

# Pre-identify LV and MV off line Cables and feeders

## JUPITER E



READ THIS MANUAL BEFORE USING THE DEVICE

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## MODIFICATION'S DIRECTORY

Version	Subject of the change	Date	Author
1.00	Creation	06/2023	L. ZOMERO
1.01	Update	09/2023	L.BERGALLO
1.02	Added class info §1.4	11/2023	T. HUBERT
1.03	Updated receiver IP info §4	12/2023	T. HUBERT
1.04	Updated receiver operating temperature	12/2023	T. HUBERT
1.05	Updated receiver pictogram	10/2024	T. HUBERT

These instructions are important for your safety. Read this manual carefully and in its entirety before using the device, and keep it for future reference

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This document is the **JUPITER E** user guide. It describes how to commission the device as well as the different running modes to facilitate its use.

## **1. SAFETY INFORMATION**

### **1.1. Safety instructions**

**IMPORTANT:** This equipment must be used in accordance with safety rules. For your safety and that of others, read this manual carefully before unpacking, configuring or using the device. Be careful of all the hazard notices and warnings. Failure to follow warnings and instructions may result in serious injury to the operator or damage to the equipment. To guarantee the suitable protection of this device, do not use or install it in conditions other than those described in this manual.

The opening of the devices is prohibited. It is strictly reserved for qualified staff approved by MADE.

### **1.2. Use of the safety instructions**





**HAZARD:** Indicates an immediate or potential hazard which, if not avoided, would lead to serious or fatal injuries.

**WARNING:** Indicates a potentially hazardous situation that could lead to superficial or moderate injuries.

**Note:** Information that needs to be highlighted.

### **1.3.Warning signs**

Read all the labels and statements fixed to the instrument. If the instructions are not respected, physical injury or damage to the instrument may occur.

	Symbol referring to the instruction manual about operation and/or safety instructions.
	Dangerous voltage
	Alternating current
IP XX	IP Standard - Protection from dust and water
	Do not dispose of with household waste

## **1.4.Purpose of the device**

**JUPITER E** is a device that is used to:

- **Pre-identify** de-energised cables in trenches, cable ducts and cable trays, **with short-circuited ends.**
- **Identify the de-energised conductors and test continuity to the S1 transmitter.**
  - **Short-circuited end** (closed circuit)
  - **Open circuit end**

The device/system described in this documentation must only be operated by personnel qualified for each specific task. The documentation relating to the task must be complied with, in particular the safety instructions and warnings. Qualified persons are, by virtue of their training and experience, able to recognise the risks associated with handling this product/system and avoid them.

**JUPITER E** is intended for personnel authorised to work on electricity networks.

The documentation relating to each function must be complied with, in particular the safety instructions and warnings. Qualified persons are, by virtue of their training and experience, able to recognise the risks associated with handling this product and avoid them.

All the safety instructions imposed by the grid operator must be scrupulously followed.

The equipment users must have been trained in its use.



It can only be used on **de-energised** networks.

The cable to be identified must be **locked out** by an authorised agent and the 2 ends must be short-circuited and earthed.

**The JUPITER E should only be used on fault-free cable.**

It is essential to check that no voltage is present (**No voltage tested**) before using it.

Personal protective equipment (PPE) must be worn (class 00 or higher electrically insulating gloves, hard hat with protective face shield)



The equipment must not be used if at least one of its components is damaged.

The JUPITER E is designed to operate in an industrial environment.



It is a Class A product. In a household environment, this product may cause radio interference in which case users may be required to take appropriate measures.

## **2. GENERAL PRESENTATION**

### **2.1. Operating principle**

Each of these running modes has a configuration described in the document below.

Each function is carried out on de-energised MV and LV cables (customer loads connected).

The signals used and the physical principles are common to every mode.

The removable transmitter is housed in a shock-resistant case containing all the accessories. The connection leads for the injection clamps are connected to the transmitter box.

The receiver is in a rigid case housed inside the transmitter case. It has 3 sensors for the operations specific to each mode:

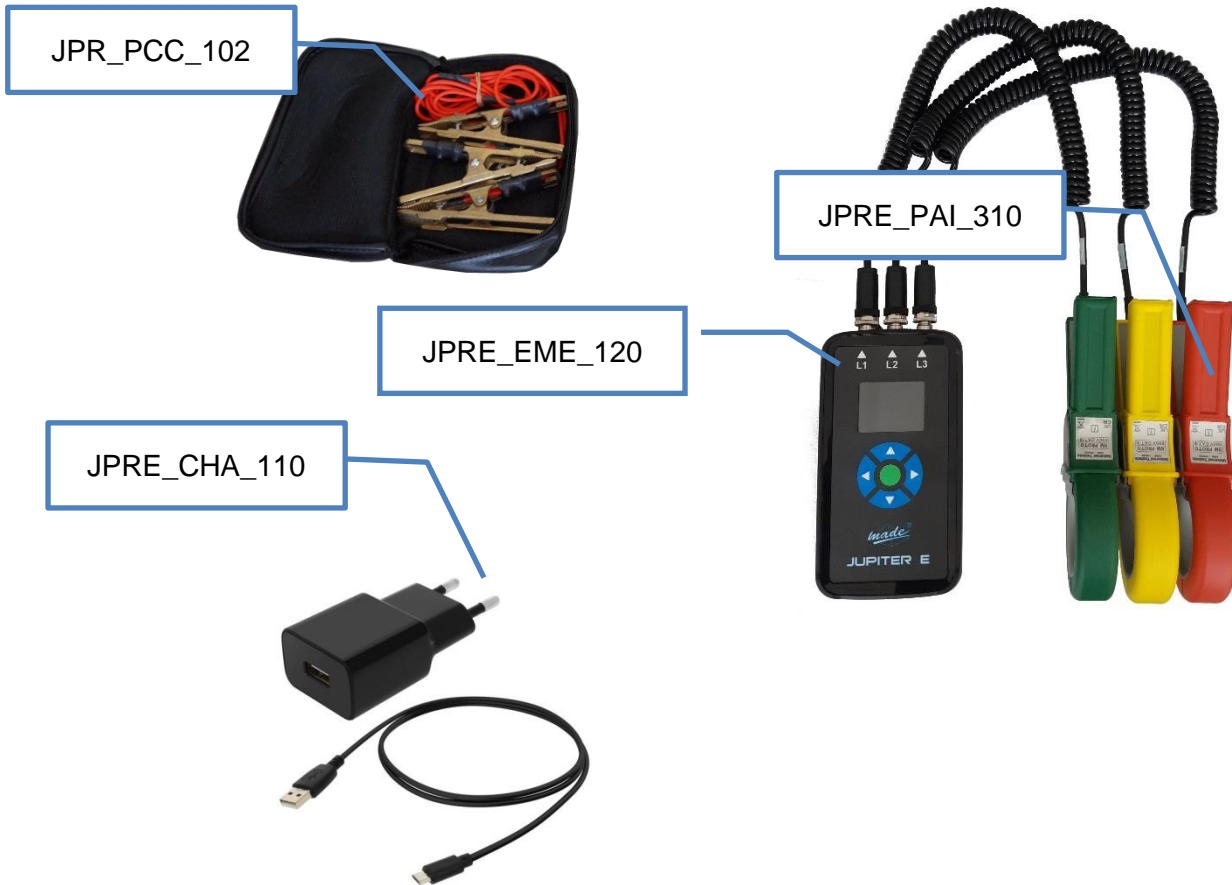
- **Cable pre-identification**
- **Continuity and identification of open-circuit conductors**
- **Continuity and identification of short-circuited conductors (MV and LV)**

The receiver is designed for outdoor use



## 2.2. Composition

### 2.2.1. Transmitter



- 3 injection clamps with connection leads (ref JPRES\_PAI\_310)
- 220V~ charger (ref JPRES\_CHA\_110)
- 1 short-circuit lead (ref JPR\_PCC\_102)
- 1 transmitter (ref JPRES\_EME\_120)



Important: the transmitter must only be used with the accessories supplied by MADE

## 2.2.2.Receiver

### 2.2.2.1.Receiver box



Ref: JPRE\_RXE\_120



Important: the receiver must only be used with the sensors supplied by MADE

### 2.2.2.2.Standard sensors

- **Short-circuit (SC) conductor identification sensor:**



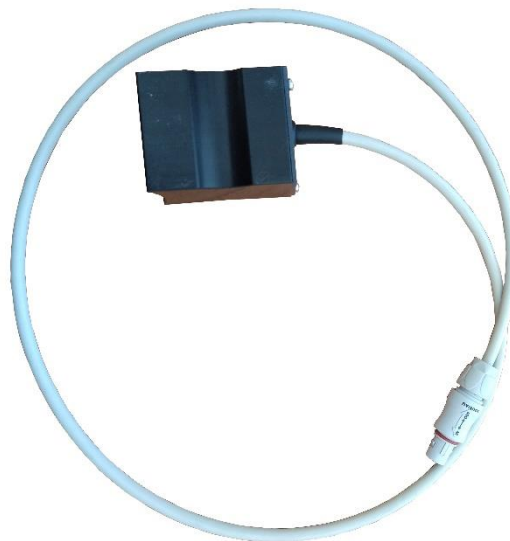
Ref: JPRE\_CAP\_410

- **Open circuit conductor identification sensor (OC):**



Ref: JPRE\_CAP\_220

- **Pre-identification sensor:**

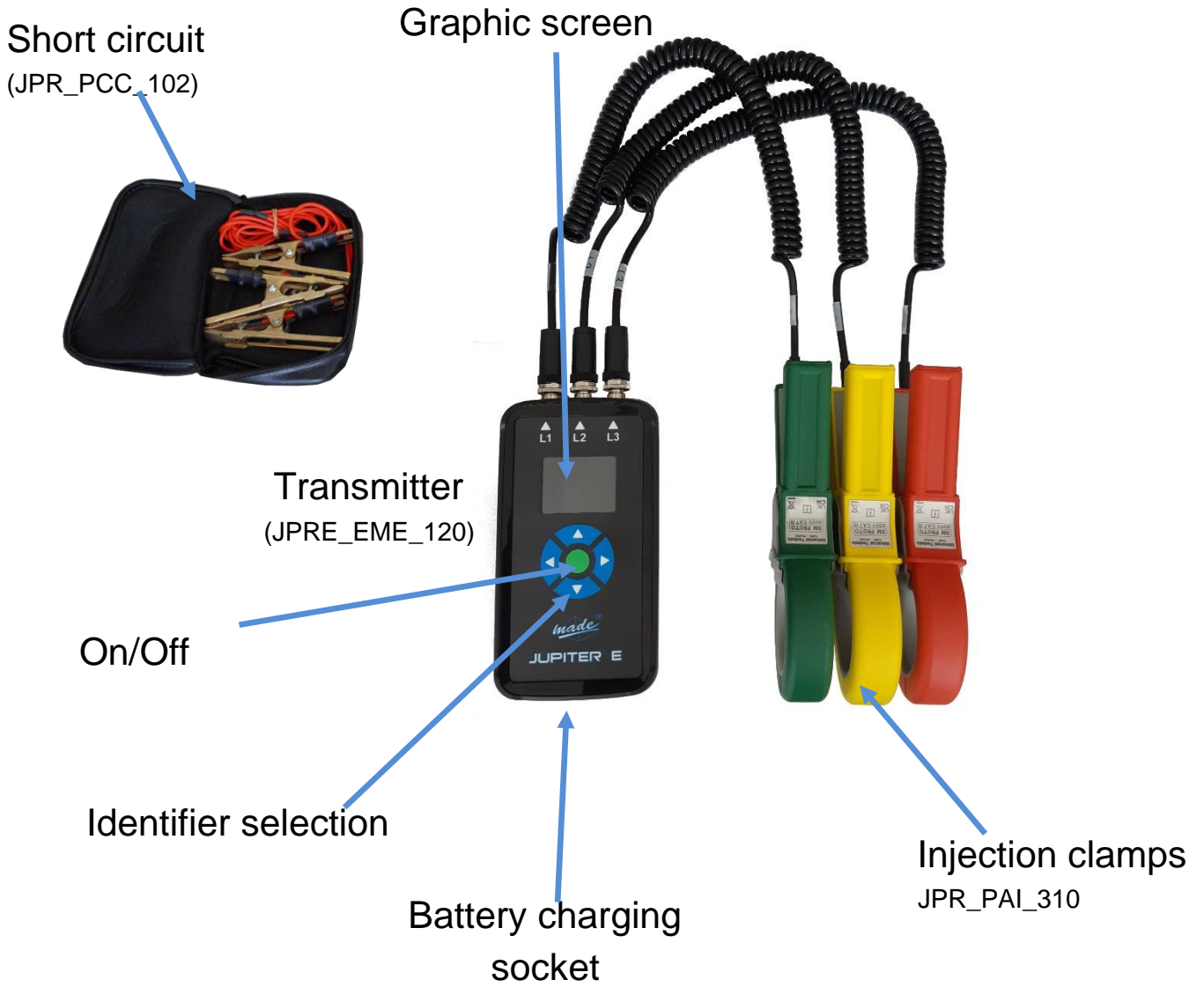


Ref: JPRE\_SAB\_100

# 3. INSTALLATION

## 3.1. Transmitter

### 3.1.1. Transmitter presentation



## **3.1.2. General transmitter operation**

### **3.1.2.1. Power supply**

The **JUPITER E** transmitter runs in stand-alone mode on batteries (1.5Ah 6.4V DC).

As soon as the transmitter is switched on, the battery level is shown on the graphic display.

To recharge the battery, use the USB Type C charger supplied.

Tilt the USB cover as indicated by the arrow

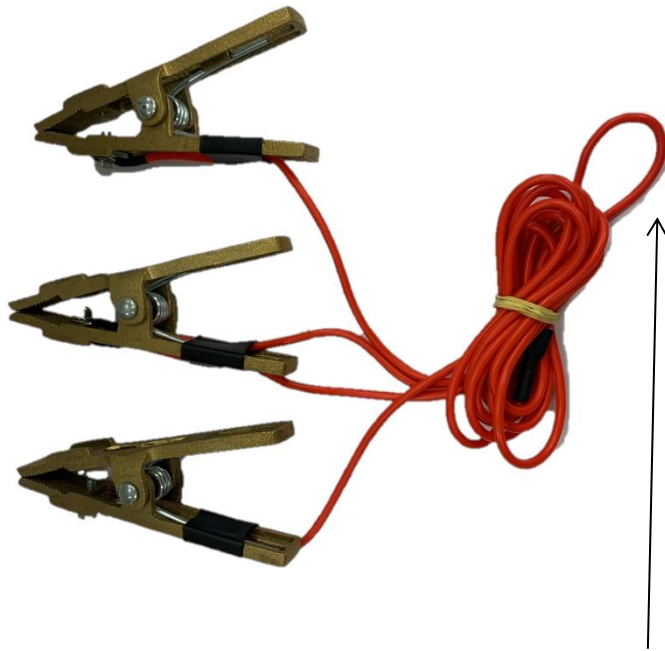


**Do not forget to replace the USB cover as soon as you have finished charging.**

### **3.1.2.2. Transmitter connection**

The transmitter is connected using injection clamps on the MV or LV cable heads. The 2 ends of the cable should be earthed and short-circuited (do not take the cable screen).

Always connect the short-circuiting leads supplied with the **JUPITER E** to both ends of the cable.



The loop at the end of the short circuit must be connected to the safety padlock

**Always calibrate the transmitter before placing the injection clamps.**

### 3.1.2.3. Transmitter calibration

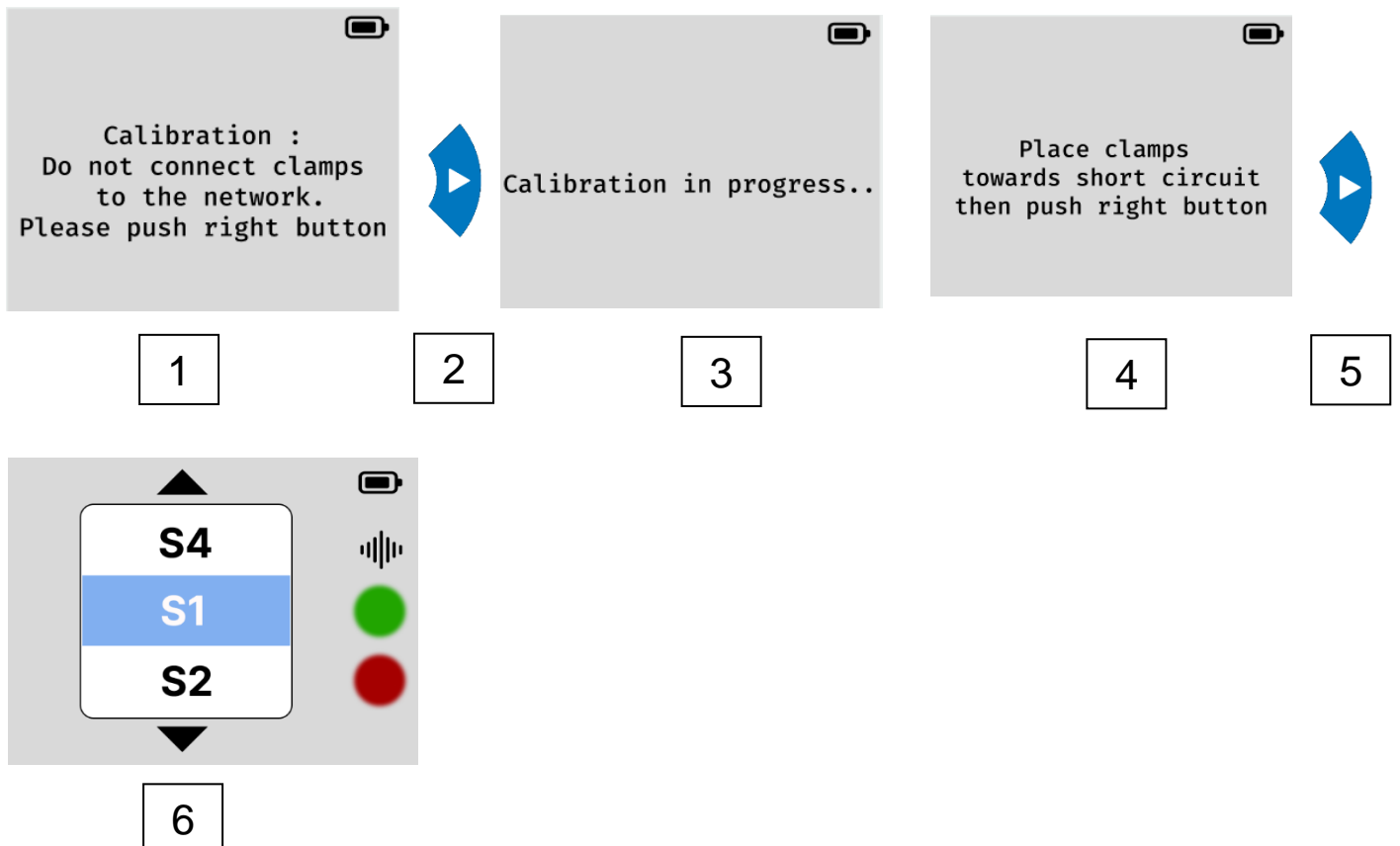
**When powered on, the JUPITER E transmitter requires calibration before positioning the injection clamps.**

This operation allows the transmitter to automatically regulate the level of the signal transmitted over the cables. The advantages of this calibration are the following:

1. Reduced radiation from the cable during the identification process, thereby avoiding any interference with nearby measurements (particularly useful during schematics operations, for example).
2. Limited power consumption by the transmitter, thereby extending its autonomy.

The transmitter must be calibrated before it is installed. The steps required for the procedure are displayed on the transmitter screen at start-up.

The transmitter is switched on by pressing the Start/Stop button: 



From step 6, **the JUPITER E Transmitter is active with the default S1 identifier** and generates the frequency signals required for all operations on de-energised MV and LV cables.

**The JUPITER E transmitter** identifier can be changed to **S2, S3 or S4** (with different sets of frequencies) for simultaneous use of several transmitters on the same structure, each transmitter being programmed with different identifiers.

This running mode makes it possible to check continuity and identify short-circuited or open-circuited conductors at both ends once the cable has been cut, without having to move the transmitter (a useful operation when replacing an accessory, for example).

The available functions are:

- **Cable pre-identification** (short-circuited ends)
- **Open-circuit conductor identification and continuity** (after cutting the cable)
- **Identifying short circuited conductors and continuity**

**Once the transmitter has been switched on, no further action by the operator is required to activate the functions described above.**

To change the identifier, use the "up/down" buttons. The change of identifier is automatically taken into account when the selection is made

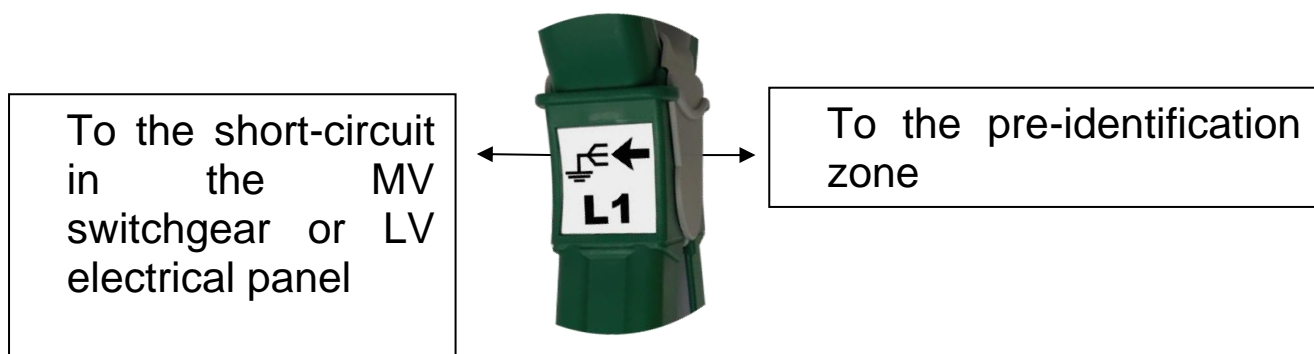
These functions can be carried out on de-energised LV or MV networks and for any type of cable: HN, Paper covered, PE.

**For LV networks, it is not necessary to disconnect the customer loads.**



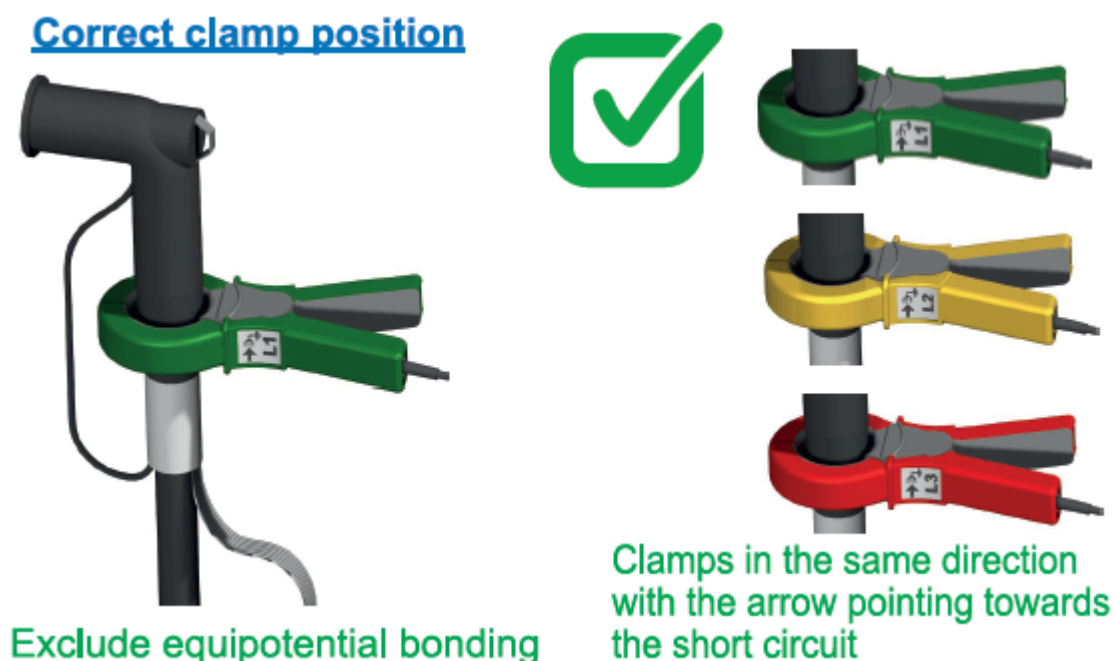
### 3.1.3. Precautions when using the transmitter

The clamps must all be installed in the same direction with the arrow pointing towards the short-circuit (towards the source):

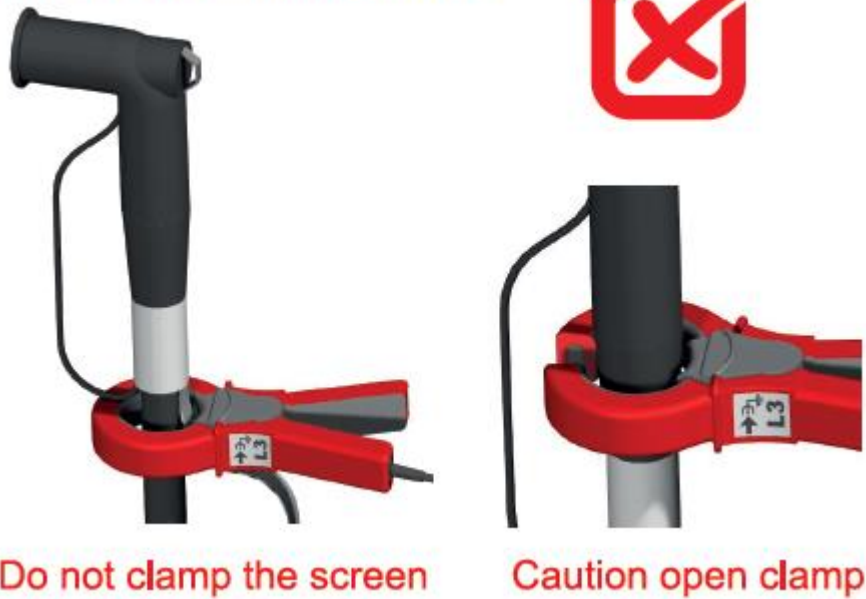


Check that the clamps remain on the part of the cable without the screening. If necessary, use wooden clamps to secure them.

If several transmitters are used per site, make sure each transmitter has a different identifier (S1, S2, etc.)



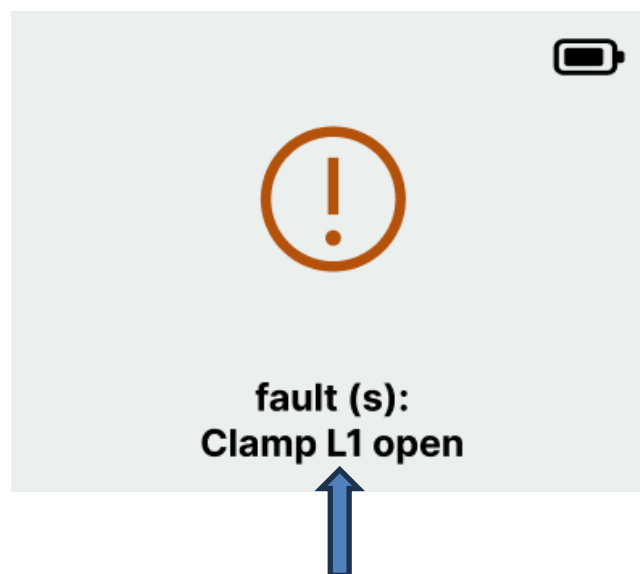
Incorrect clamp position



After switching on, check the front panel:

- For the absence of a fault signal on the transmitter circuit
- For the battery charge level

If the clamp is not closed, the following message appears on the display:



Clamp identifier

## 3.2. Receiver

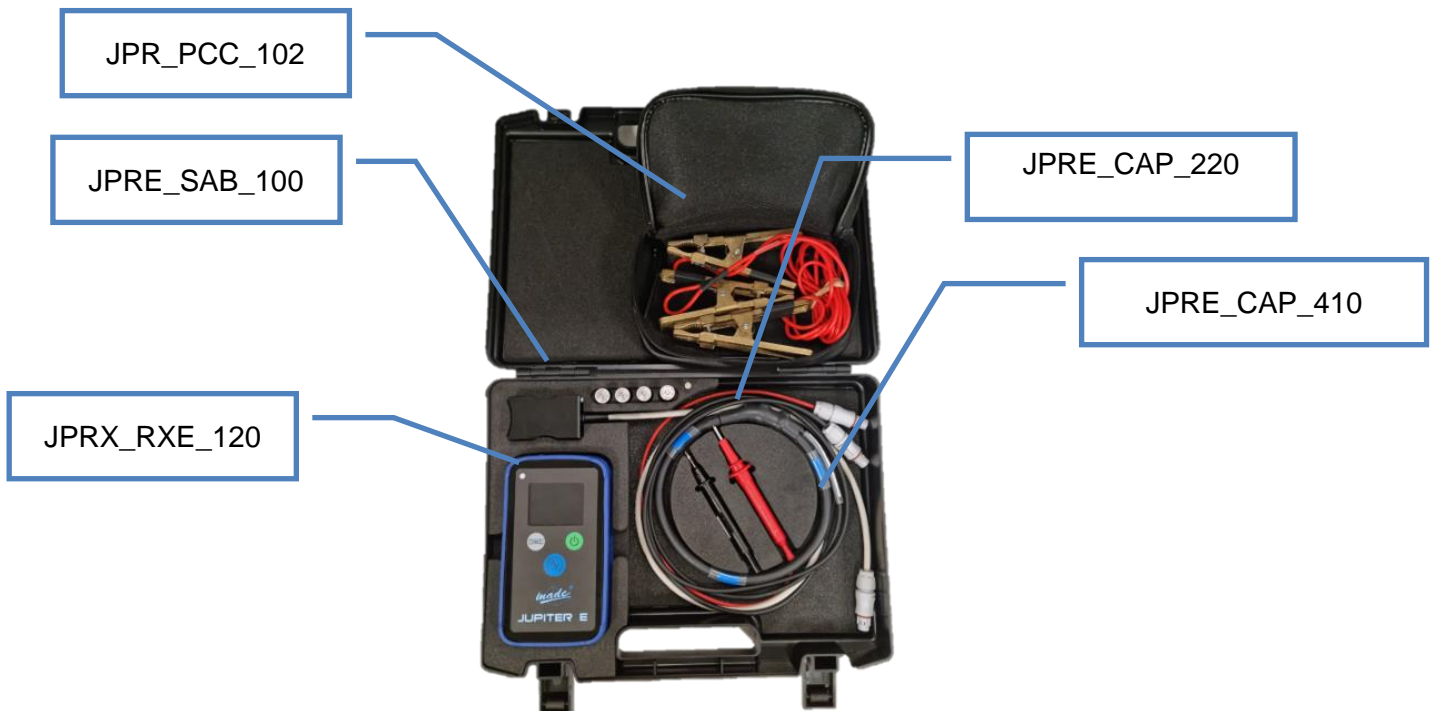
The JUPITER E receiver assembly is composed of:

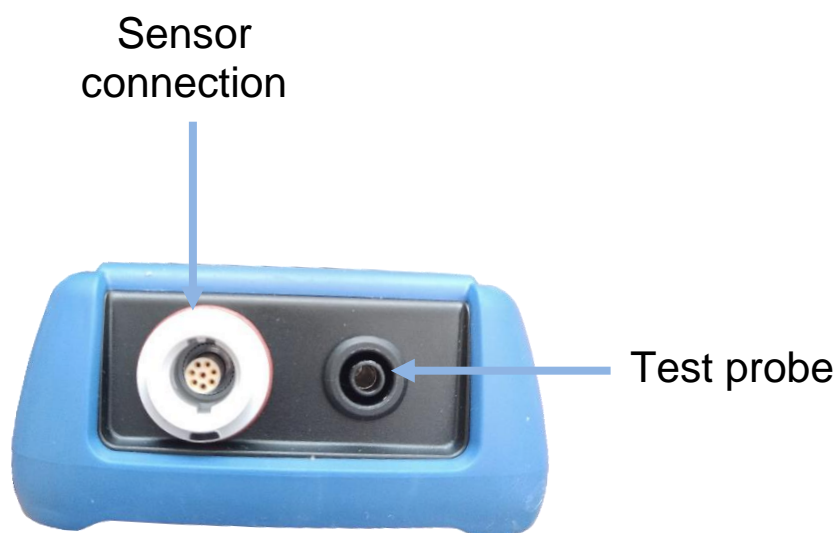
- The receiver box to which the sensors are connected
- The pre-identification sensor
- Test probes used to identify conductors and continuity in open circuits
- A flexible loop to identify short-circuited conductors

The JUPITER E receiver can be used to **pre-identify** a cable with short-circuited and earthed ends, and to **identify the conductors** on a cable in an open or closed circuit. This applies to MV and LV networks that are **de-energised**.

The JUPITER E receiver has specific sensors for each function, allowing the signals emitted by the JUPITER E transmitter to be processed.

The results obtained at receiver level are **not subject to any interpretation**, and the signal recognition algorithms are secure.





Ref: JPRE\_RXE\_120

### 3.2.1. Using the receiver

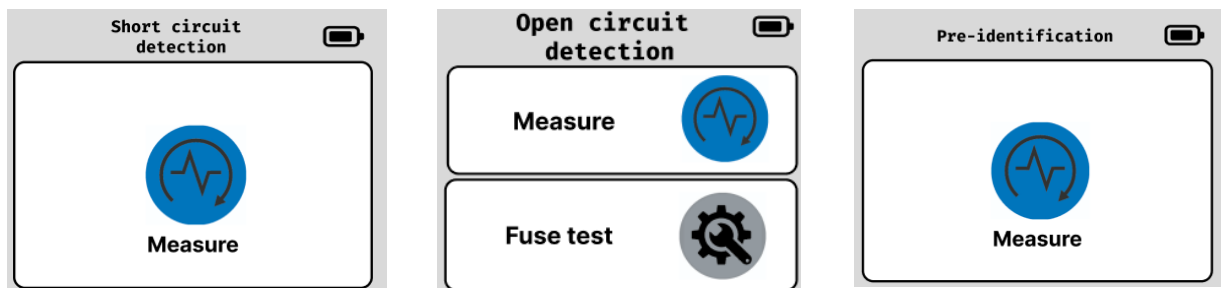
The receiver is switched on by pressing the On/Off button:



To connect a sensor, insert the connector into the socket, aligning the black dot on the socket with the IN ↔ OUT indication on the connector.



Connecting a sensor to the receiver automatically sets its running mode, which is shown on the graphic display:



These modes are:

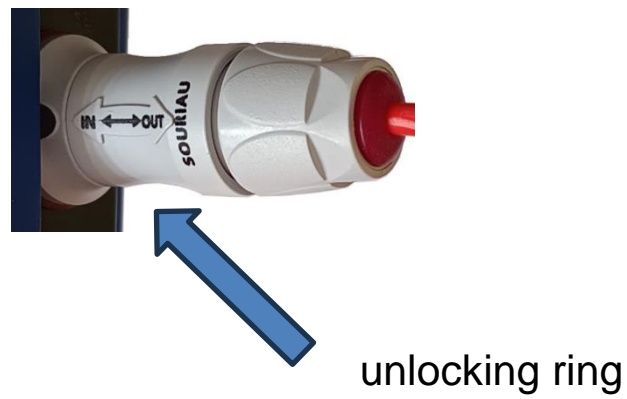
- Continuity and short-circuited conductor identification
- Continuity and open circuit identification.
- Pre-identification.

To start a measurement, press the "measurement" button:



If the "Measurement" or the "Fuse test" button has not been pressed after 2 minutes, the receiver will switch off automatically.

**WARNING:** To disconnect a sensor, pull the unlocking ring to remove the plug from the device.

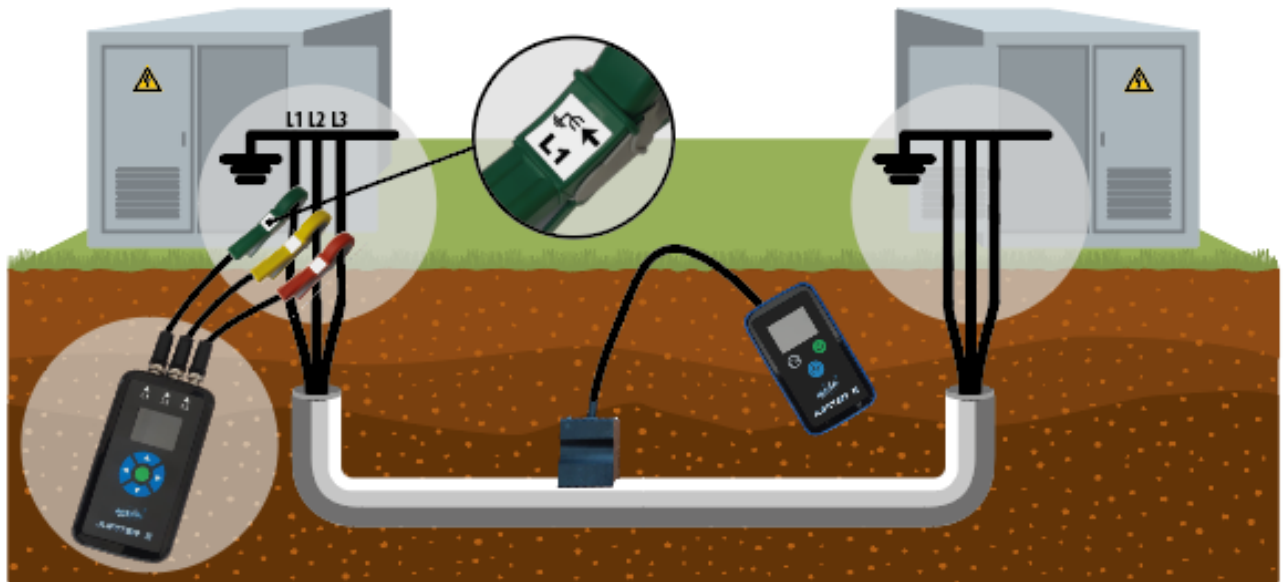


### 3.2.1.1. Pre-identification mode

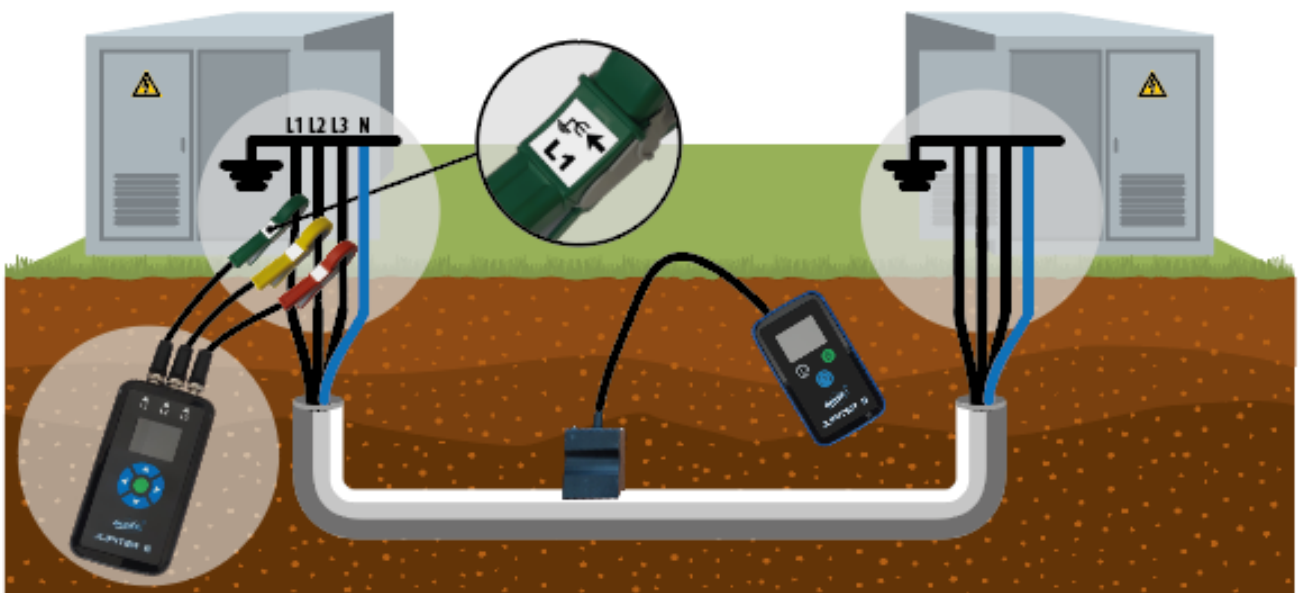
A pre-identification sensor for all types of cable.



JPRE\_SAB\_100

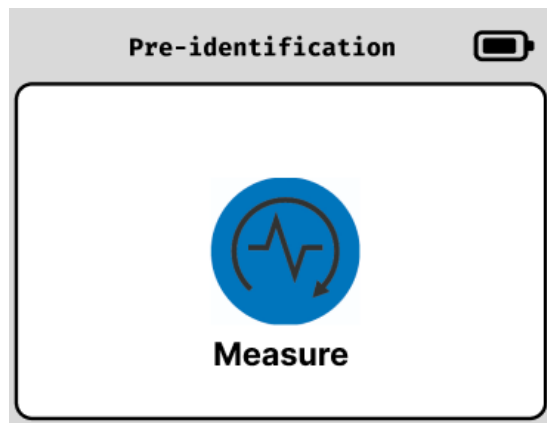


Procedure on MV cable

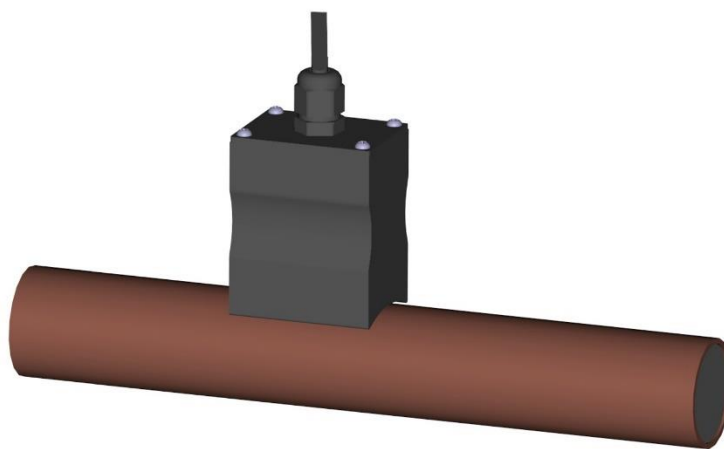


Procedure on LV cable

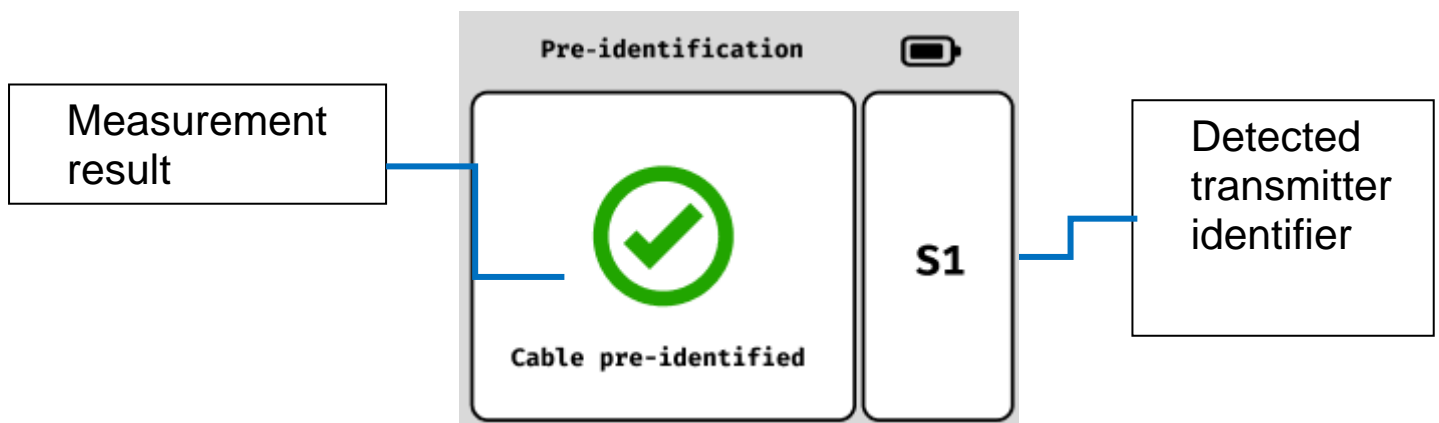
- Connect the sensor to the receiver, the **pre-identification** mode screen is displayed.



- Fit the sensor in the direction of the cable, so that the groove under the sensor fits snugly against it.

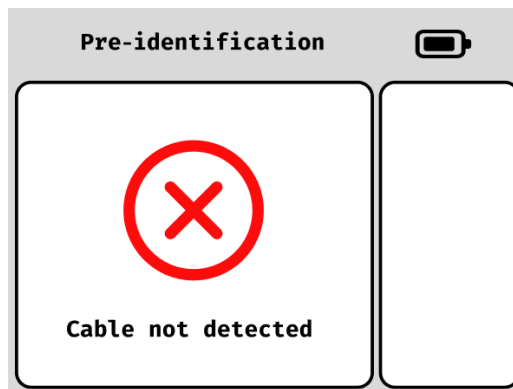


- Press the measurement button, a screen animation indicates that the measurement request has been taken into account
- Wait for the result (3 seconds) without moving the sensor. The display shows the measurement result:

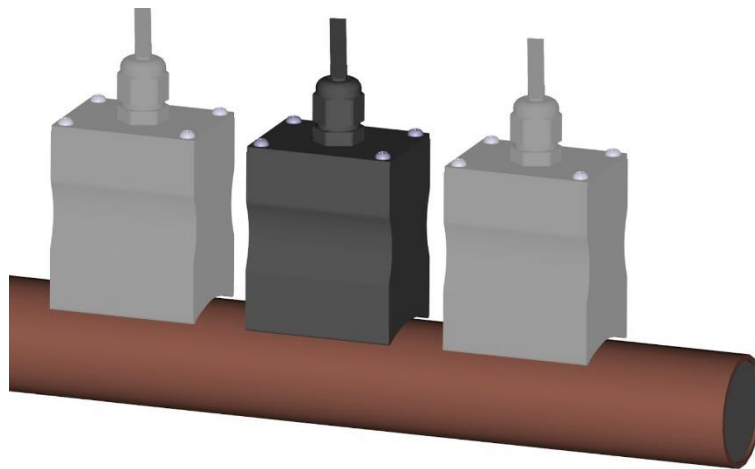


- If the cable is not pre-identified, the following message appears on the display:





repeat the operation on other points 10cm apart on the same cable, then move on to the other cables.



- If the result is positive, make sure it is the only one cable in that situation.

### 3.2.1.2. Open circuit and conductor location and continuity mode



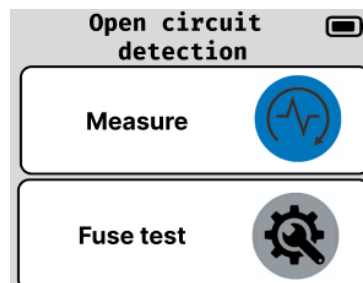
JPRE\_CAP\_220



It is essential to check that there is no voltage (No voltage testing) before using this mode

Remember to test the fuse

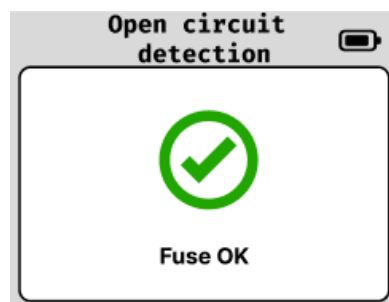
- Before each use, connect the red test probe and place it in the black test probe connector.
- Switch on the receiver and the **Open circuit locating** mode will be displayed.



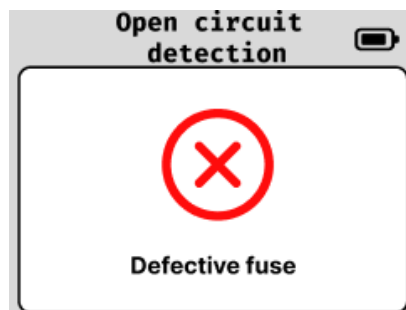
- Press the "Fuse test" button



- If the fuse is in working order



- If the fuse is defective

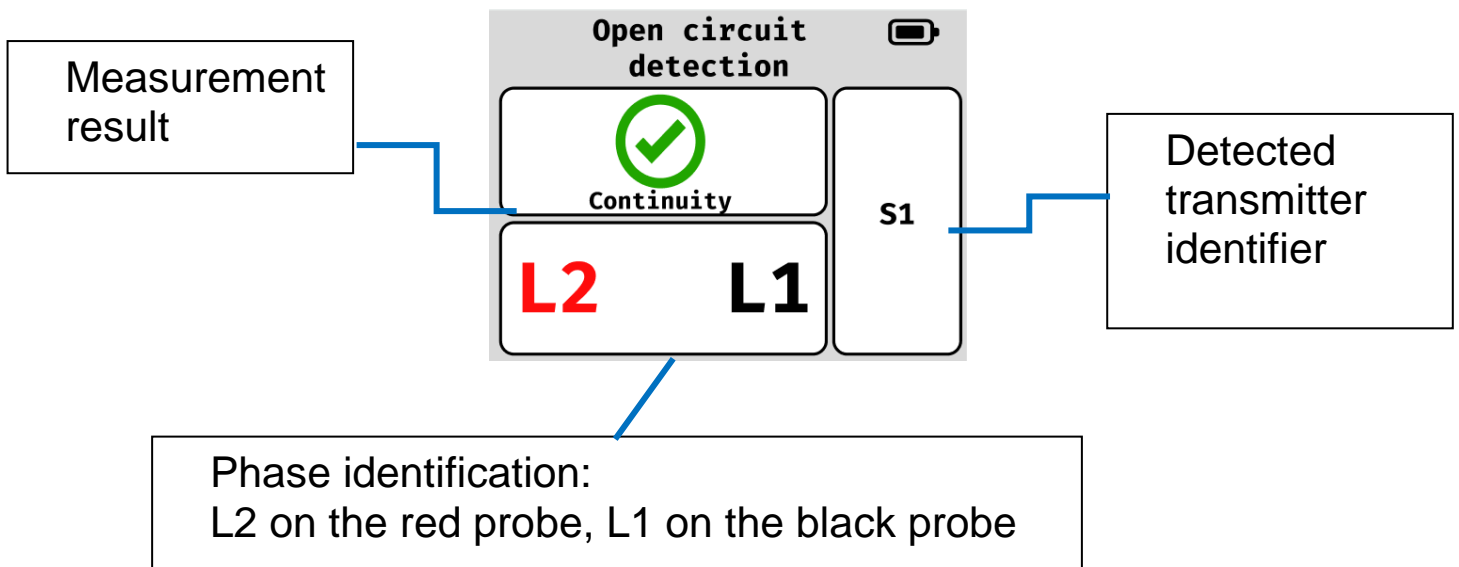


In that case, replace the fuse by unscrewing the red button.  
Comply with the fuse specifications: 2A 500VAC / HPC 50KA.

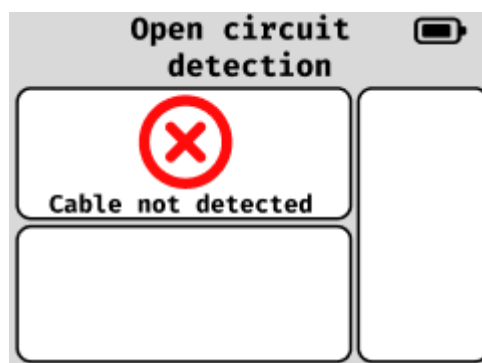
- Connect the black test probe to the receiver.
- With the cable cut, probe any 2 conductors.



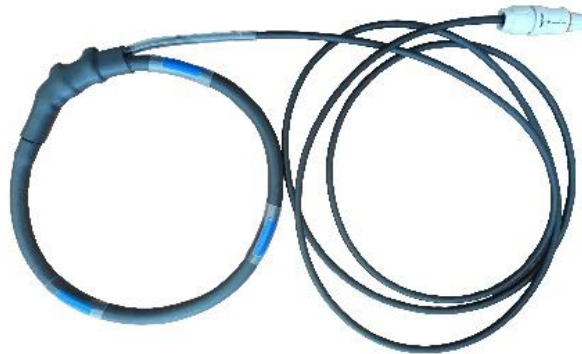
- Press the measurement button, a screen animation indicates that the command has been taken into account.
- Wait for the result (3 seconds), which is displayed on the screen:



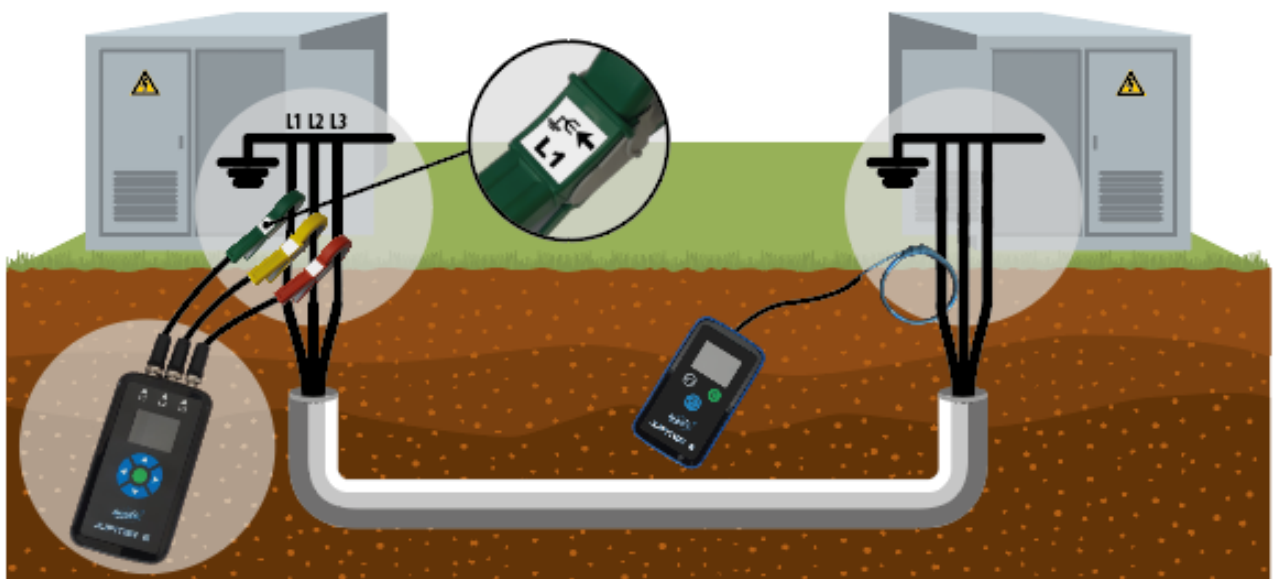
If the cable is not detected, the following message appears on the display:



### 3.2.1.3. Short circuit conductor identification and short circuit continuity mode

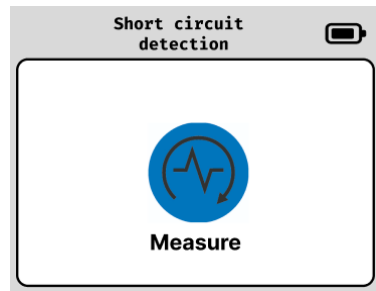


JPRE\_CAP\_410

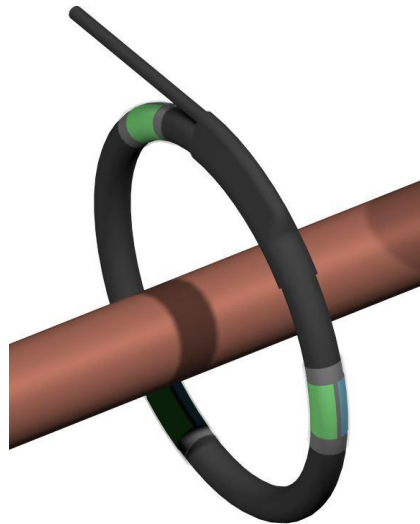


**Procedure for identifying short circuited conductors and short circuit continuity**

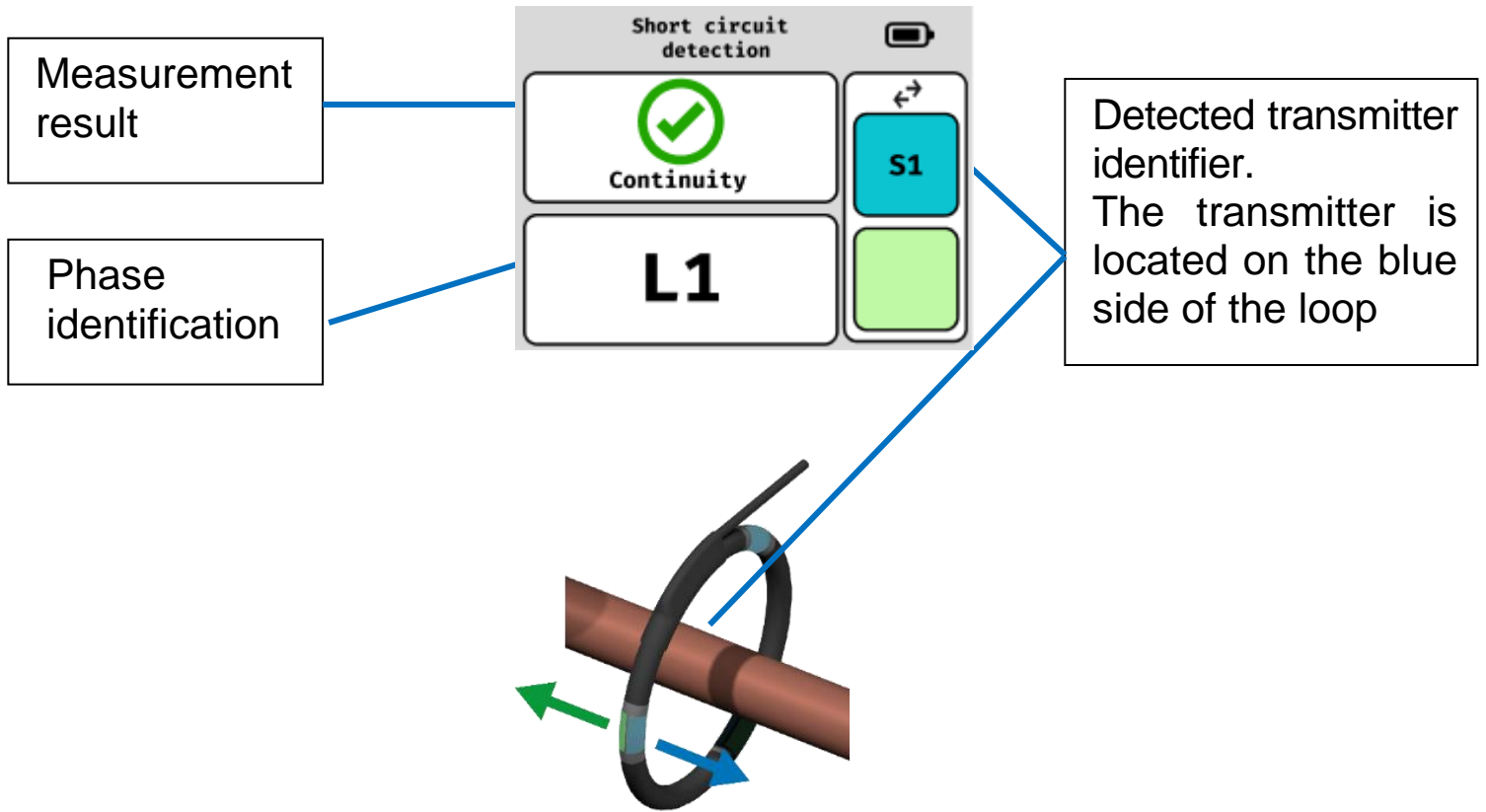
- Connect the short-circuited conductor location loop to the receiver, switch on the receiver and the **short circuit identification** mode will be displayed.



- Surround the conductor to be located, and lock the loop

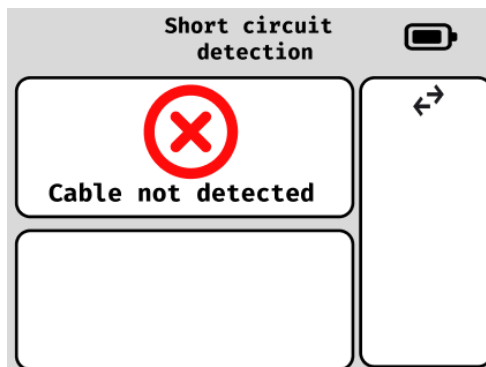


- Press measurement and a screen animation indicates that the command has been taken into account.
- 
- Wait for the result (3 seconds), which is displayed on the screen:



**The receiver identifies the conductor in the loop and establishes the continuity between the two ends of the short-circuited cable.**

If the cable is not detected, the following message appears on the display:



### **3.2.2.Batteries**

The receiver is powered by four 1.5V AA batteries. The battery level is shown on the top right of the screen.

Replacing the batteries: Remove the protective cover, unscrew the battery compartment on the underside of the receiver and replace them with similar batteries **(make sure they are inserted the right way)**.



**Important: replace the batteries with equivalent alkaline AA, 1.5V models.**

**Max. operating temperature +50°C**

**Do not replace batteries with Lithium type batteries**



## 4. TECHNICAL SPECIFICATIONS

Specification.	Transmitter	Receiver
Dimensions	205mm x 40mm x 110mm	170mm x 40mm x 95mm
Weight	0.530 Kg without the clamps 2.680 Kg with the clamps	0.420 Kg
Weight	<b>Transmitter and receiver in the case: 8.7 kg</b>	
Power supply	<b>Battery:</b> 6.4V 1.5Ah <b>Minimum autonomy:</b> 7h for continuous use at ambient temperature (20°C) 3h30/4h at -10°C <b>Charger:</b> 100 - 240 V AC ±10% 50/60 Hz Charge time: 1h30 Overvoltage category II Output: 5V 1.5A An external battery extends the operating time of the device	<b>4 Batteries:</b> Alkaline AA 1.5V Compliant with standards 60068-1 and 60068-5 <b>Minimum autonomy:</b> 2000 measurements
IP standard	<ul style="list-style-type: none"> <li>• Transmitter box with injection clamps connected IP54 (outdoor use possible).</li> <li>• Injection clamps IP20</li> </ul>	<ul style="list-style-type: none"> <li>• Receiver box with one sensor connected IP54.</li> <li>• The JPRE_SAB_200sensor is IP54</li> </ul>
Operating temperature	-10°C / + 50°C	-20°C / + 50 °C
Charging temperature	0°C / + 40°C	N.A.
Storage temperature	0°C / + 45°C	
Relative humidity	Max. 85% RH at 40 °C without condensation	
Degree of environmental pollution	3	
Altitude	Up to 2000 m.	
Injection clamp (JPR_PAI_310)	CAT III 600V	N.A.
Fuses	Internal	2A 500V 50KA fast 6.3 x 32 mm
Batteries	Power consumption during injection: up to 1.5 A depending on the length of the cable to be identified Contact MADE SA to replace the battery. The replacement must be carried out by an authorised and trained person	Alkaline AA 1.5V Consumption: 25mA at 6V Max. operating temperature: +50°

Marking: **CE**

Standardisation:

EN 61010-1 part1, EN 61010-2-032, EN 61010-2-030

IEC 61326-1 (2020)

Emission class: B

Immunity was qualified according to the industrial levels of the standard.



Emissions exceeding the levels required by this document may occur when the JUPITER E is connected to other equipment.

## **5.SERVICING, MAINTENANCE AND GUARANTEE**

### **5.1.Reminder**

Opening the devices is only authorised in the specific context of the operations described in this user guide.

Otherwise, it is strictly reserved to qualified staff approved by MADE. An annual inspection can be carried out on our premises.

Never use solvent or solvent-based products to clean the device and/or its accessories.

If the charger's power cord is damaged, it can be replaced with a standard cord that complies with the specifications (see §4 Technical specifications)

### **5.2.Guarantee**

Our general sales and guarantee terms and conditions are available on our website: [www.made-sa.com](http://www.made-sa.com) or sent by MADE SA at the customer's request.

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