



THE MOST ADVANCED RANGE OF ELECTRIC WHEELS



PRODUCTS GUIDE 2016

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.

Research and Development

A R&D-driven strategy

The company dedicates most of its resources to Research and Development in innovating methods. ez-Wheel team's industrial experience ensures good assessment and management of risks related to the delivery of innovative products to market: technological choices favour mature and secure solutions, embedded features of the products correspond to those usually required by professionals in the field, the production process uses controlled and standardized methods

Quality Commitment

An ISO 9001 management system

The quality policy reflects the company's values and senior management's commitment which share a common objective:

FULL AND LASTING CUSTOMER SATISFACTION.

OUR 3 STRATEGIC STRANDS:

- 1. Product and services quality beyond legal and regulation requirements, meeting scheduled lead times and satisfying customer expectations.
- 2. The competitiveness of our offer and its permanent evolution are part of an innovative and well-reasoned approach supported by best practices and the manufacturing experience of our partners.
- 3. A respectful and constructive social policy allowing employees to fully develop their skills and well-being is key to the success of our business as is their commitment to our Quality Policy.



Intertek

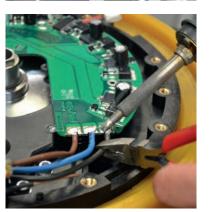
FRANCE 0027313-00

ISO 9001 v.2008









The ez-Wheel®

The first electric wheel integrating motor and batteries

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.



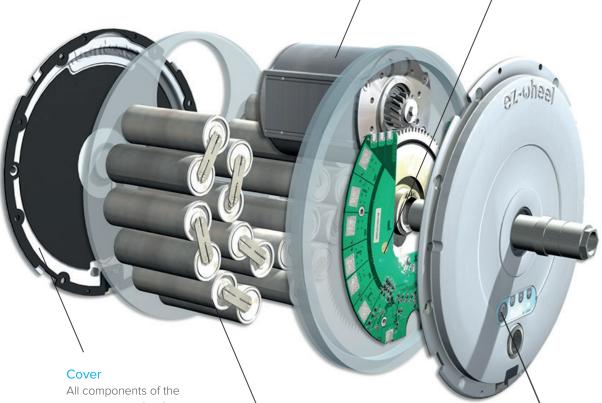
ez-Wheel's products range.

Motor

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

Electronics

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



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.

Battery

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

НМІ

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

Market Segments

AUTOMOTIVE INDUSTRY



ez-Wheel self-recharging during towing feature is the perfect fit for towed material running 3 shifts per day.

MAINTENANCE FREE













LOAD HANDLING



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

SAFETY + PRODUCTIVITY





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

EFFICIENCY + FLEXIBILITY

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

COMPATIBILITY + RELIABILITY













ez-Wheel self-propelled electric

SAFETY + RELIABILITY

wheels are ideal to preserve the health capital of healthcare workers.

ez-Wheel products can be used

ZERO EMISSION

each mobility need.

outside on bitumen or turf, as well as chaotic terrain. ez-Wheel outdoor range offers a solution for

MEDICAL



OUTDOOR



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 Pushing force Max vertical load

200 W (S1 at 6 km/h) 240 Wh 52 Nm 35 daN / moves 1t

0 to 12 km/h

Supports up to 300 kg







Ref. ezW300M/W

Main specifications

Format/Diameter Type of tyre Suitable for

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

Ref.

Main specifications

Format/Diameter Type of tyre

Suitable for

304 mm Enhanced grip 50 sh. A polyurethane Pusher/Puller in food processing industry Industrial trolleys

ezW300F/W

Ref.

ezW300I/W

Main specifications

Format/Diameter Type of tyre Suitable for

300 mm 80 sh. A polyurethane Industrial hand trucks Logistics equipment







Ref. ezW300I/WR

Main specifications

Format/Diameter Type of tyre Feature Suitable for

300 mm 80 sh. A polyurethane Regen Towed Trailers Lean Trolleys

Ref.

ezW300I/CC

Main specifications

Format/Diameter Type of tyre Features Suitable for

300 mm 80 sh. A polyurethane Serial link Industrial hand trucks Logistics equipment

Ref.

ezW300I/CCR

Main specifications

Format/Diameter Type of tyre Features

Suitable for

300 mm 80 sh. A polyurethane Serial link

Regen Towed Trailers Lean Trolleys

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 52 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 Feature

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.



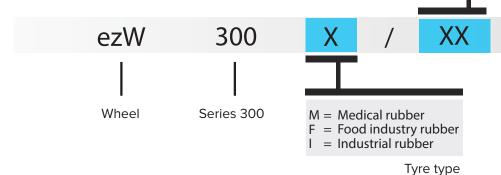
W = Wireless

WR = Wireless + Regen

CCR = Cable Connect + Regen

CC = Cable Connect





Available Wheels

Wheels / References	Designation - Series	Туре	
ezW300M/W	Series 300 wheel Medical rubber - Wireless communication		
ezW300F/W	Series 300 wheel	Food industry rubber - Wireless communication	
ezW300I/W	Series 300 wheel	Industrial rubber - Wireless communication	
ezW300I/WR	Series 300 wheel	Industrial rubber - Wireless communication - Regen	
ezW300I/CC	Series 300 wheel	Industrial rubber - Charge Cable (wired) - Wireless or Serial	
ezW300I/CCR	Series 300 wheel	Industrial rubber - Charge Cable (wired) - Regen - Wireless or Serial	

Interface

Series 10"

The **all terrain** solution

The Series 10" wheels can be used outside on bitumen, and turf, as well as chaotic terrain. The range offers a solution for each outdoor mobility problem you will encounter.

Series 160 Main specifications

0 to 18 km/h Speed Nominal power 250 W **Battery Capacity** 240 Wh 52 Nm Torque peak

Supports up to 150 kg per wheel Max vertical load



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



Ref. ezW10R/W

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

Ref. ezW10G/W

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



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



Ref. ezW10A/W

The ezW10A is suitable for weedier, 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

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

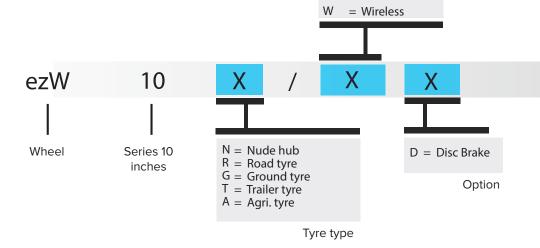
The high torque of the embedded motor allows running on any type of ground. With the water resistant and rugged envelope, it makes a perfect fit for severe outdoor environments.



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



Available Wheels

Wheels / References	Designation - Series	Туре
ezW10N/W	Series 10" wheel	Nude hub
ezW10R/W	Series 10" wheel	Road tyre
ezW10G/W	Series 10" wheel	Ground tyre
ezW10T/W	Series 10" wheel	Trailer tyre
ezW10A/W	Series 10" wheel	Agriculture tyre
Available Versions/Options		
D	Wireless + Disc brake holder	



Interface

This option is a disc holder mounted on the wheel. It is suitable for a standard 6 holes disc brake.

The disc brake option allows dynamic braking and secures your rolling material.

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 0 to 5 km/h 70 W (S1 at 4 km/h)

Battery Capacity •

70 Wh (1 battery)140 Wh (2 batteries)

Torque peak 16 Nm

Pushing force Max vertical load 20 daN / moves 500 kg Supports up to 50 kg

(use suspension p35)



Ref. ezW160I

Main specifications

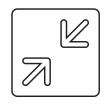
Format/Diameter Type of tyre Features Suitable for 158 mm 70 sh. A polyurethane 0/1/2 batteries Industrial hand trucks Roll carts Picking trolleys



Ref. ezW160M

Main specifications

Format/Diameter Type of tyre Features Suitable for 158 mm 70 sh. A polyurethane 0/1/2 batteries Medical beds Service trolleys Operating tables



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.

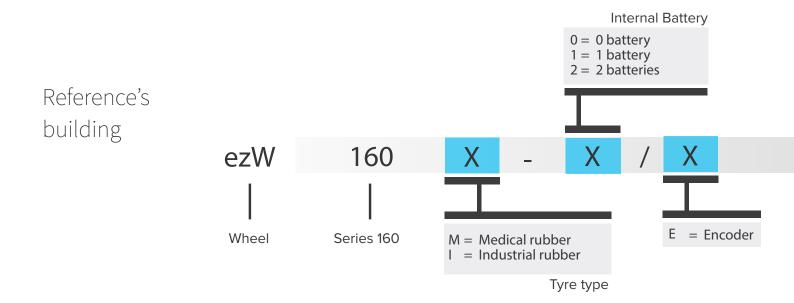


ENCODER Feature

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

- Speed limiting
- Free wheeling
- Soft deceleration





Available Wheels

Wheels / References	Designation - Series	Туре
ezW160M-0/E	Series 160 wheel	Medical rubber wheel for external battery
ezW160M-1/E	Series 160 wheel	Medical rubber wheel with one internal battery
ezW160M-2/E	Series 160 wheel	Medical rubber wheel with two internal batteries
ezW160I	Series 160 wheel	Discontinued: consult ez-Wheel for specific need

Series 200

The **powerful** Series

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











ez-Config

Configure your Wheel...

ez-Config is the heart of the ez-Wheel solutions. Thanks to their software configurations, wheels and hand controls are programmable and can be perfectly adapted to any situation.

Features

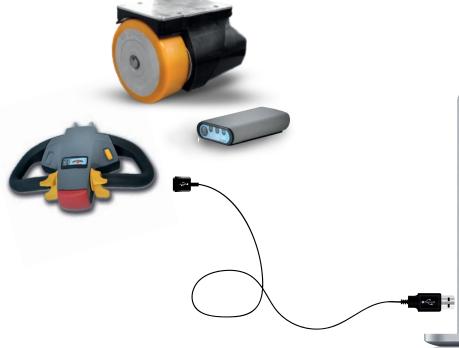
- Simple programming
- Intuitive interface
- Accurate data
- Compatibility: Windows XP and above
- English Interface



02

CONNECTION

Open ez-Config and connect ez-Wheel devices with USB port



CONFIGURATION

accessories

Save parameters

03



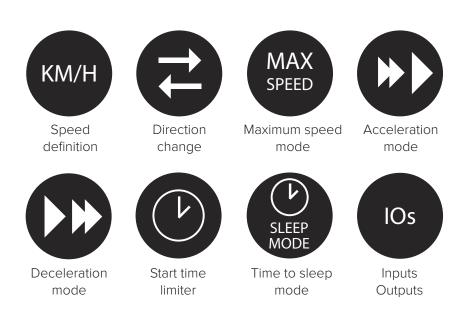
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Available versions

References	Designation	Suitable for:
ezConfig/300	Configuration software	Series 300-10" and Smart Controls
ezConfig/160	Configuration software	Series 160

Configuration Parameters

The «user parameters» tab window allows to set the configuration parameters. Different settings are possible:



Settings	Designation
Speed Definition	Define the speed of the wheel. Forward and Backward speed can be differentiated.
Direction Change	It enables the user to adjust the behaviour of the wheel during a change in the set direction; 2 modes are available: «Deceleration» and «Inversion».
Maximum Speed Mode	The field box "Max speed mode" can be used to set up the behaviour of the wheel when the rolling speed exceeds the maximum speed value entered in ez-Config.
Acceleration Mode	Set up the acceleration 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 on start up. When the hand control is released the wheel goes back to the selected deceleration mode.
Time to Sleep Mode	In the «Sleep Timer» field it is possible to enter a value in seconds corresponding to the waiting time between the absence of activity on the actuator and switching of the interface to the sleep mode.
Inputs Outputs	Configure external interfaces for the displays, buttons, external supply









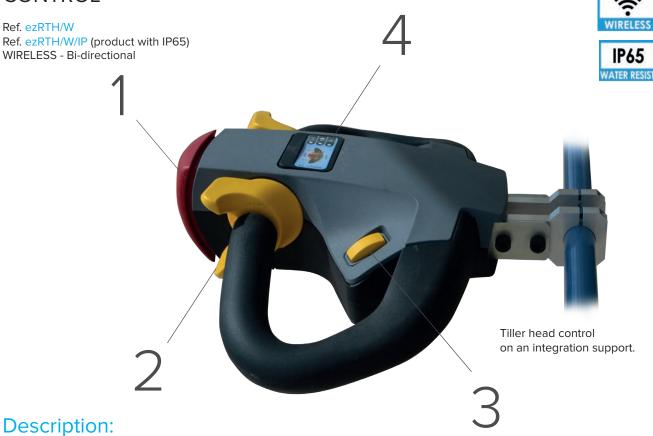


5

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Smart Controls

WIRELESS TILLER HEAD **CONTROL**



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. It is powered by its own internal battery.

Features	ezRTH/W	ezRTH/W/IP
Belly Button (1)	•	•
Progressive accelerator (2)	-	•
ON/OFF button (3)	-	•
HMI Label (4)	•	•
Protection Index	IP54	IP65
Klaxon (5)		•
XLR Waterproof Cap (6)		•
Waterproof battery		•

Suitable for:

- Series 300
- Series 10"





Other functions:

The interface remotely displays the battery level of the wheel and the system status. Its internal battery ensures up to 6 months of autonomy.

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
Citable for

Suitable for:

• Series 300



^{*} for specific use: contact your dealer to check availability

The ez-Wheel® interface

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.

Wireless ez-Box

Communication Protocol Battery Dimensions

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



COMMUNICATION

ez-Box / Wheel

01

Ref. ezR44IN/W

Suitable for:

- Series 300
- Series 10"

WHEEL CONTROL

02

WIRED CONTROLS Page 28



SWITCHES Page 29

SWITCH USE

03

Cables

Cables for Wireless interface ez-Box ezR44IN/W



Cable x Meters for Wired Control Ref. ezACxM/Box



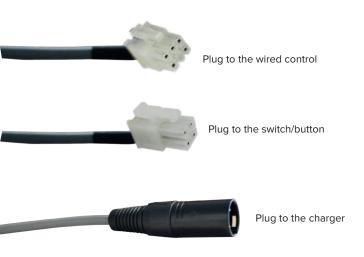
Cable x Meters for Wired Control and Button Ref. ezACxM-B/Box



Cable x Meters for Wired Control with Charge Plug for ez-Box Ref. ezACxM-UC/Box



Cable x Meters for Wired Control and Button with Charge Plug for ez-Box Ref. ezACxM-UCB/Box





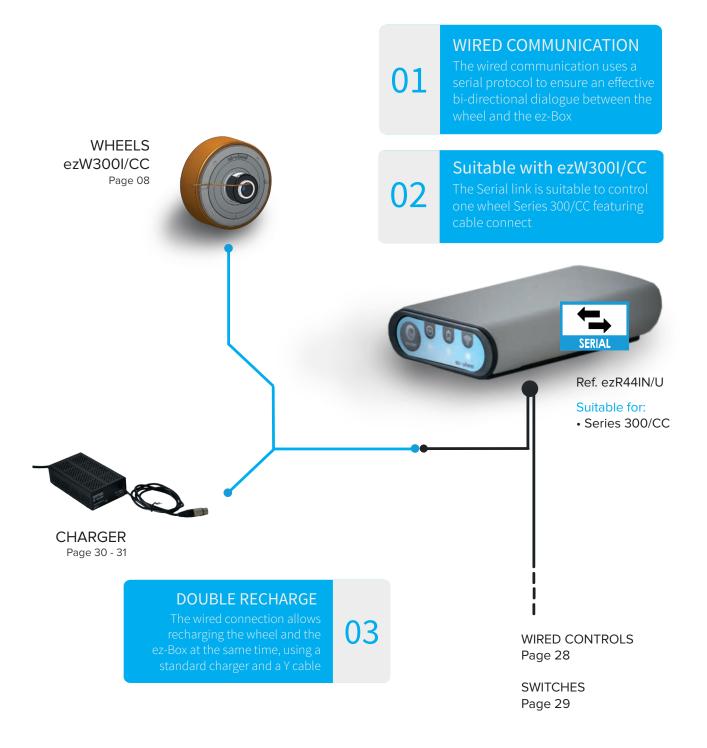
23

with **SERIAL LINK**

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

Serial ez-Box

Communication Battery Dimensions Serial Ni-MH rechargeable 124 x 75 x 27 mm



Cables

Cable for **Serial link ez-Box**





Cable x Meters for Wired Control with Charge Plug for ez-Box



Ref. ezACxM-UCB/Box

Ref. ezACxM-UC/Box

Charge Cables for all chargers



Y charge cable with Serial link Ref. ezCYC-U Suitable for:

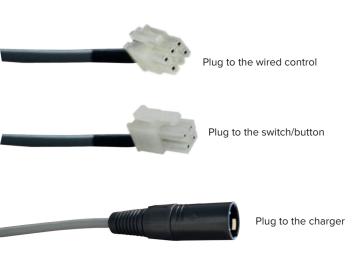
All chargers



Charge cable extender with Serial link

Ref. ezCCxM-U Suitable for:

All chargers





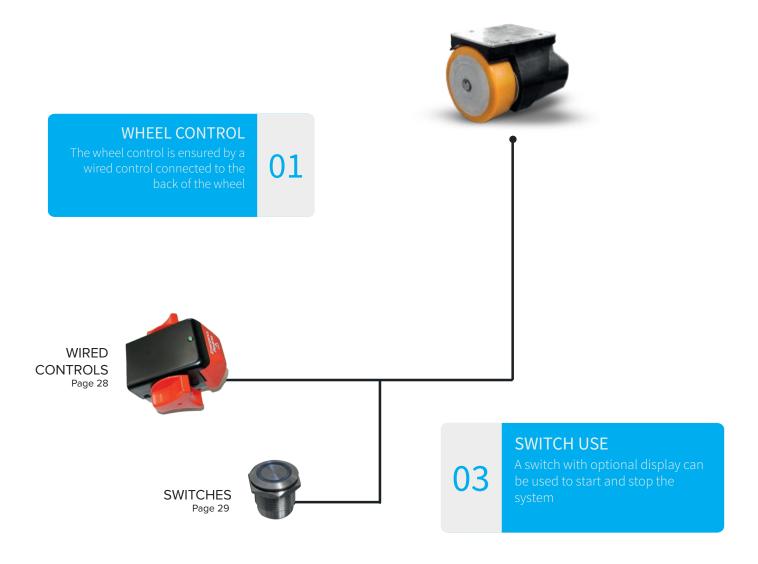
Plug to the interface

25

Series 160 - Controls and Accessories

The Modular Solution

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 driven by wired controls.



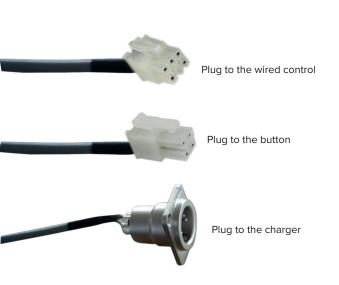
Cables

Cables for **Series 160**





For external batteries and power output cables, please refer to page 33.







Wired Controls

Hand controls with Switch ▲▼

VIEW	DESIGNATION	CHARACTERISTICS	WIRED TO
	Rotating Handle with Button & Display ▲▼ ezARH-BD	The ezARH-BD controls the speed in both directions (forward and backward) with a progressiveness following the hand control position. The control is equipped with a Display and a Button. • Cable required*	• Series 160 • ez-Box
	Tiller Head ▲▼ ezATH	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 a safe action, the control includes a belly button. • Cable required*	• Series 160 • ez-Box

Bi-directional hand controls ▲▼

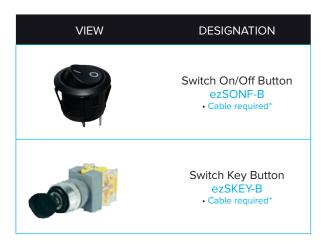
VIEW	DESIGNATION	CHARACTERISTICS	WIRED TO
No. B. F.	Mini joystick ▲▼ ezAARmini	This finger operated mini joystick can control the speed in both directions (forward and backward) with progressiveness. It can be mounted at the end of a tube, or on a panel. • Cable required*	• Series 160 • ez-Box
	Joystick ▲▼ ezAAR	The joystick can control the speed in both directions (forward and backward) with progressiveness. It can be mounted on a panel and is suitable for tough environments. • Cable required*	• Series 160 • ez-Box
	Forward & Backward control ▲▼ ezAFB	This simple button control is suitable for a basic forward and backward operation without progressiveness. • Cable required*	• Series 160 • ez-Box
	Rotating Handle ▲▼ ezARH	The ezARH controls the speed in both directions (forward and backward) with a progressiveness following the hand control position. • Cable required*	• Series 160 • ez-Box
	Mini Tiller Head ▲▼ ezATHmini	This compact tiller head perfectly fits small size trolleys with minimal adaptation. Equipped with a belly button, it is suitable for safe operations. • Cable required*	• Series 160 • ez-Box

Switches

Uni-directional controls

VIEW	DESIGNATION	CHARACTERISTICS	WIRED TO
	Throttle ▲ ezAV	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	• ez-Box
	Foot Pedal ▲ ezAFP	The foot Pedal can control the speed in a single direction. • Cable included	• ez-Box

Standard Switches**



Switches for Series 160

VIEW	DESIGNATION
	Switch On/Off Button + LED ezSONF-BD • Cable required*
	Switch Push Button Color ezSPBC-BD • Cable required*
	switch Emergency ezSEMRxM/160 • Cable included

 $^{^*}$ (Cable required) - Please refer to page 23 - 25 - 27 on this catalogue to select the appropriate cable. ** (Standard switches) - Products suitable for the complete range: Series 300 - Series 10" - Series 160

Chargers

Chargers for **ez-Wheel devices**

VIEW	REF.	DESIGNATION	COUNTRY PLUG EXTENSION
	Mascot1A8	CHARGER 1.8 Amp XLR charge Plug	Suitable for: • Series 300 • Series 10" • Series 160 with charge cable
IP67 WATERPRO		CHARGER 1.8 Amp XLR charge Plug IP67	Suitable for: • Series 300 • Series 10" • Series 160 with charge cable
	Mascot4A	CHARGER 4 Amp XLR charge Plug + EU power cord (type E-F)	Suitable for: • Series 300 • Series 10" • Series 160 with charge cable
	Mascot1A8/160	EMBEDDED CHARGER 1.8 Amp Molex charge Plug + EU power cord (type C)	Suitable for: • Series 160

International Compatibility



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

Charge Cables for all chargers

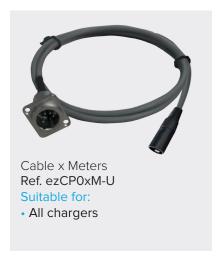




Charge Cable for **Series 160**



Extension Cable for all chargers



Batteries

External Batteries

REF.	DESIGNATION	PERFORMANCE	COMPATIBILITY
ezB24V6AH/L	External battery with handle Ni-Mh Long life	24V 6Ah	Suitable for: • Series 160 • Series 300/CC with converter charger
ezB24V9AH	External battery with handle Ni-Mh	24V 9Ah	Suitable for: • Series 160 • Series 300/CC with converter charger
ezB24V15AH	External battery with handle Ni-Mh	24V 15Ah	Suitable for: • Series 160 • Series 300/CC with converter charger



External Battery Ref. ezB24V6AH/L

Suitable for:

- Series 160
- Series 300/CC with MASCOT1A8/BAT

Cable for external battery



Converter charger



Battery cables for **Series 160**





Additional battery for **Series 160**



Additional internal battery Ref. ezB24V3AH/160 Suitable for:

• Series 160

^{*} Consult ez-Wheel to get battery specification

Mechanical Accessories

Accessories for Series 300 et 10"

VIEW	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" • Series 300/CC

Accessories for Series 300/CC



Accessories for **Series 160**

VIEW	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
	Horizontal suspension bracket ezMCS/L/160	The suspension bracket ezMCS/L/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











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