart of the ez-Wheel solutions.

Thanks to its software configurations, wheels and hand controls may be programmed and perfectly adapted to any situation.

# DIAGNOSE CONFIGURATE SAVE MODIFY



# Features

- · Simple programming
- Intuitive interface
- Accurate data
- Compatibility: Windows XP and above
- English Interface

# **AVAILABLE VERSIONS**

References Designation Suitable for:

ez-Config Configuration software dedicated to: system parameters. Series 300 - Series 10" and Smart controls

ez-Config/160 Configuration software dedicated to: system parameters. Series 160





\*ez-Wheel devices with USB port

# CONFIGURATION PARAMETERS

The user parameter window allows to set the configuration parameters. Different settings are possible:

- forward and reverse speed
- · acceleration curve
- · electric assistance duration at starting
- motor brake and deceleration
- etc.



SPEED DEFINITION

Define the speed of the wheel. Forward/backward speed can be differentiated.





ACCELERATION MODE

Set up the acceleration according to your needs. e.g. Slow patient moving; fast for picking trolley.



DECELERATION MODE

Choose the deceleration behaviour when releasing the hand control.

e.g. motor brake to apply motor resistance, free wheel to continue rolling.



START TIME LIMITER

Limit the motor drive time on start up.

When the hand control is released the wheel goes back to selected deceleration mode. I<sub>0</sub>s

INPUTS OUTPUTS

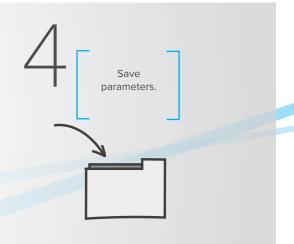
Configure external interfaces for the display, buttons, external supply...

# Other configuration

# parameters available!



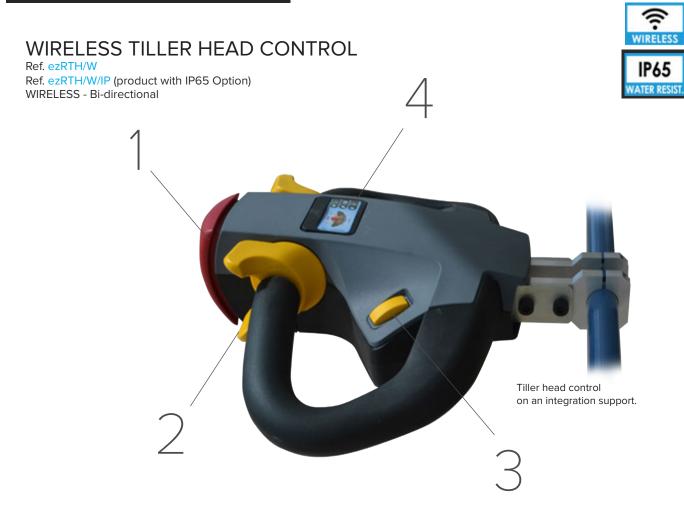




# CONTROLS & ACCESSORIES

# ez-Wheel®

# Smart controls



### Description:

It 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 material.

### Other functions:

The interface remotely displays the battery level of the wheel and the system status.

### Features:

- Stop button (1)
- Progressive accelerator (2)
- ON/OFF button (3)
- HMI label (4)
- IP65 available as an option

### Suitable for:

- Series 300
- Series 10"



Ref. ezRPP/W

WIIRELESS - Bi-directional - Sensitive sensor







### Description:

It ensures a natural handling of equipment thanks to sensitive sensors, ergonomic shapes and well organised commands. The integrated wireless interface allows a simple and quick integration on rolling material.

### Other functions:

The interface remotely displays the battery level of the wheel and the system status.

### Features:

- Dead-man switches for activation (1)
- Pressure sensors in Push and Pull directions (2)
- Battery and status indicator (3)
- ON/OFF button (4)
- IP 54

### Suitable for:

• Series 300







# ez-Box

# The ez-Wheel® interface

The wireless interface ez-Box (1) is used to remotly control one or two wheels (2).

The wheel control is ensured by a wired control (3) connected to the ez-Box wireless interface.

A switch (4) can be used to start and stop the system.

### Wireless ez-Box Main specifications

Communication Protocol Battery IP Index Dimensions

Wireless 2.4GHz IEEE 802.15.4 Ni-MH rechargeable IP54 124 x 75 x 27 mm

# WHEELS SERIES 300 & 10"



ez-Box mounted on a tool trolley.



ez-Box used for a production machinery.



- Series 300
- Series 10"

WIRED CONTROLS 3

The interface remotely displays the battery level of the wheel and the system status.

The ez-Box can be mounted on a chassis with fixing collars, or on a drilled panel with bolts.

# with SERIAL LINK

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

The wired communication uses a serial protocol to ensure an effective bi-directional dialogue between the wheel (2) and the ez-Box (1).

The Serial link is suitable to control one wheel Series 300/CC featuring cable connect.

### Serial ez-Box Main specifications

Communication Serial Protocol UART

Battery Ni-MH rechargeable IP Index IP54

Dimensions  $124 \times 75 \times 27 \text{ mm}$ 

# Wired Controls

# HAND CONTROLS WITH SWITCHES AV

### **DESIGNATION** CHARACTERISTICS WIRED TO The ezARH-BD controls the speed in both directions Rotating Handle with • Series 160 (forward and backward) with a progressiveness following Button & Display ▲▼ the hand control position. • ez-Box ezARH-BD The control is equipped with a Display and a Button. · Cable required\* The ezATH command is a tiller head type control. It ensures a proper handling of equipment thanks to ergonomic • Series 160 shapes and well organized commands. It can control the Tiller Head ▲▼ • ez-Box speed in both directions (forward and backward). For a safe ezATH action, the control includes a stop button. Cable required\* BI - DIRECTIONAL HAND CONTROLS AV **CHARACTERISTICS DESIGNATION** WIRED TO

### This finger operated mini joystick can control the speed in both directions (forward and backward) with Mini joystick ▲▼ • Series 160 progressiveness. It can be mounted at the end of a tube. ezAARmini • ez-Box or on a panel. • Cable required\* The joystick can control the speed in both directions Joystick ▲▼ • Series 160 (forward and backward) with progressiveness. It can be ezAAR mounted on a panel and is suitable for tough environments. • ez-Box Cable required\* Forward & Backward This simple button control is suitable for a basic forward • Series 160 control ▲▼ and backward operation without progressiveness. • ez-Box · Cable required\* ezAFB The ezARH controls the speed in both directions (forward Rotating Handle ▲▼ and backward) with a progressiveness following the hand • Series 160 control position. ezARH • ez-Box Cable required'



Mini Tiller Head ▲▼ ezATHmini

This compact tiller head perfectly fits small size trolleys with minimal adaptation. Equipped with a stop belly button, it is suitable for safe operations.

Cable required\*

- Series 160
- ez-Box

# UNI - DIRECTIONAL CONTROLS A

# DESIGNATION CHARACTERISTICS WIRED TO The ezAV control is a throttle control, as commonly found on electric bikes or scooter. It can control the speed in a single direction. • Cable included • ezAFP The foot Pedal can control the speed in a single direction. • cable included • ez-Box

# **Switches**

# STANDARD SWITCHES\*\*

# **SWITCHES FOR SERIES 160**

# DESIGNATION



Switch On/Off Button ezSONF-B • Cable required\*



Switch Key Button ezSKEY-B • Cable required\*





# DESIGNATION

Switch On/Off Button + LED ezSONF-BD • Cable required\*

Switch Push Button Color ezSPBC-BD • Cable required\*

> switch Emergency ezSEMRxM/160 • Cable included

<sup>\* (</sup>Cable required) - Please refer to page 26 - 27 on this catalogue to select the appropriate cable.

<sup>\*\* (</sup>Standard switches) - Products suitable for the complete range: Series 300 - Series 10" - Series 160

# Cables

# CABLES FOR WIRELESS ez-Box



CABLE x METERS FOR WIRED CONTROL

Ref. ezACxM/Box

### Suitable for:

• ez-Box ezR44IN/W



CABLE x METERS FOR WIRED CONTROL, WITH CHARGE PLUG FOR

Ref. ezACxM-UC/Box

### Suitable for:

• ez-Box ezR44IN/W



CABLE x METERS FOR WIRED CONTROL AND BUTTON

Ref. ezACxM-B/Box

### Suitable for:

• ez-Box ezR44IN/W



CABLE x METERS FOR WIRED CONTROL AND BUTTON & DISPLAY, WITH CHARGE PLUG FOR ez-Box

Ref. ezACxM-UCB/Box

### Suitable for:

• ez-Box ezR44IN/W

# **CABLES FOR SERIES 160**



CABLE x METERS FOR WIRED CONTROL AND BUTTON & DISPLAY

Ref. ezACxM-BD/160

# Suitable for:

• Series 160

# CABLES FOR SERIAL LINK ez-Box



CABLE X METERS FOR WIRED CONTROL, WITH CHARGE PLUG FOR e7-BOX

Ref. ezACxM-UC/Box

### Suitable for:

• ez-Box ezR44IN/U

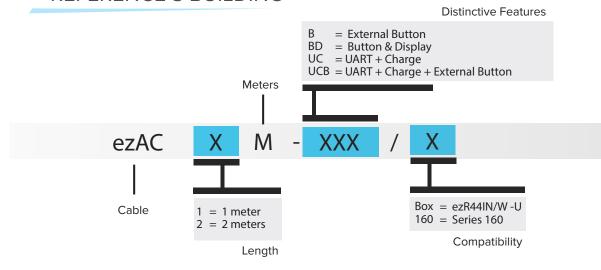


CABLE X METERS FOR WIRED CONTROL AND BUTTON & DISPLAY, WITH CHARGE PLUG FOR ez-Box Ref. ezACxM-UCB/Box

### Suitable for:

• ez-Box ezR44IN/U

# REFERENCE'S BUILDING



# ez-Wheel®

# Chargers



CHARGER 1.8 Amp XLR charge Plug + EU power cord (type C) Ref. Mascot1A8

### Suitable for:

- Series 300
- Series 10"
- Series 160 with charge cable



CHARGER 4 Amp XLR charge Plug + EU power cord (type E-F) Ref. Mascot4A

### Suitable for:

- Series 300
- Series 10"
- Series 160 with charge cable



EMBEDDED CHARGER 1.8 Amp Molex charge Plug + EU power cord (type C) Ref. Mascot1A8/160

### Suitable for:

• Series 160



CHARGER 1.8 Amp XLR charge Plug + EU power cord (type C) Ref. Mascot1A8/IP

### Suitable for:

- Series 300
- Series 10"
- Series 160 with charge cable

# INTERNATIONAL COMPATIBILITY

REF.	DESIGNATION	COUNTRY PLUG EXTENSION
Mascot1A8AUS Mascot1A8/160AUS	CHARGER 1.8 Amp XLR charge Plug + AUS power cord	Australia (type I)
Mascot1A8UK Mascot1A8/160UK	CHARGER 1.8 Amp XLR charge Plug + UK power cord	United-Kingdom (type G)
Mascot1A8US Mascot1A8/160US	CHARGER 1.8 Amp XLR charge Plug + US power cord	United States (type A)

# Charge cables



Y CHARGE CABLE WITH SERIAL LINK Ref.ezCYC-U

### Suitable for:

All chargers



CHARGE CABLE EXTENDER WITH SERIAL LINK Ref. ezCCxM-U

### Suitable for:

All chargers



CHARGE CABLE Ref. ezCCxM/160

### Suitable for:

• Series 160

ez-Wheel®

Battery



### Suitable for:

• Series 160

# Accessories for

# Integration

# ACCESSORIES FOR SERIES 300/CC

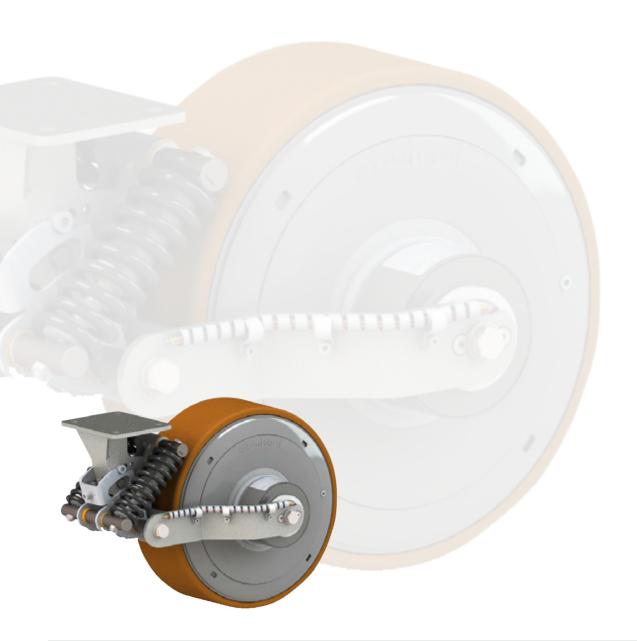
DESIGNATION CHARACTERISTICS COMPATIBILITY



Horizontal suspension bracket ezMCS/H/CC

The suspension bracket ezMCS/H/CC is a specific version of the ezMCS/H for the wheels Series 300/CC. It includes collars to attach the wheel's cable output.

• Series 300/CC



# ACCESSORIES FOR SERIES 300 & 10"

DESIGNATION	CHARACTERISTICS	COMPATIBILITY
Suspension bracket ezMCS/H	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
Fixed bracket ezMCF/300	The ezMCF/300 fixed bracket facilitates the assembly of Series 300 wheels on rolling material (trucks, trolleys, handling tools). The bracket is designed to immediately fit the wheel on any chassis.	• Series 300
Fixed bracket ezMCF/10	The ezMCF/10 fixed bracket facilitates the assembly of Series 10" wheels on rolling material (trucks, trolleys, handling tools). The bracket is designed to immediately fit the wheel on any chassis.	• Series 10"
Anti-rotate ring ezMAR	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 • Series 10"

# **ACCESSORIES FOR SERIES 160**

DESIGNATION	CHARACTERISTICS	COMPATIBILITY
Horizontal suspension bracket ezMCS/160	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 160

# PUSHER PULLER

# ez-Wheel®

# Pusher / Puller DIN9797

ez-Wheel's pusher/puller makes any load handling easier in the food processing industry. Fully compliant to DIN9797 (food) standards, it is suitable for stainlesssteel tanks, stainless-steel tubs, etc.

The ez-Wheel pusher/puller has been designed to facilitate the transport of containers and stainless-steel tanks used within the food production.

The pusher/puller is designed for an indoor use, over a wide temperature range.

It offers optimal conditions of handling and stability allowing the safe transport of loads up to 400 Kgs.

The pusher/puller is made of high quality stainless-steel (316L) and can operate in severe environments.

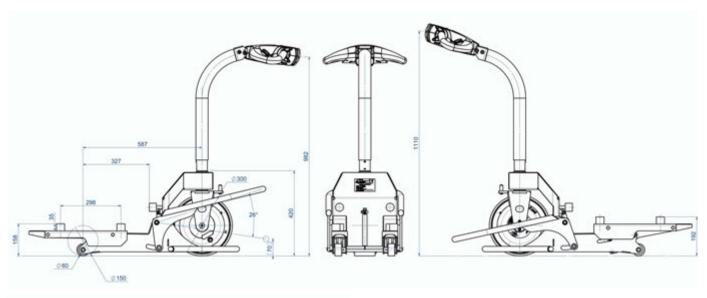
It features a state-of-the-art drive system with wireless offering a zero-maintenance system.

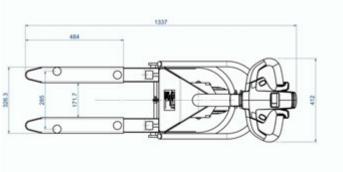
### Pusher/Puller Main specifications

400 Kg Max. load Max. speed 6 Km/h Autonomy (number of starts) 500 - 1000 IP Index IP65 Noise level < 80 dB



# PUSHER / PULLER BLUE PRINTS





# PUSHER / PULLER POSITIONS

### Low position («unlocked»):

The low position (or «unlocked» position) allows the fork insertion under the stainless steel tank.



# Foot pedal lift:

A pressure on the foot pedal lifts the fork, making the loading/unloading process very simple.



### High position («locked»):

The high position (or «locked» position) of the pusher/puller ensures a safe and easy transportation.





# ez-Wheel SAS

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**ISO 9001** v.2008



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