W2-2oh301235 (Wheel-e 2 Ω)

Designation : "Wheel-e" Continuity Hybrid Reel-Tester with alarm LoZ voltmeter. 2-ohm version.

Applications : to test the continuity and measure the resistance of protective conductors and equipotential bonding on AC power sockets, lights, metal frames, plugged and unplugged appliances, …

Play the video

Keep your hands free when testing the continuity and measuring the resistance of protective conductors and equipotential bonding.

"Wheel-e" includes a continuity tester, a reel and a low impedance voltmeter in a single product.

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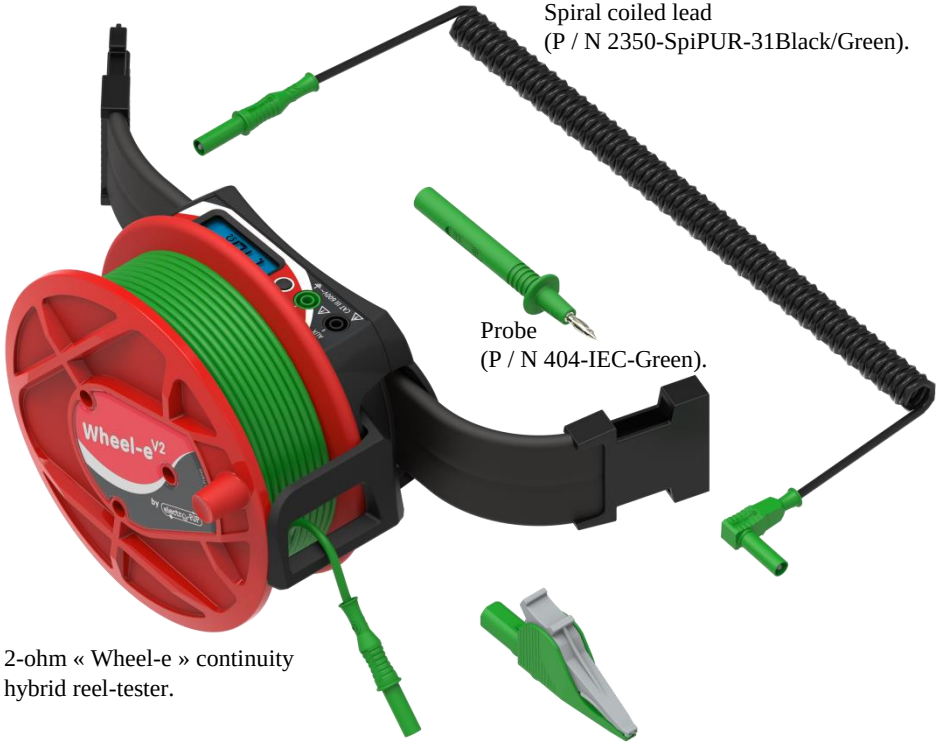
"Wheel-e" continuity hybrid reel-tester is provided with four items so it is ready to use.

How to use : to measure the resistance of protective conductors and equipotential bonding.
QUICKLY READY AND INTUITIVE USE.

- (1) I attach the belt at my waist ; I switch on "Wheel-e" ;
- (2) I connect the wire of "Wheel-e" to an equipotentiality reference (like the earth contact of an AC power socket) with the crocodile clip or the AC power socket adaptor ;
- (3) I connect the probe to "Wheel-e" with the spiral coiled lead ;
- I touch protective conductors with the probe,
- "Wheel-e" beeps if the resistance is OK, ≤ 2 Ω,
- Does not if it is greater than 2 Ω (the value is displayed).

W2-2oh301235 includes the five items below :



Spiral coiled lead
(P / N 2350-SpiPUR-31Black/Green).

Probe
(P / N 404-IEC-Green).

2-ohm « Wheel-e » continuity hybrid reel-tester.

Crocodile Clip
(P / N 5066-IEC-Green).

AC Power Socket Adaptor
(P / N AdaFMSectFR-T/F4-Green).

W2-2oh301235 (Wheel-e 2 Ω)

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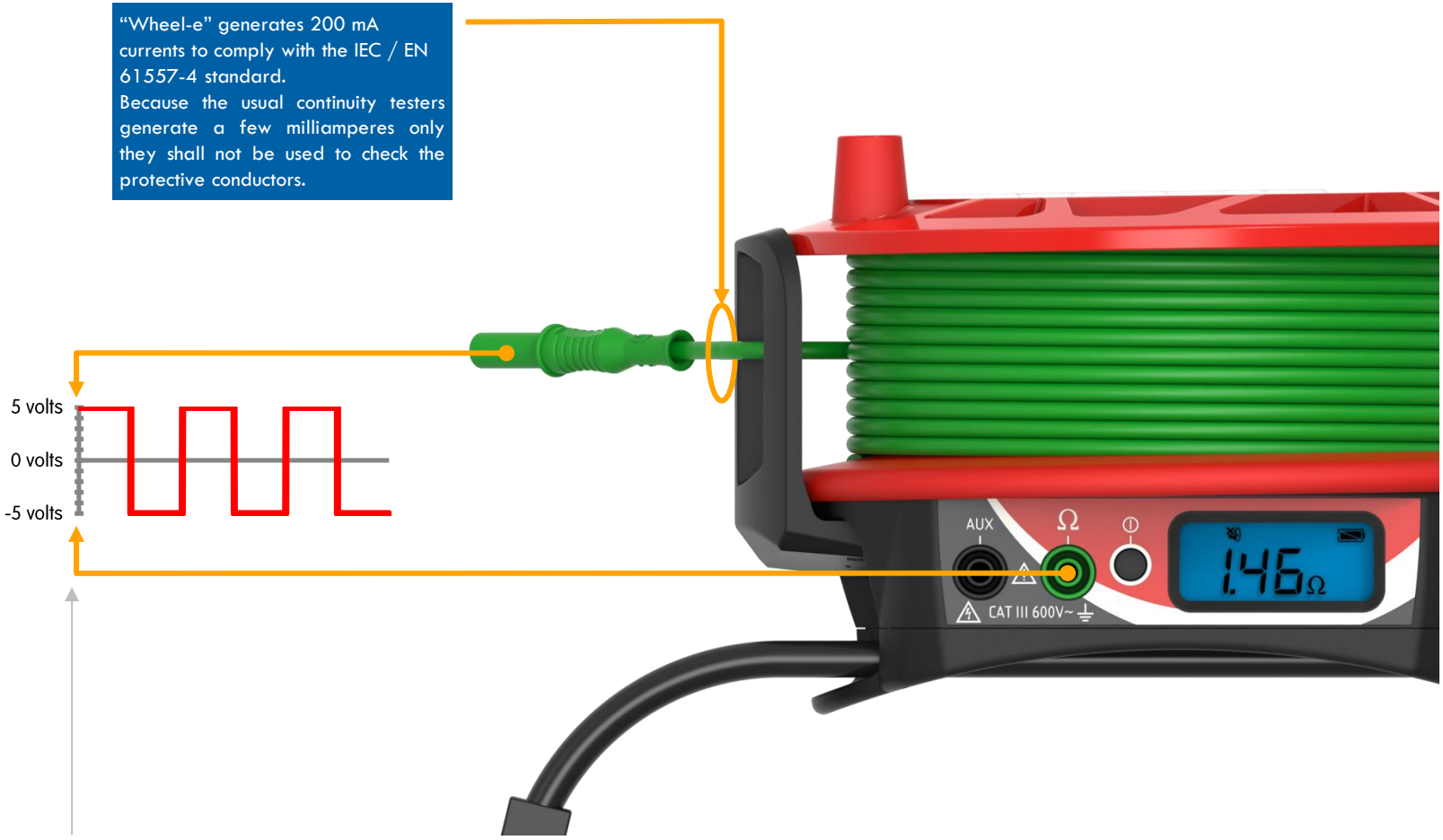
The "Wheel-e" electronics performances comply with the standard IEC / EN 61557-4. Usual continuity testers do not comply and they shall not be used to check protective conductors.

"Wheel-e" is designed around the standard international / European IEC / EN 61557-4 "Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. – Equipment for testing, measuring or monitoring of protective measures – Part 4: Resistance of earth connection and equipotential bonding".

"Wheel-e" generates 200 mA currents to comply with the IEC / EN 61557-4 standard.
Because the usual continuity testers generate a few milliamperes only they shall not be used to check the protective conductors.

The standard IEC / EN EN61557-4 requires the DC voltage of the measuring reverses. To avoid the operator reversing the test leads while complying with IEC / EN 61557-4, "Wheel-e" generates the DC voltage and reverses it automatically.
Because the usual continuity testers do not reverse the polarities they shall not be used to check the protective conductors. The reversing DC voltage allows the operator to find Seebeck effects that may affect the safety function of the protective conductors.



+5 volt / -5 volt square waveform voltage.

0.200 ampere current when the resistance is equal to or lower than 2 Ω. 0.080 ampere else.

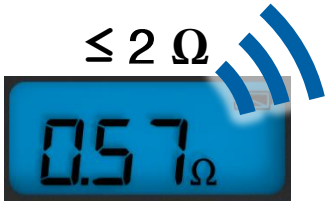
Measuring range from 0.00 ohm to 20.0 ohm.

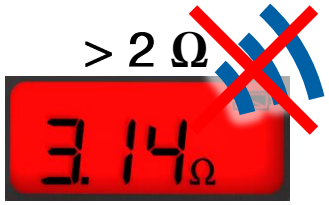
Measurement accuracy :
±0.07 Ω from 0.00 Ω to 9.99 Ω ;
±0.1 Ω from 10.0 Ω to 20.0 Ω.
Operating uncertainty : ≤ 30%.

W2-2oh301235
(Wheel-e 2 Ω)

Designation : "Wheel-e" Continuity Hybrid Reel-Tester with alarm LoZ voltmeter. 2-ohm version.

All the functions are chosen by a single button.





Ohmmeter. "Wheel-e" displays the resistance of the protective conductor. When the resistance is lower or equal to 2 ohms then it complies so "Wheel-e" beeps loud and its backlight color is blue. When the resistance is greater than 2 ohms then the it does not comply and "Wheel-e" does not beep and its backlight color is red.

Mute. Although "Wheel-e" beeps loud when the resistance complies, it can be muted not to disturb the quiet areas.

Alarm LoZ voltmeter. "Wheel-e" includes a voltmeter with two features :

1. Alarm. While measuring resistances, "Wheel-e" watches voltages. At any moment it can raise an alarm if any hazardous voltage occurs.
2. LoZ. "Wheel-e" includes a low impedance ("LoZ") voltmeter. This helps the operator to understand the trouble. If an alarm is raised then "Wheel-e" displays the voltage. If the value is about 240 V while the operator works on a 240 V electrical installation then it could mean "Wheel-e" has found a phase, this is a "hard" voltage. But if the value is much lower, such as 70 V, then it could mean "Wheel-e" has found a "ghost" voltage. (Any usual voltmeter would indicate 240 V.) "Ghost" voltages come from the capacitive coupling between energized and non-energized wirings. They are hazardous too. Thanks to the alarm LoZ voltmeter the operator can understand if "Wheel-e" is facing a "hard" or "ghost" voltage and this helps to diagnose the trouble.

Null. The resistance of the inner electronics, the 30 meter long wire, the probes, and the clip or adaptor can be compensated at 0 ohm. So the displayed resistance is the resistance of the protective conductor only and does not include the resistance of the accessories. Because the usual continuity testers can not compensate they shall not be used to check the protective conductors.

"Wheel-e" offers 4 functions chosen by a single button :
- measures electrical resistance (while watching voltage) and checks conformity (greater or lower than 2 ohms) ;
- mutes ;
- compensates the resistances of the accessories and inner electronics ; and
- calibrates.

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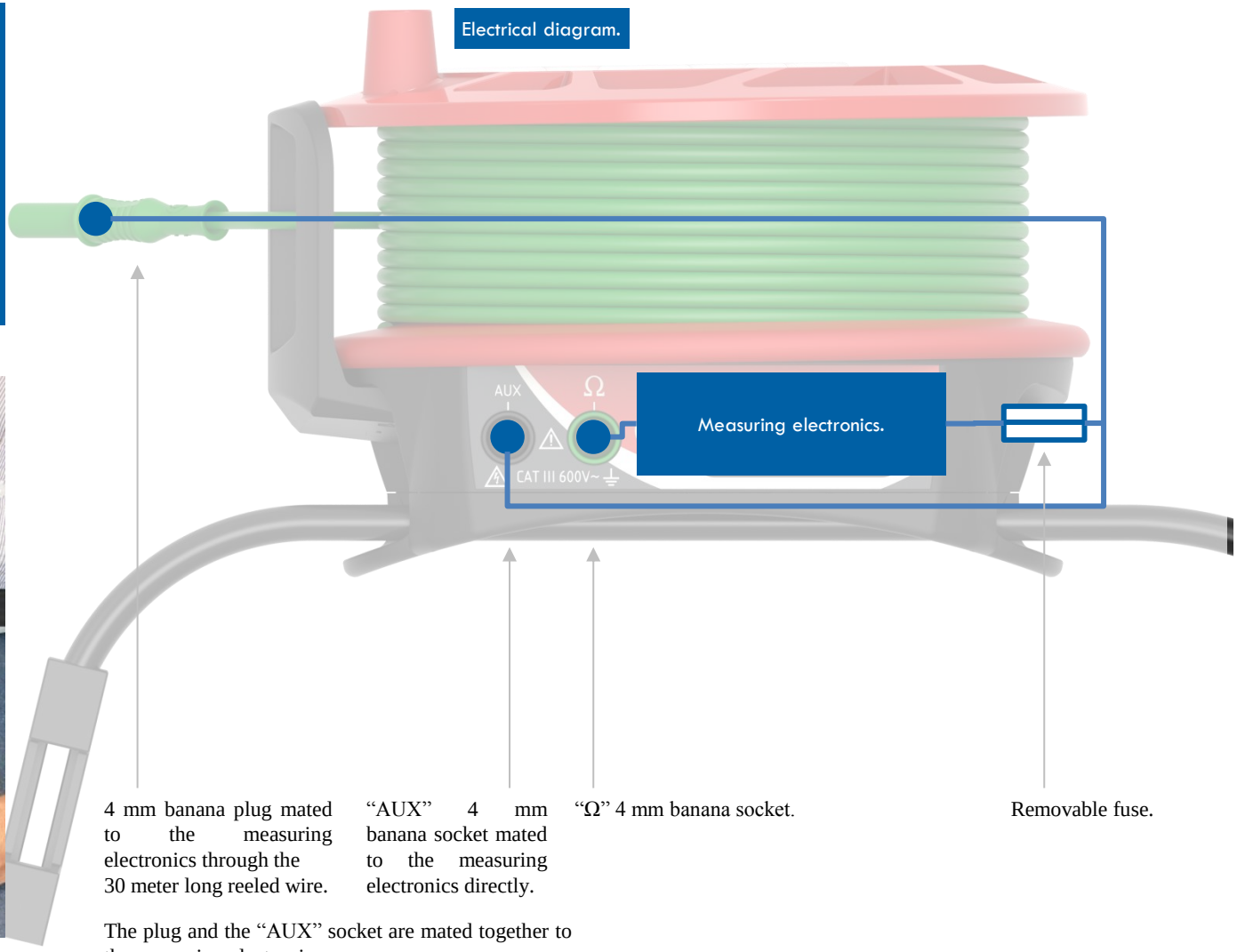
"Wheel-e" is designed to check unplugged appliances too.

Usually the resistance of the protective conductors is measured by using the 4 mm banana plug and the "Ω" 4 mm banana socket because the plug benefits of the 30-meter long wire. So the operator connects the plug to an equipotentiality reference and moves in the area while unreeling the wire.

But the operator may have to check the ground conductor of unplugged appliances. Then the "AUX" 4 mm banana socket is very useful. The operator can check the appliance without walking back to the equipotentiality reference. While keeping the plug connected to the equipotentiality reference, the operator connects a second probe to the "AUX" socket and checks the appliance with the two probes (the probe connected to the "Ω" socket and the probe connected to the "AUX" socket).

Electrical diagram.



4 mm banana plug mated to the measuring electronics through the 30 meter long reeled wire.

"AUX" 4 mm banana socket mated to the measuring electronics directly.

"Ω" 4 mm banana socket.

Removable fuse.

The plug and the "AUX" socket are mated together to the measuring electronics.

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(Wheel-e 2 Ω)

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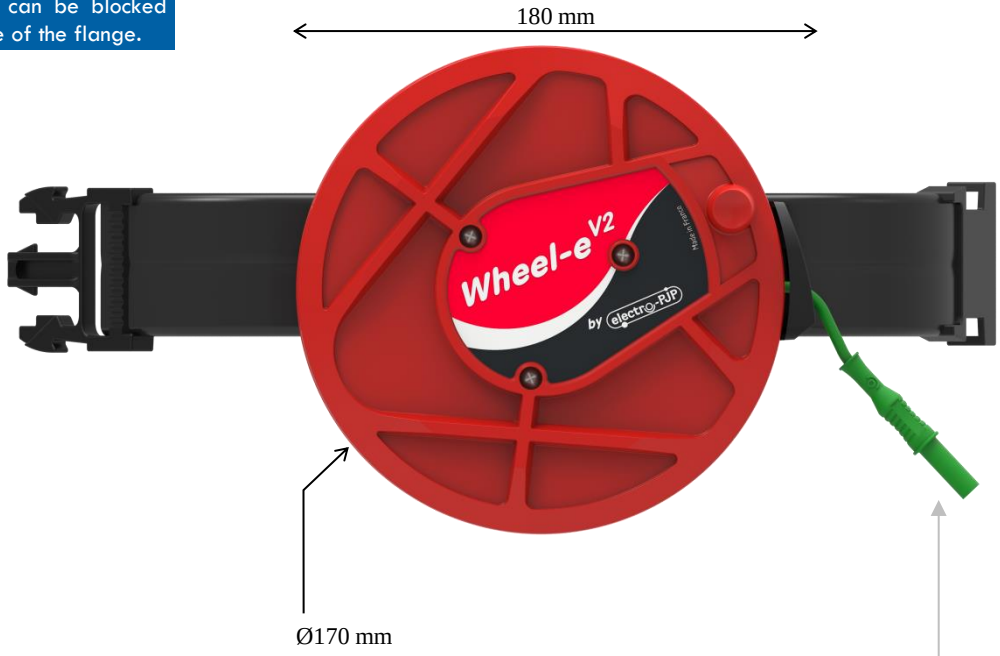
General specifications.

The reeling is eased thanks to the wire guide.

The wire does not unreel accidentally when reeled. Because it can be blocked in the edge of the flange.



Worn on the waist by the belt to free the two hands and also the neck. The belt complies with a waist circumference up to 144 cm.

4 mm banana sockets to connect to the probe and lead included and the Electro-PJP's telescopic poles. It complies with the 4 mm banana plugs of the worldwide most famous manufacturers.

Wire :
- 30-meter long for wide range operating.
- 1 mm² cross section area so the wire is strong but also it can cut if necessary to prevent the operator to be pulled.
- Double jacket to offer a wire wear indicator.
- PVC jackets to withstand friction.
- Replaceable in the field.

4 mm banana plug to connect to the probe included and the Electro-PJP's telescopic poles. It complies with the 4 mm banana sockets of the worldwide most famous manufacturers.

W2-2oh301235
(Wheel-e 2 Ω)

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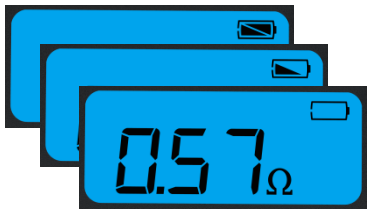
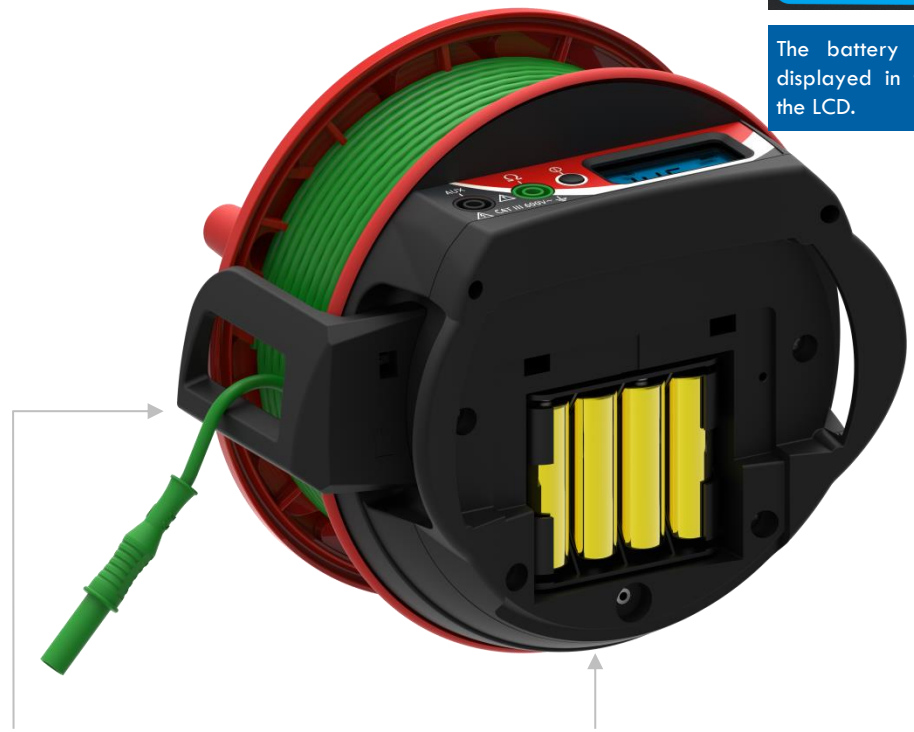
"Wheel-e" is designed to save the battery life. And its wire can be replaced in the fields.



The battery life status is displayed in the corner of the LCD.



Wire guide.

Energized by 4 replaceable AA batteries to offer up to 10000 measures.
Compliant with alkaline and rechargeable batteries.
The battery life depends on the performances of the alkaline batteries and the age of the rechargeable batteries.
AA batteries are often sold by multiples of four : four, eight, … . As there are four batteries in Wheel-e every batteries bought are used.

"Wheel-e" is designed so that the wire is quickly replaceable in the fields by unscrewing the three screws of the flange.

3 screw removable flange to replace easily the wire when worn.

W2-2oh301235
(Wheel-e 2 Ω)

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Electrical safety 600V CAT III 300 V CAT IV IP2X Works on electrical installations energized or not.	« Wheel-e » continuity hybrid reel-tester. According to EN / IEC 61010-1. 600 V CAT III / 300 V CAT IV, reinforced insulation, for the pollution degrees 1 and 2. 300 V CAT III / 300 V CAT IV, reinforced insulation, for the pollution degree 3. « Wheel-e » continuity hybrid reel-tester. According to EN / IEC 60529. IP2X. Removable fuse. These specifications come from the creepage distances, clearances, accessible parts, and solid insulation of the product. And the considered specifications of the environment are : • relative humidity, 80 % maximum for temperatures up to 31 °C decreasing linearly to 50 % relative humidity at +40 °C ; • operating and storage temperature ranges, -20 °C to +55 °C ; • indoor use ; and • altitude, 2000 m maximum.
Operating temperature range	-20 °C mini., +55 °C maxi. (please see above too).
Protection against fire	UL94 V-1 (insulating enclosure).
Conformity	• European Directive "Low Voltage Directive" 2014/35/UE. • International / European standard EN / IEC 61010-031. • International / European standard EN / IEC 61010-1. • International / European standard EN / IEC 61010-2-030. • International / European standard EN / IEC 61557-1. • International / European standard EN / IEC 61557-4. • International / European standards EN / IEC 61326-1, 61000-3-2, and 61000-3-3. • International / European standard EN / IEC 60529. • European Directive "RoHS" 2011/65/EU. • European REACH regulation n°1907 / 2006. • European Directive "EMC" 2014/30/UE.
Environment	• "RoHS" compliant, Pb ≤ 4 % in conductor, Pb ≤ 0.1 % in insulator, Hg ≤ 0.1 %, Cr VI ≤ 0.1 %, Cd ≤ 0.01 %, PBB ≤ 0.1 %, PBDE ≤ 0.1 %, DEHP ≤ 0.1 %, BBP ≤ 0.1 %, DBP ≤ 0.1 %, and DIBP ≤ 0.1 %. • REACH compliant, no substances from the candidate list of SVHC for authorisation at mass concentrations greater than 0.1 %.
Materials	Wire jackets : PVC.
Colors	Black, red, and green.
Weight	1.8 kg.
Origin	Designed and manufactured in France.
Reliability benchmark	Year of 1st placing on the market 2013.
Packaging	1 « Wheel-e » continuity hybrid reel-tester + 1 Spiral coiled lead + 1 Probe + 1 Crocodile clip + 1 AC Power Socket Adaptor.

GLOSSARY :

ACCESSIBLE. Able to be touched with a standard test finger or test pin.

BASIC INSULATION. Insulation of HAZARDOUS LIVE parts which provides basic protection.

CAT II. Measurement or overvoltage category II. For measurement performed on / equipment connected to the building wiring.

CAT III. Measurement or overvoltage category III. For measurement performed on / equipment connected to part of a building wiring installation.

CAT IV. Measurement or overvoltage category IV. For measurement performed on / equipment connected to the origin of the electrical supply to a building.

CLEARANCE. Shortest distance in air between two conductive parts.

CREEPAGE DISTANCE. Shortest distance along the surface of a solid insulating material between two conductive parts.

CTI. Comparative Tracking Index of the insulating material in accordance with IEC 60112.

DOUBLE INSULATION. Insulation comprising both BASIC INSULATION and SUPPLEMENTARY INSULATION.

EN / IEC 60529. European / international standard regarding the degrees of protection provided by enclosures.

EN / IEC 61010-1. European / international standard regarding the safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements.

EN / IEC 61010-031. European / international standard regarding the safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test.

"LVD". European Directive 2014/35/EU on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits. (Usually called the Low Voltage Directive.)

MAINS. Low-voltage electricity supply system to which the equipment concerned is designed to be connected for the purpose of powering the equipment.

MAINS CIRCUIT. Circuit which is intended to be directly connected to the MAINS for the purpose of powering the equipment.

OVERVOLTAGE CATEGORY. Numeral defining a TRANSIENT OVERVOLTAGE condition.

POLLUTION. Addition of foreign matter, solid, liquid or gaseous (ionized gases), that may produce a reduction of dielectric strength or surface resistivity.

POLLUTION DEGREE. Numeral indicating the level of POLLUTION that may be present in the environment.

POLLUTION DEGREE 1. No POLLUTION or only dry, non-conductive POLLUTION occurs, which has no influence.

POLLUTION DEGREE 2. Only non-conductive POLLUTION occurs except that occasionally a temporary conductivity caused by condensation is expected.

REINFORCED INSULATION. Insulation which provides protection against electric shock not less than that provided by DOUBLE INSULATION.

"RoHS". European Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

SOLID INSULATION. Insulating materials.

SUPPLEMENTARY INSULATION. Independent insulation applied in addition to BASIC INSULATION in order to provide protection against electric shock in the event of a failure of BASIC INSULATION.

TRANSIENT OVERVOLTAGE. Short duration overvoltage of a few milliseconds or less, oscillatory or non-oscillatory, usually highly damped.

WORKING VOLTAGE. Highest r.m.s. value of the a.c. or d.c. voltage across any particular insulation which can occur when the equipment is supplied at rated voltage.

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(Wheel-e 2 Ω)

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Spare parts (not included).

Spare 30 meter wire.
Part number 2352WE-3000Green.

Length : 30 meters.
Cross section area : 1 mm².
Jackets material : PVC.
Safety : 1000 V CAT III, double jacket, wire wear indicator.

Spare fuse.
Part number 4381.

Size : 6.35 mm x 32 mm.
Nominal current : 0.5 A.
Rated voltage : 1000 V.
Breaking capacity : 50 kA.

Accessories (not included).

2 ohm shunt.
Part number 21119-2-00Red.

Useful for calibration and verification.
Connects directly to the two sockets.

1 ohm shunt.
Part number 21119-1-00Black.

Useful for verification.
Connects directly to the two sockets. Provides 0.66 ohm when stacked on 21119-2-00Red.

0 ohm null shunt.
Part number 2019-S-Black.

Useful for verification and 0 ohm compensation.
Connects directly to the two sockets.

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