

# Portable Insulation Fault Location System

## *ISOM PS-62*



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# 1. DOCUMENTATION

All the documentation on our portable insulation fault location system can be found on the SOCOMEC site at the following address: [www.socomec.com](http://www.socomec.com)









## 2. HAZARDS AND WARNINGS

The term "device" used in the paragraphs below refers to the ISOM PS-62.

The assembly, use, servicing (including cleaning) and maintenance of this equipment must only be carried out by trained, qualified professionals (in case of failure, please contact our Customer Services).

SOCOMECS is not responsible for any failure to follow the procedures given in these instructions.

### 2.1. Risks of electrocution, burns or explosion

	Caution: risk of electric shock	Ref. ISO 7000-0434B (2004-01)
	Caution: refer to the documentation whenever you see this symbol	Ref. ISO 7010-W001 (2011-05)
	DC and AC	IEC 60417-5033 (2002-10)
	DC	IEC 60417-5031 (2002-10)
	Fuse	IEC 60417-5016 (2002-10)
	The CE marking means that this product meets all the essential requirements of each applicable directive.	-
	The DEEE marking means that this product must not be disposed of with unsorted waste, but must be sent to separate collection facilities for reuse and recycling.	-
	The RoHS China marking means that this product is without environmental risks during its period of use.	-

- This device must only be installed and serviced (cleaning with a dry cloth) by qualified personnel who have in-depth knowledge of installing, commissioning and operating the device and who have had appropriate training. He or she should have read and understood the various safety measures and warnings stated in the instructions.
- Always follow the sequence of the different stages when connecting and disconnecting the device on the system, to protect against the risk of electric shock.
- Before cleaning or changing the battery, the device must be disconnected from the electrical system to avoid the risk of electric shock.
- Only accessories authorised or recommended by SOCOMEC may be used in association with the device.
- The instructions are valid together with the specific instructions for the device.
- The device is designed only for its intended purpose as set out in the instructions.
- This device is not designed to be repaired by the user.
- For any questions related to the disposal of the device, please contact SOCOMEC.
- Qualified and trained personnel must wear PPE while using the PS-62 system.
- The devices are designed for indoor use.
- During installation, the safety of any system integrating the device is the responsibility of the system installer.
- Any use of a battery other than one stipulated by SOCOMEC is forbidden – risk of explosion (batteries allowed: VARTA, VKB 56637 502 017 or ENIX, MGL00575 5200 mAh 3.6).
- ISOM JP-62: Socomec recommends the use of an external Li-Po battery, such as the ANSMANN Powerbank 20.8 or an equivalent.
- In the event of a shock from the battery, stop using the battery and replace it with a new one.
- Use Socomec clamps P-20, P-52 and P-120 together with locating device Isom FP-60.
- Use Socomec connection cable sets references 4725 0293 and 4725 0291.
- Remove the test leads from the product before opening the battery compartment lid.
- Do not use the device in the vicinity of explosive gases or vapours
- Do not apply more than the rated voltage shown on the device, between the terminals or between the terminals and the earth.
- Do not use the device or test leads if they appear to be damaged.
- When using test leads or probes, keep your fingers behind the finger guards.
- The sole purpose of the device is to measure on a low voltage electrical network. The device is not designed to perform measurements on a high voltage electrical network.











Do NOT clamp or pull out NON-INSULATED conductors carrying DANGEROUS VOLTAGE which could cause an electric shock, burn or arc flash. Ref. IEC 61010-2-032

**Failure to follow these precautions could result in serious injury or death.**

If there is a problem, please contact:  
 SOCOMEC, 1 rue de Westhouse, 67235 BENFELD, FRANCE  
 Tel. +33 3 88 57 41 41  
 info.scp.isd@socomec.com

## 2.2. Risks of damaging the unit

	Caution: risk of electric shock	Ref. ISO 7000-0434B (2004-01)
	Caution: refer to the documentation whenever you see this symbol	Ref. ISO 7010-W001 (2011-05)
	DC and AC	IEC 60417-5033 (2002-10)
	DC	IEC 60417-5031 (2002-10)
	Fuse	IEC 60417-5016 (2002-10)
	The CE marking means that this product meets all the essential requirements of each applicable directive.	-
	The DEEE marking means that this product must not be disposed of with unsorted waste, but must be sent to separate collection facilities for reuse and recycling.	-
	The RoHS China marking means that this product is without environmental risks during its period of use.	-

To ensure that the unit operates correctly, make sure that:

- The unit is correctly installed.
- The auxiliary power supply voltage indicated on the device: 230 VAC  $\pm$  10% (mains) or USB 5VDC (external battery).
- The network frequency indicated on the device: 50 or 60 Hz.
- There is a maximum voltage at the voltage input terminals of 480 VAC phase/phase or 480 VAC phase/neutral or 480 VDC for the JP-62, 600 VAC and DC phase/earth for the FP-60.
- Equipment for measuring on networks in the overvoltage category (CATIII) (IMPORTANT: auxiliary power supply must be taken from a power source with overvoltage category II).
- the combination with the detection clamps and respecting the recommended maximum currents.
- Use ISOM JP-62, mounted in the transport case.

**Failure to respect these precautions could cause damage to the device.**

## 2.3. Responsibility

- Assembly, connection and use must be carried out in accordance with the installation standards currently in force.
- The unit must be installed in accordance with the rules given in this manual.
- Failure to observe the rules for installing this unit may compromise the device's intrinsic safety.
- The unit must be positioned within an installation which complies with the standards currently in force.
- Any cable which needs to be replaced may only be replaced with a cable with the correct rating.
- Despite constantly striving for quality in preparing this manual, errors or omissions are always a possibility and are not the responsibility of SOCOMEC.
- The disconnection device for the JP-62 is the power cable socket.
- The disconnection device must remain easily accessible.
- The JP-62 should be positioned so that the disconnection device can be operated at all times.

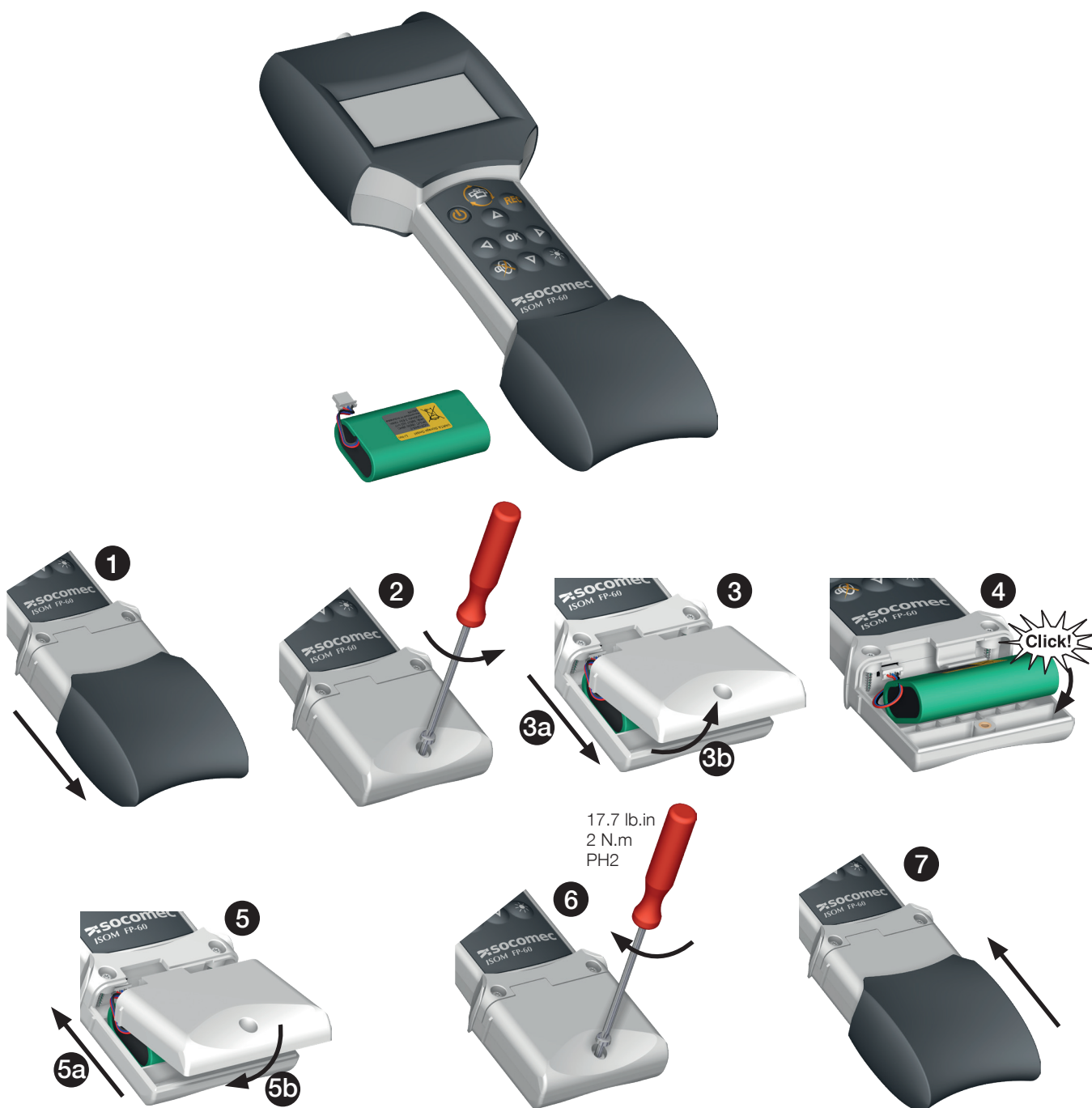
## 3. BEFORE YOU START

### 3.1. Checking all the parts

To ensure the safety of people and the device, please carefully read the contents of these instructions before installation. Check the following points as soon as you receive the package containing the unit, one or several sensors:

- The packaging is in good condition
- The device has not been damaged during transit
- The device reference matches your order
- The case includes all the ordered parts (see page 8)

### 3.2. Inserting the battery inside ISOM FP-60



## 4. INTRODUCTION

### 4.1. About ISOM PS-62

The ISOM PS-62 case is designed to locate insulation faults on a neutral IT electrical system. It can also measure 50Hz leakage currents in TT and TNS systems.

This case is used together with ISOM Digiware L-60 devices permanently installed on the LV electrical distribution network.

The ISOM PS-62 case can also be autonomous, using all the integrated accessories:

- ISOM JP-62 generates the location signal
- With ISOM FP-60 identifies the circuit with the insulation fault
- The various differential measuring are measuring the location signal
- The network connection kits (cables, grip-wires) for ISOM JP-62 and ISOM FP-60

### 4.2. System components

 <p>Portable insulation fault location system (PIFLs) ISOM PS-62 <b>4725 0211</b></p>	 <p>ISOM Digiware JP-62 portable location current injector (PLCI) <b>4725 0221</b> Cable set for ISOM JP-62 <b>4725 0293</b></p>	 <p>Portable insulation fault locator (PIFL) ISOM FP-60 <b>4725 0230</b> Cable set for ISOM FP-60 <b>4725 0291</b></p>
 <p>Detection clamp ISOM P-20 <b>4794 1020</b></p>	 <p>Detection clamp ISOM P-52 <b>4794 1052</b></p>	 <p>OPTIONAL: Detection clamp ISOM P-120 <b>4794 1120</b></p>



# 5. DESCRIPTION OF THE PRODUCT

## 5.1. Portable location current injector ISOM JP-62

### 5.1.1. Front view



- Ethernet and USB connections are defined as SELV (safety extra-low voltage).
- The auxiliary power supply should be connected to an earthed socket.
- The "INJ START/STOP" pushbutton on the front of the L-60 takes precedence over the "INJ START/STOP" switch on the JP-62. We recommend you avoid using the pushbutton in normal operation.
- When the equipment is powered by the external battery, it cannot be turned off with the ON/OFF button.
- The device is not designed to check for lack of voltage (VAT). Please use suitable equipment for this.

**Note:** The "INJ START/STOP" pushbutton on the front of the L-60 takes precedence over the "INJ START/STOP" switch on the JP-62. We recommend avoiding the use of this pushbutton in normal operation.

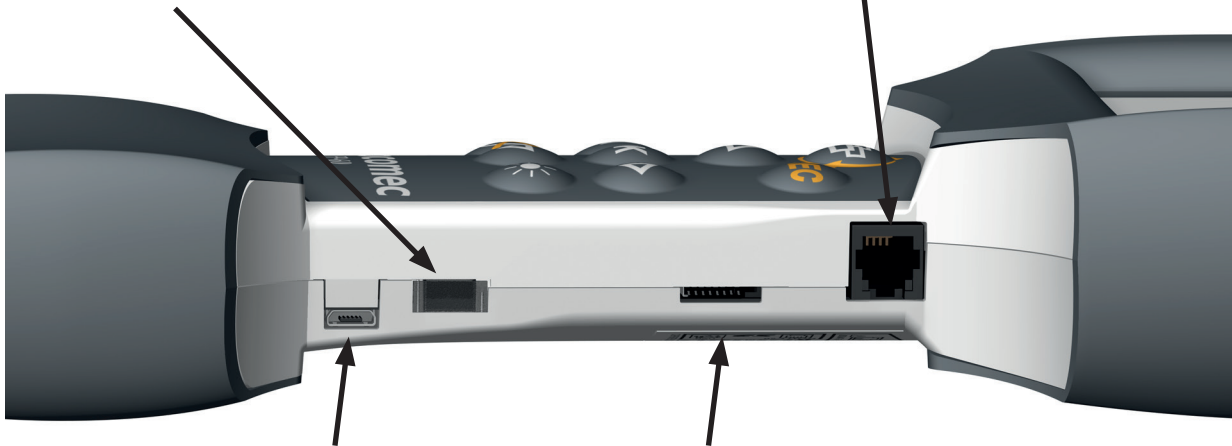
## 5.2. Portable insulation fault locator ISOM FP-60

### 5.2.1. Side view

LED:

- On: the device is charging
- Off: the device is charged (if USB is connected)

• RJ9 port: Not used



• USB port: to charge the device

Type of USB charger delivered with the device and specified by SOCOMEC: CUI, SMI10-5-V-I38

#### CAUTION

Cannot retrieve data



Do not charge the device during the fault location process

Always insert the USB connector gently as it is sensitive: any improper connection is the responsibility of the user.

Ensure there is enough load before using the ISOM FP-60

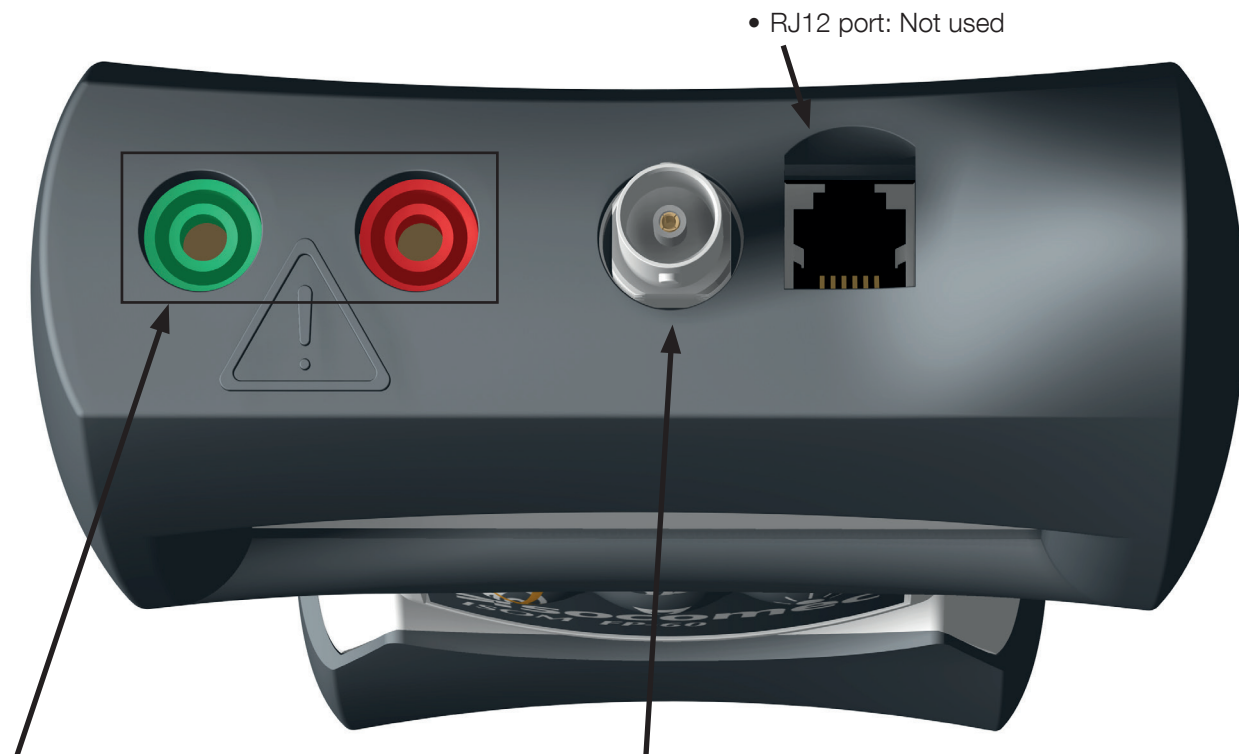
• SD card to store logs (screenshots in BMP format)

Examples of compatible SD cards:  
micro SD card (from 4 to 32 GB):

- TRANSCEND,  
ref TS4GUSDHC10 4 GB microSDHC, class 10
- INTEGRAL,  
ref TSRASPI10-32G 32GB microSDHC, class 10

# Portable insulation fault locator ISOM FP-60

## 5.2.2. View from above



• RJ12 port: Not used

- Power plug between the active and earth conductor, connection mode for measuring: 4mm banana plug

- Connection BNC of the detection clamp

CAUTION



Max. voltage: 600V phase/earth in CAT. III

Use safety grip-wires with fuses recommended by SOCOMEC (2A gG)

CAUTION



Do not use a BNC/banana adapter! (risk of inadvertently connecting the network voltage to the BNC)

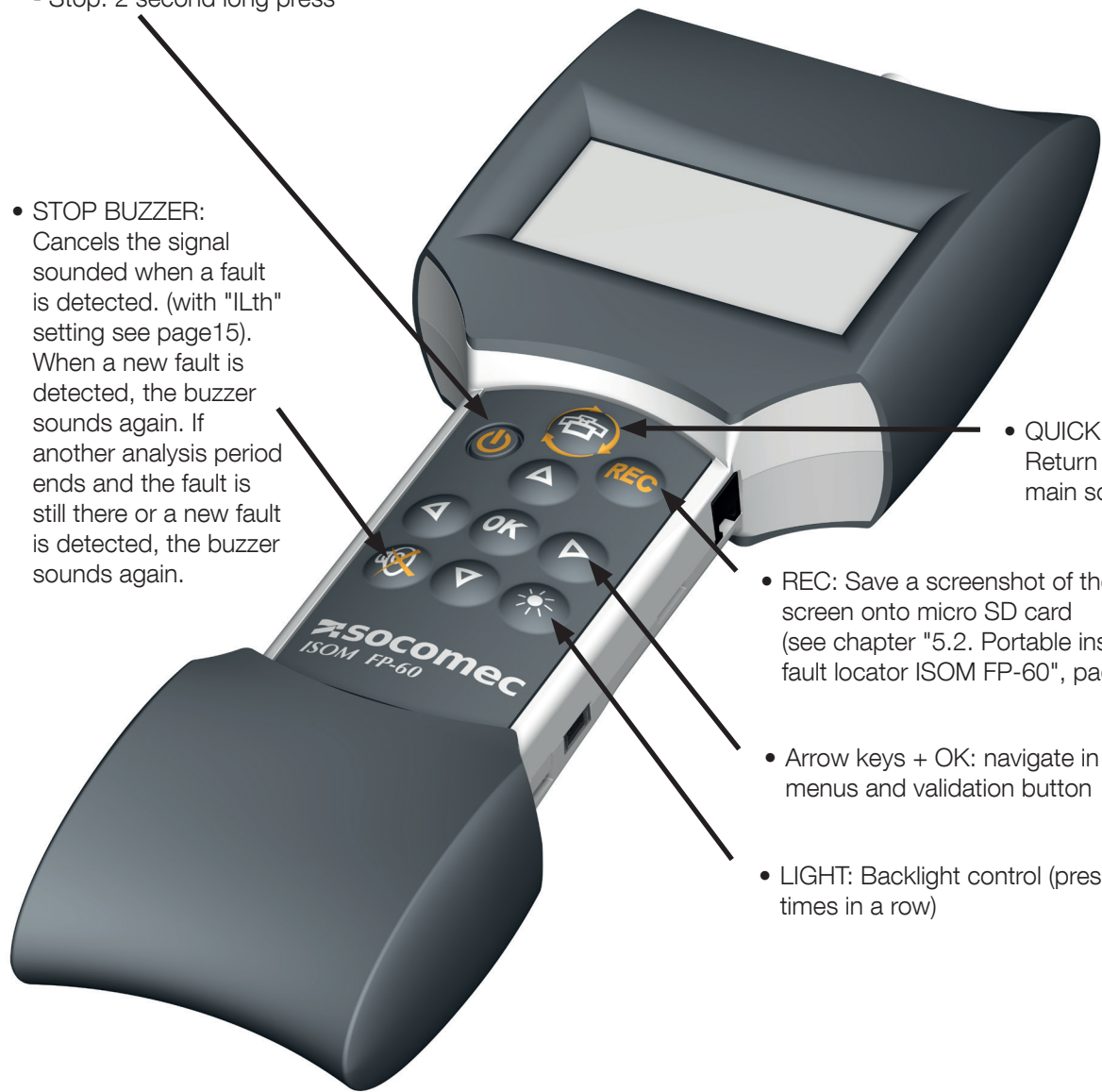


Note: the phase/earth voltage socket should not show readings of 50Hz. This voltage plug can only be used to find an unearthed IT system fault. The inputs/outputs (outside of voltage measuring channels) are defined as SELVs (safety extra-low voltage).

### 5.2.3. Front view

- M/A: start and stop:
  - Start: quick press
  - Stop: 2 second long press

- STOP BUZZER:  
Cancels the signal sounded when a fault is detected. (with "ILth" setting see page15).  
When a new fault is detected, the buzzer sounds again. If another analysis period ends and the fault is still there or a new fault is detected, the buzzer sounds again.



- QUICK ACCESS:  
Return to the main screen

- REC: Save a screenshot of the current screen onto micro SD card (see chapter "5.2. Portable insulation fault locator ISOM FP-60", page 10)

- Arrow keys + OK: navigate in the menus and validation button

- LIGHT: Backlight control (press several times in a row)

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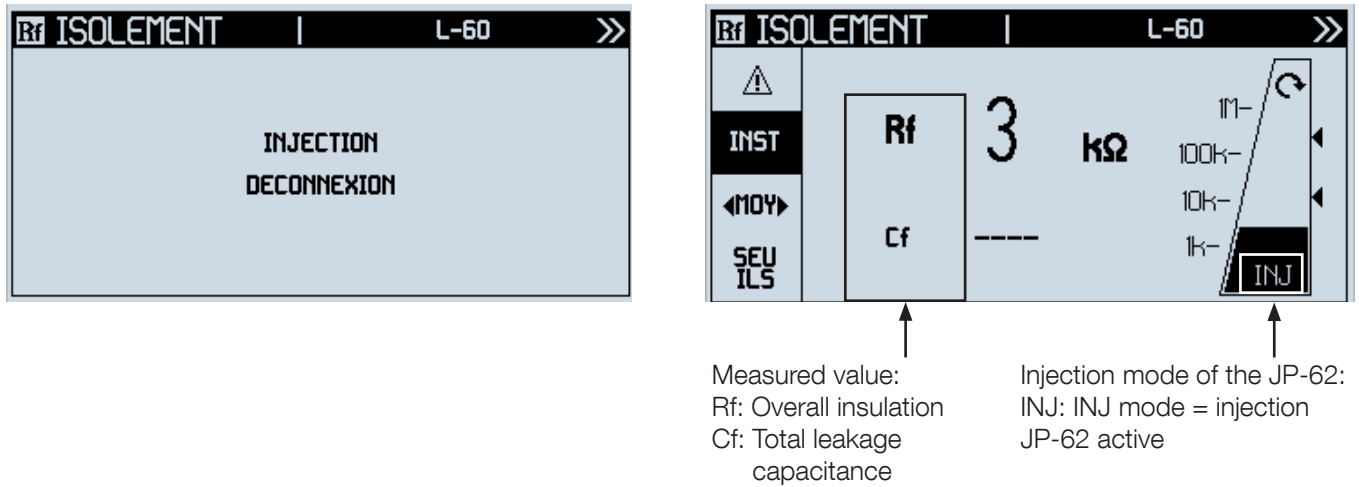
 Note : the buzzer remains active when the fault has disappeared. This is particularly useful in the context of locating intermittent faults.

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## 6. DESCRIPTION OF THE SCREENS

### 6.1. ISOM JP-62

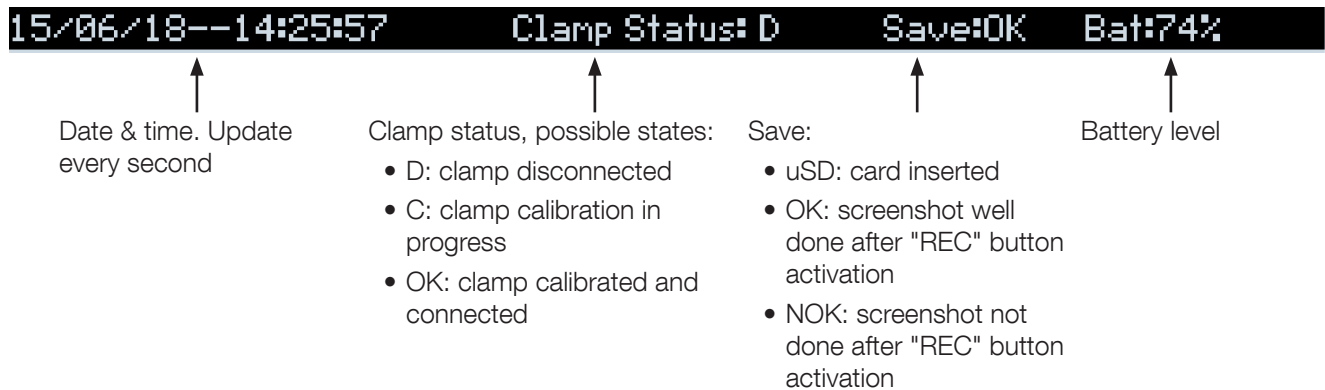
Injection disconnection: No JP-62 locating current injection Mode INJ: Location current injection activated on the JP-62



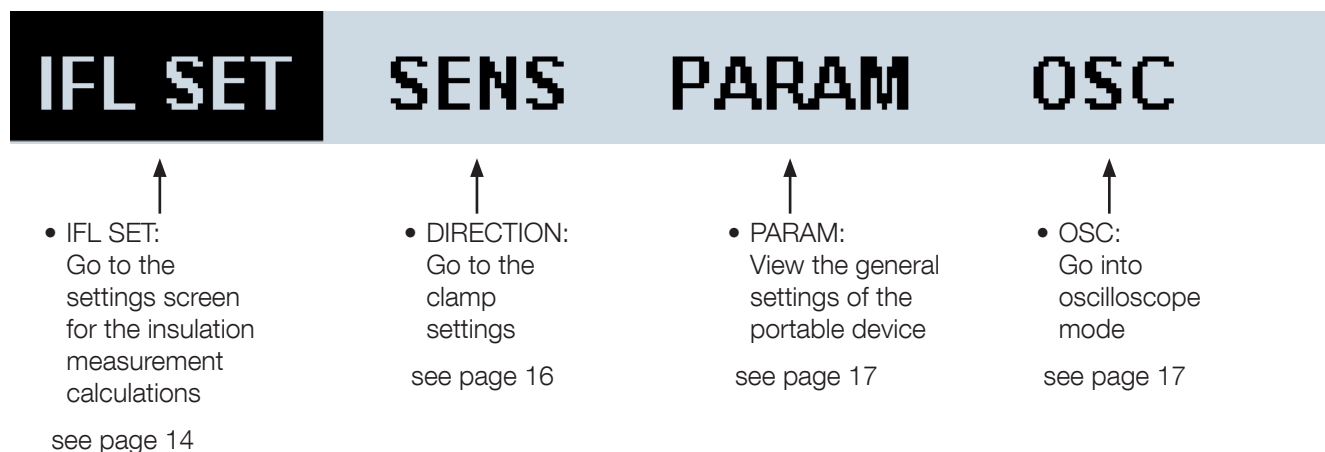
For more details on the HMI on ISOM JP-62, see "ISOM Digeware Screen" ref. 547301

### 6.2. ISOM FP-60

#### 6.2.1. Top banner

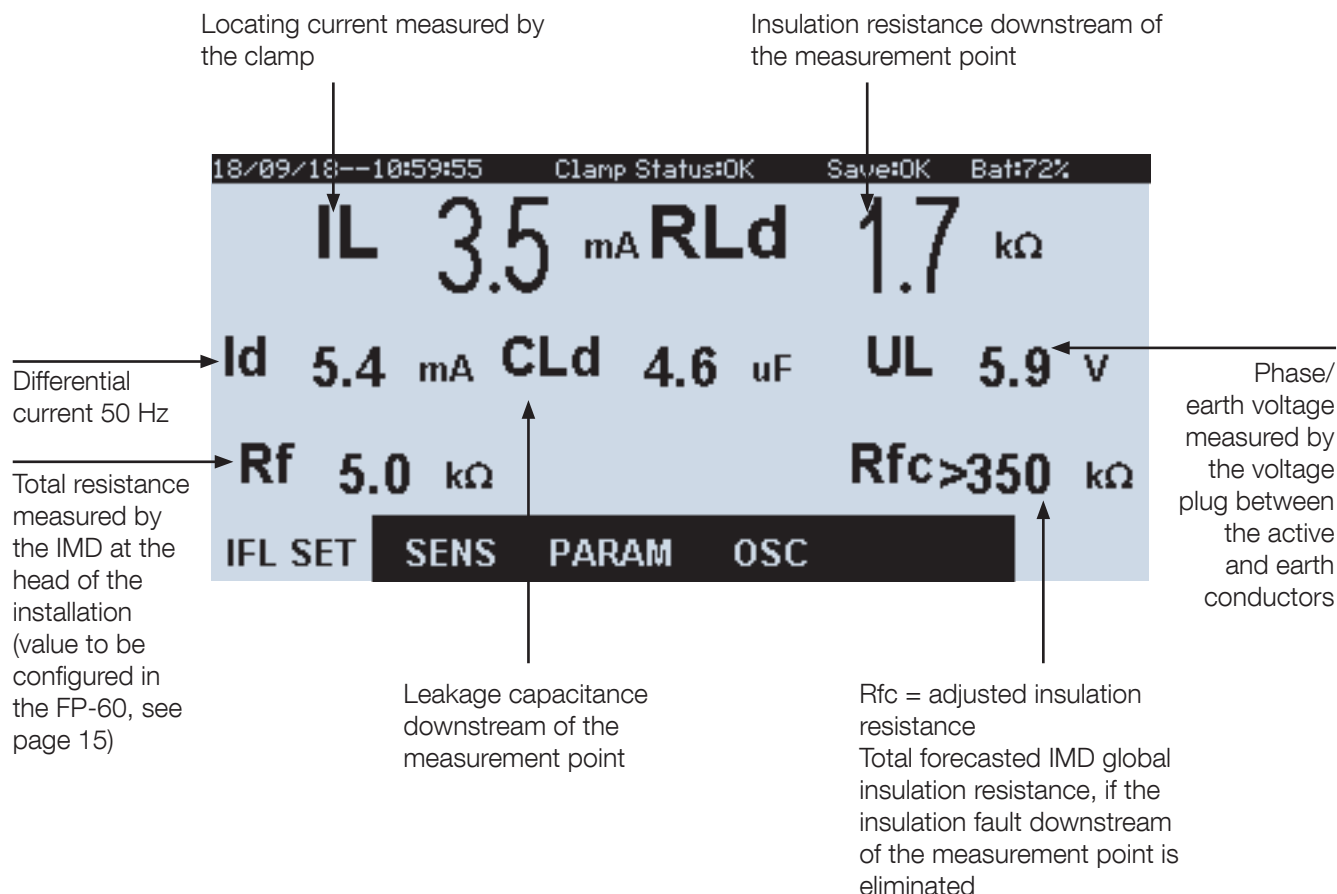


#### 6.2.2. Bottom banner



### 6.2.3. PIFL screen

This screen shows the main data related to the system fault location.

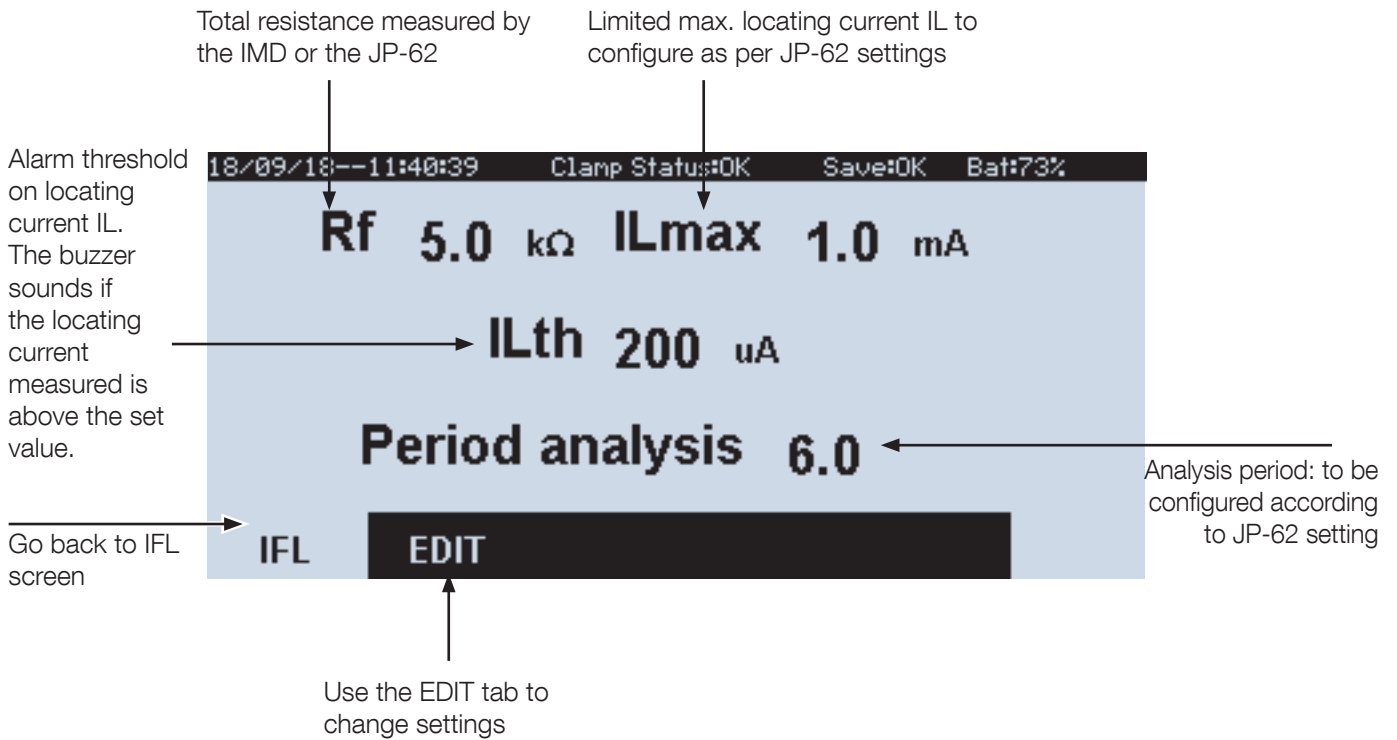


ACCESSIBLE VALUES	CLAMP CONNECTION	CLAMP CONNECTION + VOLTAGE PORTS
IL	●	●
RLd		●
Id	●	●
CLd		●
Vmc or UL		●
Rf		●
Rfc		●

- Note:**
- To update the values, you need to keep the clamp clamped on the circuit for a measurement period of around 12 seconds (configurable analysis period)
  - The values shown have a tolerance of 30%
  - Connecting the clamp only (w/o voltage connection) can locate clear faults
  - Connecting the clamp and the voltage connection allows us to interpret the insulation level of each circuit, up to 350 KOhms.
  - Press the "QUICK-ACCESS" key to go back to this PIFL screen at any time

## 6.2.4. PIFL SET screen

This screen shows and configures the settings related to the insulation measurement calculations.

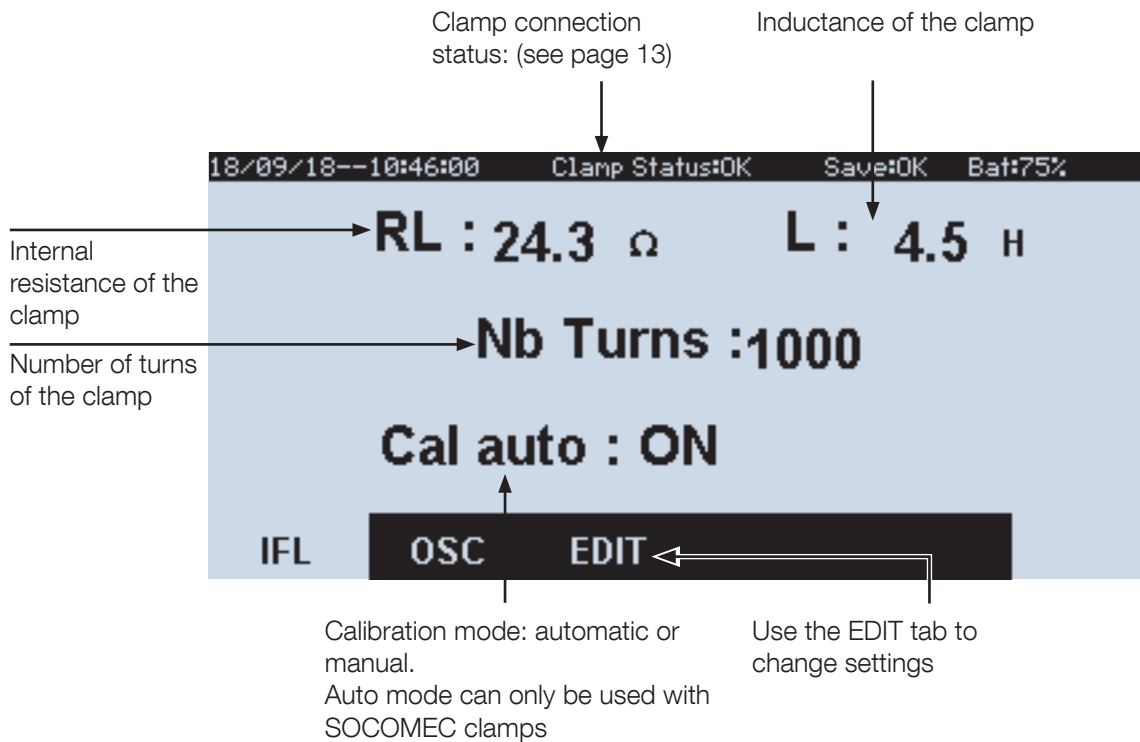


Note:

- "ILmax" corresponds to the recall of the value configured at the level of the injector and has no effect on the calculations. Parameter setting is carried out in mA steps, consistent with the adjustment range available on ISOM JP-62: 1, 5, 10 or 25mA. This setting is optional.
- The use of the "ILth" alarm threshold corresponds to a specific use linked to the detection of intermittent insulation faults:
  - on a low impedance network (<5 KOhms)
  - on a network with a high level of impedance but not capacitive (typical example: medical IT)

## 6.2.5. DIRECTION screen

This screen is for identifying and editing the settings of the connected detection clamp



- i** Note:
- The RL and L values are determined automatically when the detection clamp is calibrated.
  - The number of turns 1000 corresponds by default to the SOCOMEC P-20, P-52 and P-120 detection clamps (only use Socomec clamps).



## 6.2.6. PARAM screen

This screen shows and configures the general settings of the FP-60 fault-locating device

The image shows two screenshots of the PARAM screen. The top screenshot shows the following settings:

Parameter	Value
DATE FORMAT	DD/MM/YYYY
DATE SEPARATOR	/
DATE	18/09/18
TIME	11:44
BUZZER	OFF
...	

The bottom screenshot shows the following settings:

Parameter	Value
...	
TIME	10:46
BUZZER	OFF
SHUTDOWN DELAY	NEVER
VERSION	010001
OK	

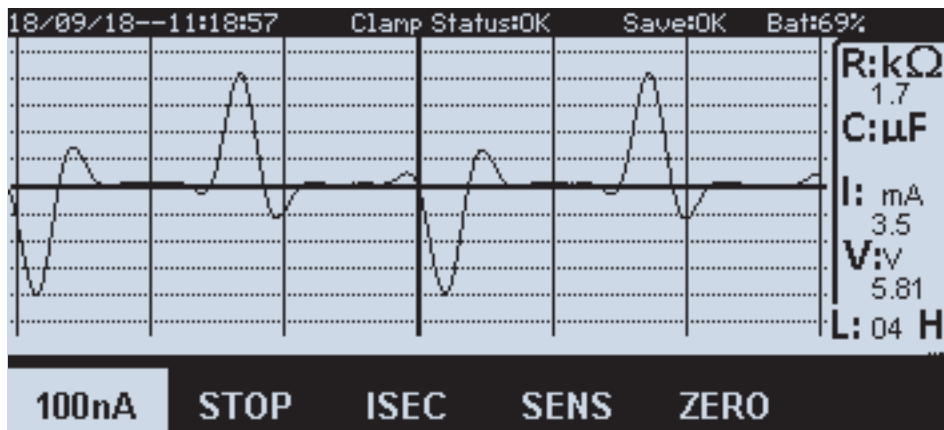
Annotations for the top screenshot:

- Select the date format: day/month/year or year/month/day
- Set the time
- Select date separator / or - or .
- Activate/deactivate the buzzer

Annotations for the bottom screenshot:

- Standby timer
- Software version installed on the FP-60 locating device

## 6.2.7. OSC screen

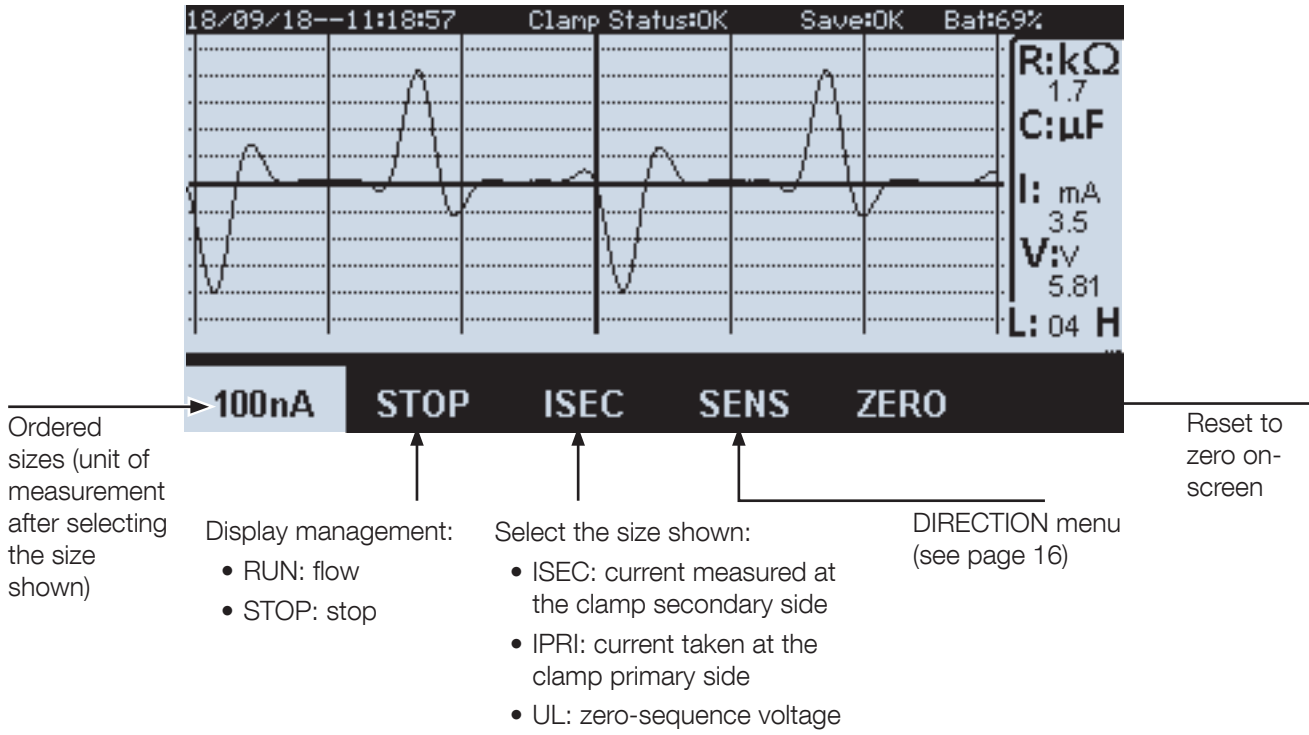


This screen shows the locating current waveform measured by ISOM FP-60.

By analysing the signal we can determine the following:

- R: insulation reading taken downstream of the clamp (if the input voltage of the ISOM FP-60 is used)
- C: leakage capacitance reading downstream of the clamp (if the input voltage of the ISOM FP-60 is used)
- I: value of the locating current measured by the clamp
- V: value of the zero-sequence voltage (if the voltage input of the ISOM FP-60 is used)
- L: Inductance value of the clamp

The graph depicting the signal shows the boost cycles which helps the locating process.

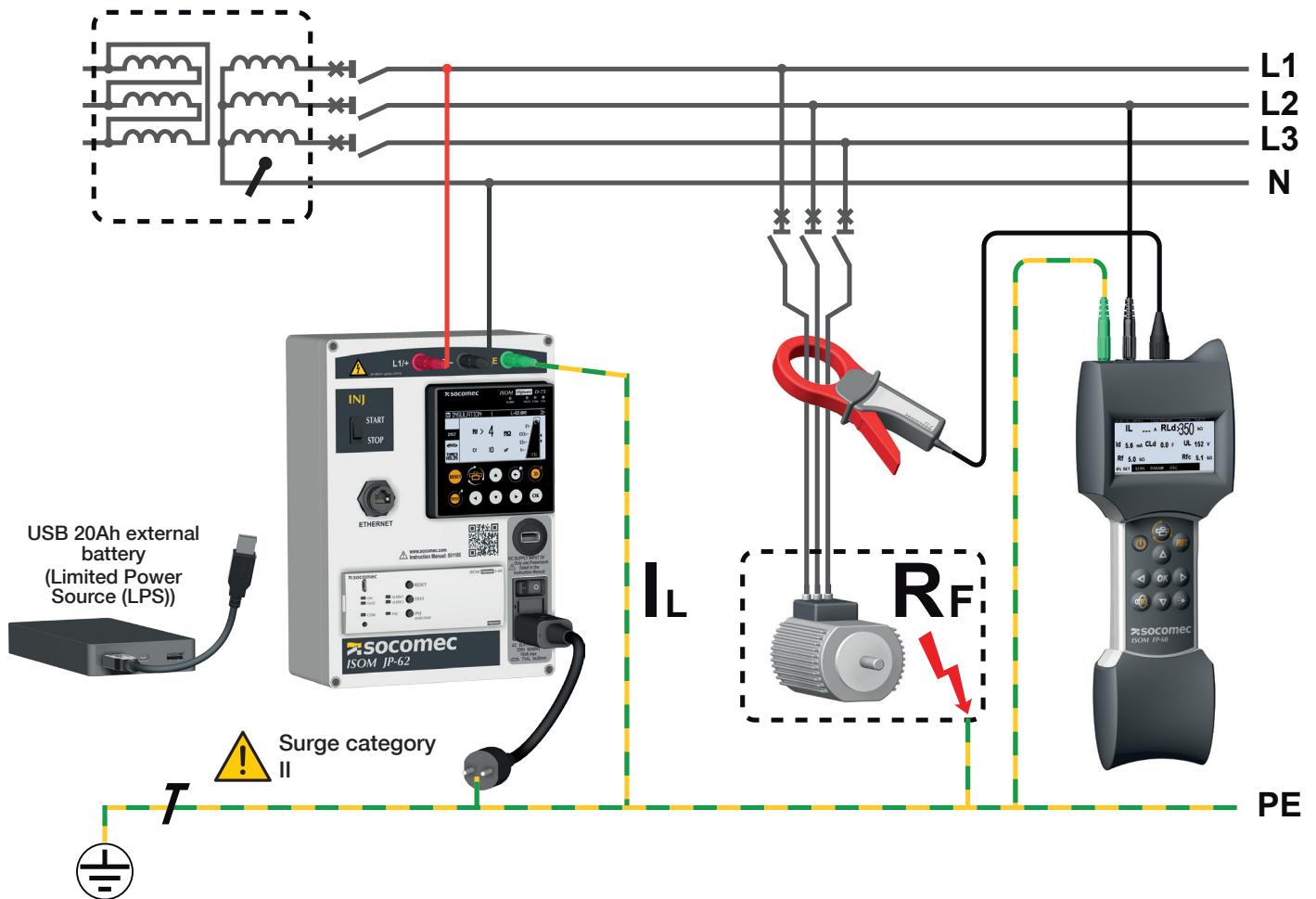


## 7. HOW IT WORKS

### 7.1. General concept

Step 1	Connection
Step 2	Clamp calibration
Step 3	Insulation measurement at PLCI + configuration of the network profile (distribution, control/command)
Step 4	Recording the insulation value read on the local IMD or on the ISOM JP-62 in the FP-60
Step 5	Start injection with the INJ START/STOP switch
Step 6	Use the clamp to check the insulation levels by circuit in order to locate insulation faults

## 7.2. Connection



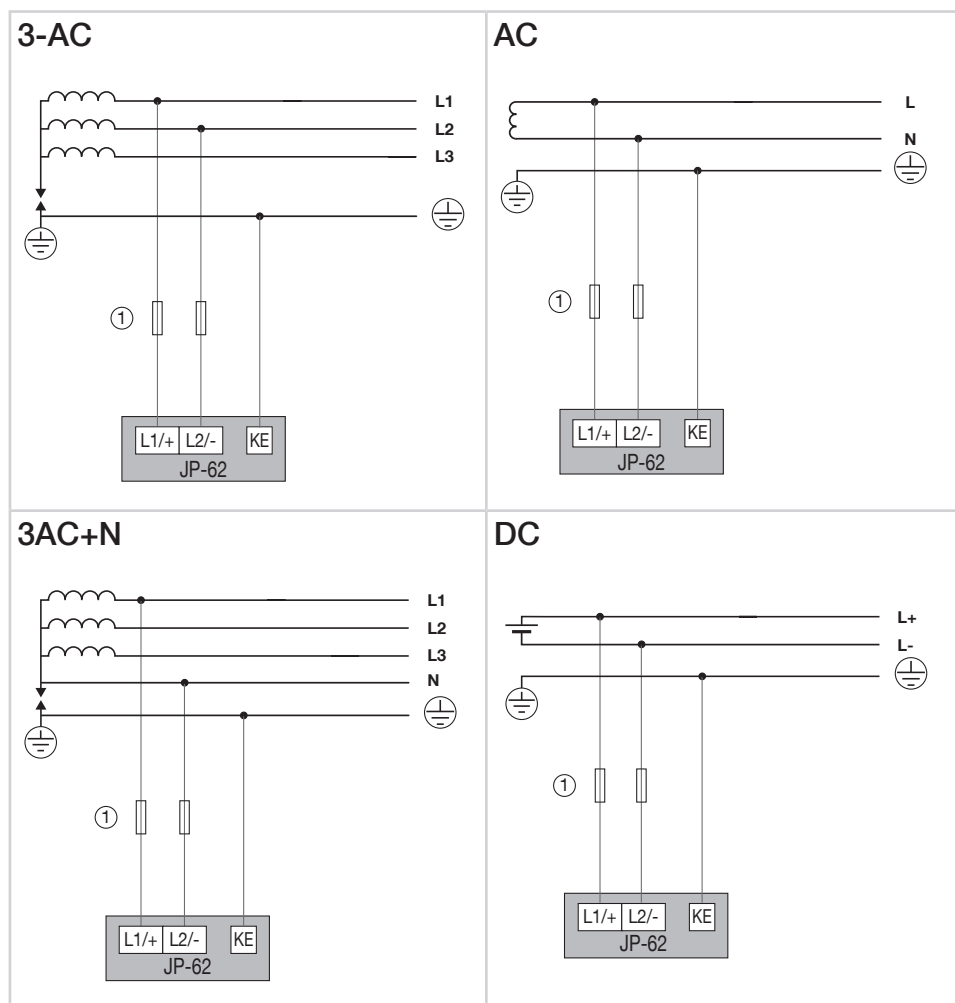
**!** Disconnect the IMD before any work with ISOM JP-62. Voltage range on the network monitored AC 24 ... 480 V / DC 24 ... 480 V. If, for usage reasons, the device is connected by terminals L1, L2 to a powered IT network, the terminal KE should not be separated from the protective conductor (PE). KE and FE should not be separated from the protective conductor (PE).

1. Connect the KE terminal to the system's protective earth conductor.
2. Connect terminals L1/L2 to 2 active conductors.
3. Connect the power plug (make sure the earth of the ISOM JP-62 auxiliary power supply is the same as the protective earth of the IT network being monitored) or the external battery via the dedicated USB port.
4. Connect the current measuring clamp.
5. Clamp all the active conductors you want to test in the clamp.
6. Connect a phase and the earth to the FP-60 (ignore this step for measuring mode only with the locating current).
7. Use the FP-60 (see the following sections).

### Disconnecting ISOM JP-62

1. Disconnect terminals L1/L2 from the active conductors.
2. Disconnect terminal KE from the system's protective earth conductor.
3. Disconnect the mains plug or the external battery.

## 7.3. Connection depending on the type of network



① 2 A gG fuses

## 7.4. Setting up the network profile

Depending on the type of network on which the fault search is taking place, first set up the network profile to adjust the measurement voltage and location current of ISOM JP-62.

As a general rule:

- "Control/command" profile = AC/DC voltage network less than 120V,
- "Distribution" profile = AC/DC voltage network above 120 V

You can make these settings on the JP-62 screen:

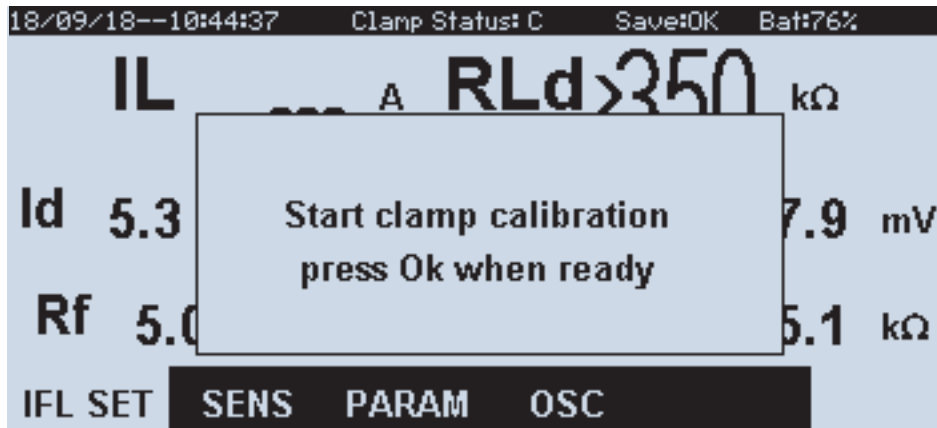
- Long-press the "HOME" button
- "SETTINGS" menu --> Code "100"
- "CONFIGURE A DEVICE" menu
- Select device "Product\_6 ID (...)"
- "INSULATION MEASUREMENT" menu
- Choose the profile "COMMAND CIRCUIT" or "DISTRIBUTION", then confirm with "SUBMIT SETTINGS"
- Press "QUICK-ACCESS" to go back to the main screen.

---

## 7.5. Clamp calibration

When the clamp is disconnected, status "D" appears. To start the calibration:

1. Connect the current measuring clamp to the connector located on top of the locating device
2. When the clamp is connected, the status goes to "C" and the screen below appears



To ensure accurate calibration, **avoid moving the clamp during the calibration phase, this must be done without load** (ideally, put your devices into standby). Install all the equipment and press OK. Once the home screen appears, the status goes to "OK" and you can use your devices again.

IMPORTANT: Make sure detection clamp's airgap is clean (i.e. no grease, dust which can change the magnetic closure of the clamp's core).

---

## 7.6. Additional controls

When the clamp is calibrated, measure the insulation resistance at the JP-62 (or ISOM Digiware L-60).

Check the value shown on the IFLSET screen:

1. Press "QUICK-ACCESS"
2. Press "OK" to go to the "IFL SET" menu. The following screen appears
3. Browse and press "EDIT"
4. Check the readings for insulation / ILmax / ILth / period analysis



Note: the ISOM FP-60 analysis period must be set according to the table in Section 6.2.4. page 15

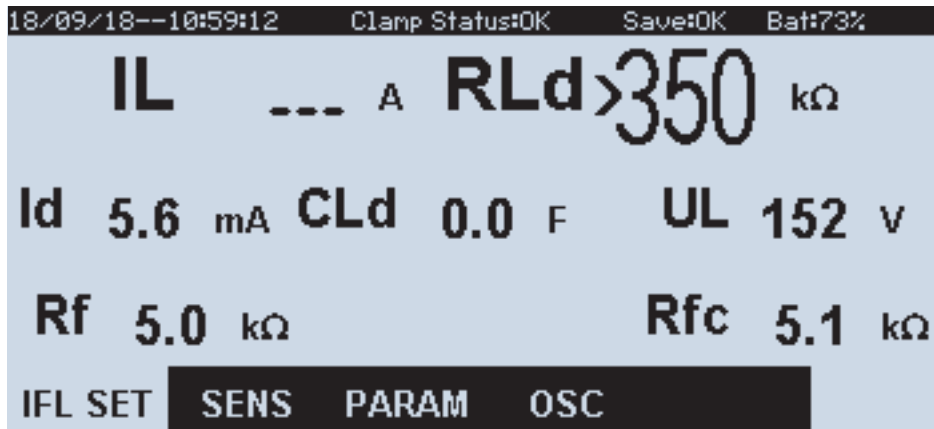
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## 7.7. Operation

### 7.7.1. Display with no insulation fault

In this case:

- Value IL not shown ("IL --- A)
- RLd > 350 KOhms

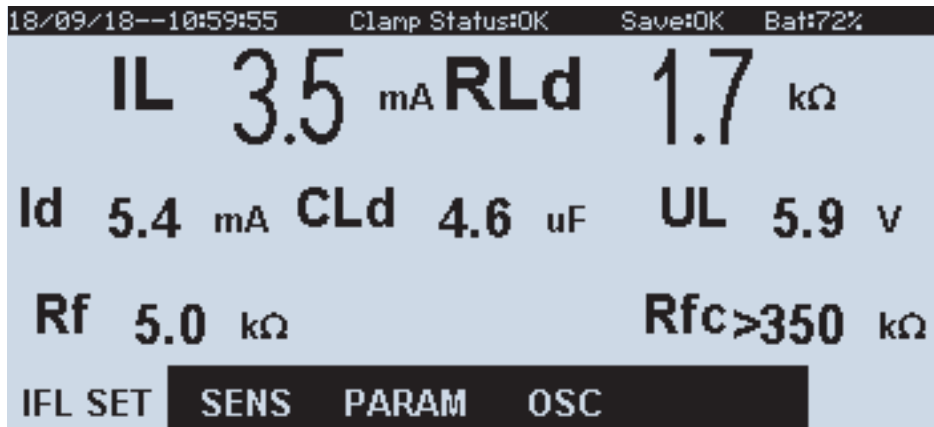


### 7.7.2. Display with an insulation fault being detected

In this case:

- Indicates a residual value of the locating current IL
- Indicates an insulation value

**Note:** The insulation value RLd is only significative if the voltage ports of the ISOM FP-60 are used. Otherwise, this value is not stable and cannot be used (same applies for UL, CLd and Rfc)



## 8. CHARACTERISTICS

### 8.1. ISOM JP-62

Power supply	
Power supply $U_s$	230 VAC 50-60 Hz overvoltage category II or 5 USB VDC with a limited power source (LPS) (recommended battery: ANSMANN Powerbank 20.8)
Battery back-up	about 7 hours (with permanent injection)
Power consumed	Max. 15 VA
Monitored network $U_n$	
Monitored network voltage $U_n$	AC 24 to 480 V / DC 24 ... 480 V CATIII
Frequency range	DC, 40 to 460 Hz
Injection	
Adjustable max. locating current	1, 5, 10 or 25 mA
Operating conditions	
Operating temperature	-5°C to +45°C
Storage temperature	-10°C to +60°C
Shockproof to level	IK06
Protection degree	IP40
Relative humidity max	60%
General characteristics	
Dimensions W x H x D	254 x 180 x 90 mm
Weight	1460 g

 The auxiliary power supply of the JP-62 must be connected to an overvoltage category II power supply.

### 8.2. ISOM FP-60

Power supply	
Power supply $U_s$	Li-On battery
Battery life	> 8 h
Monitored network $U_n$	
Monitored network voltage $U_n$	AC 24 to 600 V phase/earth or DC 24 ... 600 V CATIII
Frequency range	DC, 10 to 460 Hz
Measurement input: FLD mode	
Measurement range	40 $\mu$ A at 25 mA
Measurement input: AC differential mode	
Measurement range	3 mA at 10 A
Operating conditions	
Operating temperature	-5°C to +45°C (0°C to +45°C with battery full)
Storage temperature	-10°C to +60°C
Shockproof to level	IK06
Protection degree	IP40
Relative humidity max	60%
General characteristics	
Dimensions W x H x D	315 x 117 x 49 mm
Weight	680 g

### 8.3. Detection clamps

Insulation voltage (clamp Ø 20, 52 and 115 mm)	AC 600 V CAT III or AC 300 V CAT IV
<b>Clamp diameter 20 mm</b>	
Diameter	20 mm
Dimensions W x H x D	135 x 65 x 32 mm
Cable length	± 2000 m
Output connection	BNC sheet
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	275 g
<b>Clamp diameter 52 mm</b>	
Diameter	52 mm
Dimensions W x H x D	216 x 111 x 45 mm
Cable length	± 2000 m
Output connection	BNC sheet
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	680 g
<b>Clamp diameter 115 mm</b>	
Diameter	115 mm
Dimensions W x H x D	308 x 150 x 43 mm
Cable length	± 2000 m
Output connection	BNC sheet
Protection index (standard NF C 20-010, IEC 60529)	IP40
Weight	1010 g

### 8.4. Case PS-62

Type	Case
Dimensions W x H x D	546 x 347 x 247 mm
Material	Polypropylene
Protection degree	IP67
Weight (empty case)	7 kg
Weight (full case)	12 kg

### 8.5. Standards and safety

Product	EN/IEC 61557-9
Safety	Conformity with Low Voltage Directive 2014/35/EU of 26 February 2014 (EN 61010-1:2010)
Insulation coordination	Overvoltage category III – degree of pollution 2
EMC	Conformity with Directive CEM 2014/30/EU



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## 8.6. Other features

Environment	<ul style="list-style-type: none"><li>- Altitude <math>\leq 2000\text{m}</math></li><li>- Degree of pollution 2</li><li>- Relative humidity 90%</li><li>- Voltage network tolerance <math>\pm 10\%</math></li></ul>
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