

INSTRUCTION
MANUAL

ISOM PS-61

Portable fault-locating system

EN



[www.socomec.com/
operating-instructions](http://www.socomec.com/operating-instructions)

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1. DOCUMENTATION

All the documentation on the ISOM PIFL can be found on the SOCOMEC site at the following address:

www.socomec.fr



2. HAZARDS AND WARNINGS

The term "device" used in the paragraphs below refers to the ISOM PS-61.


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).

SOCOMEK shall not be held responsible for failure to comply with the instructions in this manual.

2.1. Risk of electrocution, burns or explosion

	Caution: risk of electric shock	Ref. ISO 7000-0434B (2004-01)
	Caution: refer to the accompanying documentation each time this symbol is shown	Ref. ISO 7010-W001 (2011-05)



- 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 SOCOMEK 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 SOCOMEK.
- Qualified and trained personnel must wear PPE while using the PS-61 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 SOCOMEK is forbidden – risk of explosion (batteries allowed: VARTA, VKB 56637 502 017 or ENIX, MGL00575 5200 mAh 3.6).
- In the event of an impact to the battery, do not use the battery any longer 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 0290 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
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Failure to take these precautions could cause death or serious injuries.

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

2.2. Risk of damaging the unit

	Caution: risk of electric shock	Ref. ISO 7000-0434B (2004-01)
	Caution: refer to the accompanying documentation each time this symbol is shown	Ref. ISO 7010-W001 (2011-05)

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%.
- 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-61, 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-61, mounted in the transport case.

Failure to respect these precautions could cause damage to the unit.

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 cutoff device for the JP-61 is the disconnectable power cable.

3. BEFORE YOU START

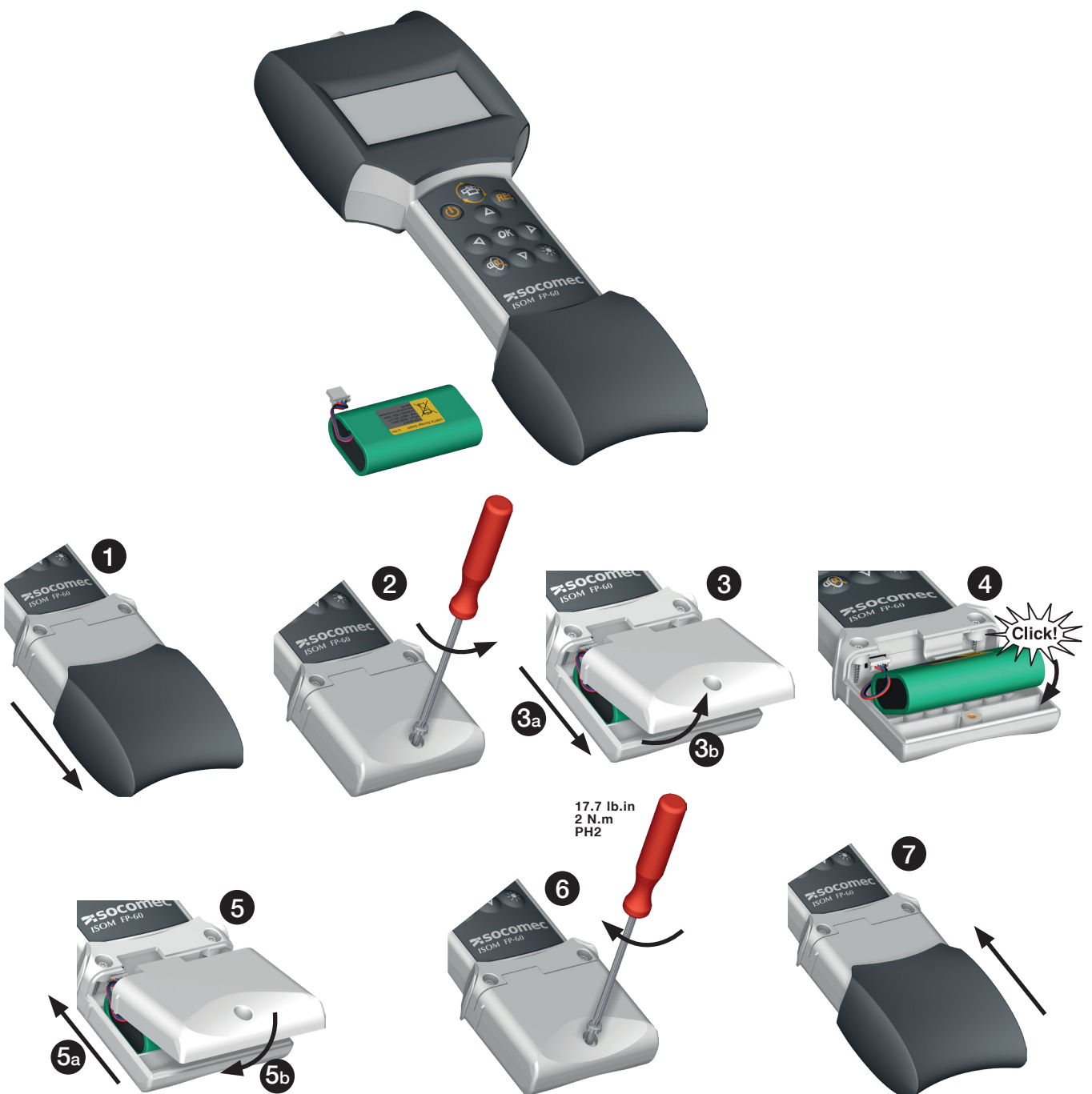
3.1. Checking all the parts

To ensure the safety of personnel and the product, 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 part number conforms to your order
- The case includes all the ordered parts (see page 8)

3.2. Inserting the battery ISOM FP-60



4. INTRODUCTION

4.1. About ISOM PS-61

The ISOM PS-61 case is designed to locate 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-61 case can also be automated, using all the integrated accessories:

- ISOM JP-61 boosts location signals
- With ISOM FP-60 you can show the network specifications and identify the circuit with the insulation fault
- The various differential measuring clamps
- The network connection kits (cables, grip-wires) for ISOM JP-61 and ISOM FP-60

4.2. System components

		
Portable locating system ISOM PS-61 4725 0210	ISOM Digiware JP-61 portable signal booster 4725 0220 Cable set for ISOM JP-61 4725 0290	Portable locating unit ISOM FP-60 4725 0230 Cable set for ISOM FP-60 4725 0291
		
Detection clamp ISOM P-20 4794 1020	Detection clamp ISOM P-52 4794 1052	OPTIONAL: Detection clamp ISOM P-120 4794 1120

5. DESCRIPTION OF THE PRODUCT

5.1. Portable ISOM JP-61 booster

5.1.1. Front view



- Ethernet and micro-USB ports are defined as SELV (safety extra-low voltage).
- The auxiliary power supply should be connected to an earthed socket.

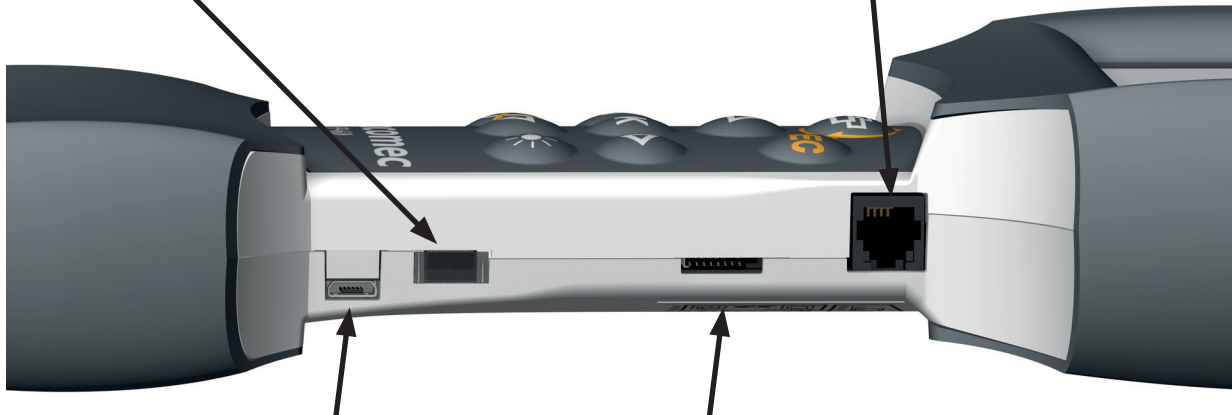
5.2. Portable locating unit ISOM FP-60

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

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

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

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

WARNING

Cannot retrieve data



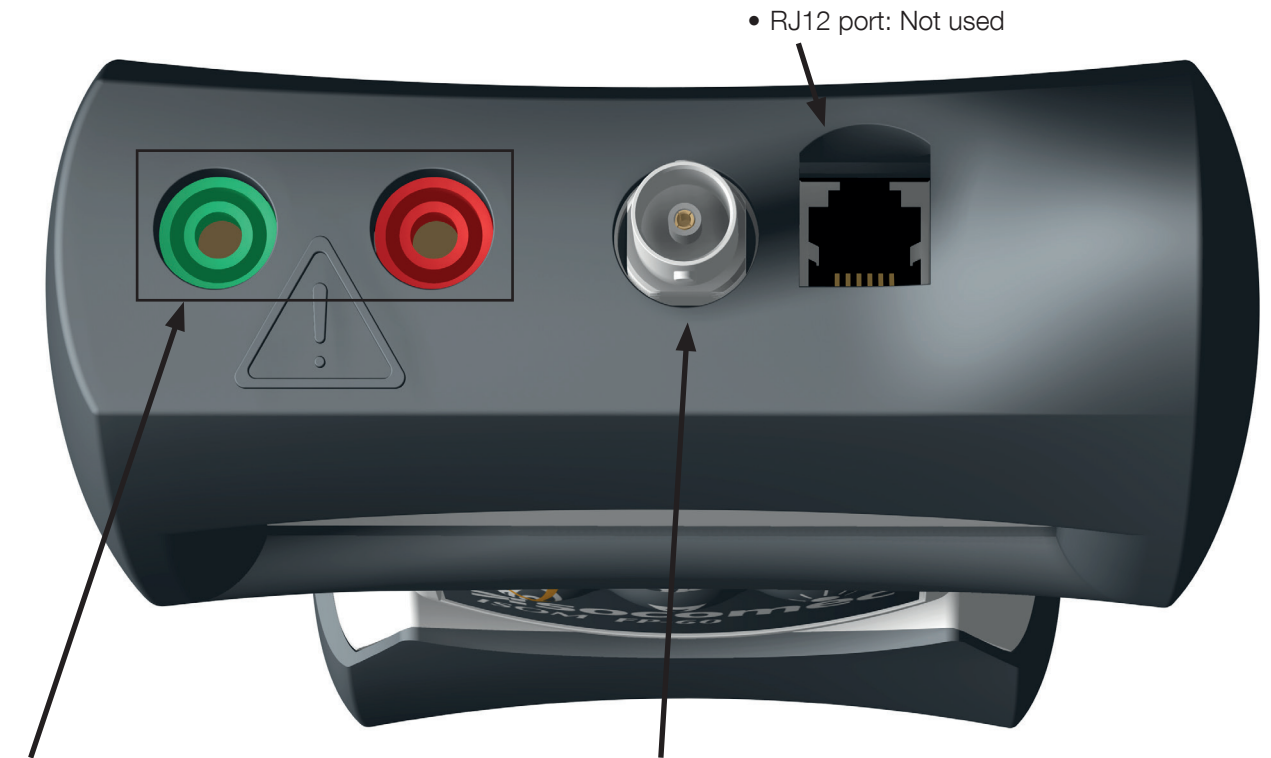
Do not charge the device during the fault-locating process

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

Portable locating unit ISOM FP-60

5.2.2. View from above



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

WARNING



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

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

- Connection BNC of the detection clamp

WARNING



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 IT 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: 1 second long press

- STOP BUZZER:
OK the signal sounded when a fault is detected. 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 page 10)

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

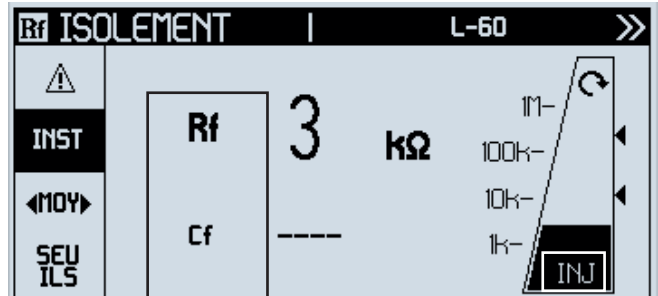
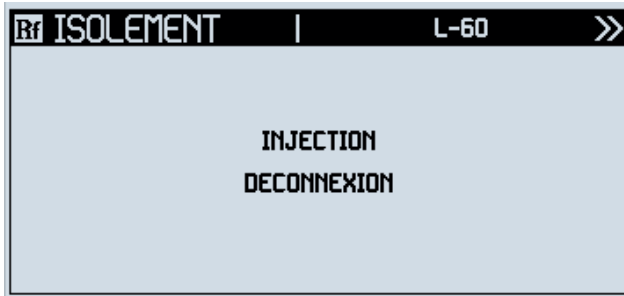
- LIGHT: Screen lighting controls (press several times in a row)

6. DESCRIPTION OF THE SCREENS

6.1. ISOM JP-61

Injection disconnection: No JP-61 voltage/current boost

Mode INJ: injects current of the JP-61



Measured value:
 Rf: Overall insulation
 Cf: Total leakage capacity

Boost mode of the JP-61:
 INJ: INJ mode = injection
 JP-61 active

For more details on the HMI on ISOM JP-61, see "ISOM Digiware Screen" ref. 547301

6.2. ISOM FP-60

6.2.1. Top banner



↑
 Date & time. Update every second

↑
 Clamp status, possible states:

- D: clamp disconnected
- C: clamp calibration in progress
- OK: clamp calibrated and connected

↑
 Save:

- uSD: card inserted
- OK: to save, long-press the "Rec" button
- NOK: if you do not want to save, press "REC"

↑
 Battery level

6.2.2. Bottom banner



↑

- IFL SET: Go to the settings screen for the insulation measurement calculations
see page 14

↑

- DIRECTION: Go to the clamp settings
see page 15

↑

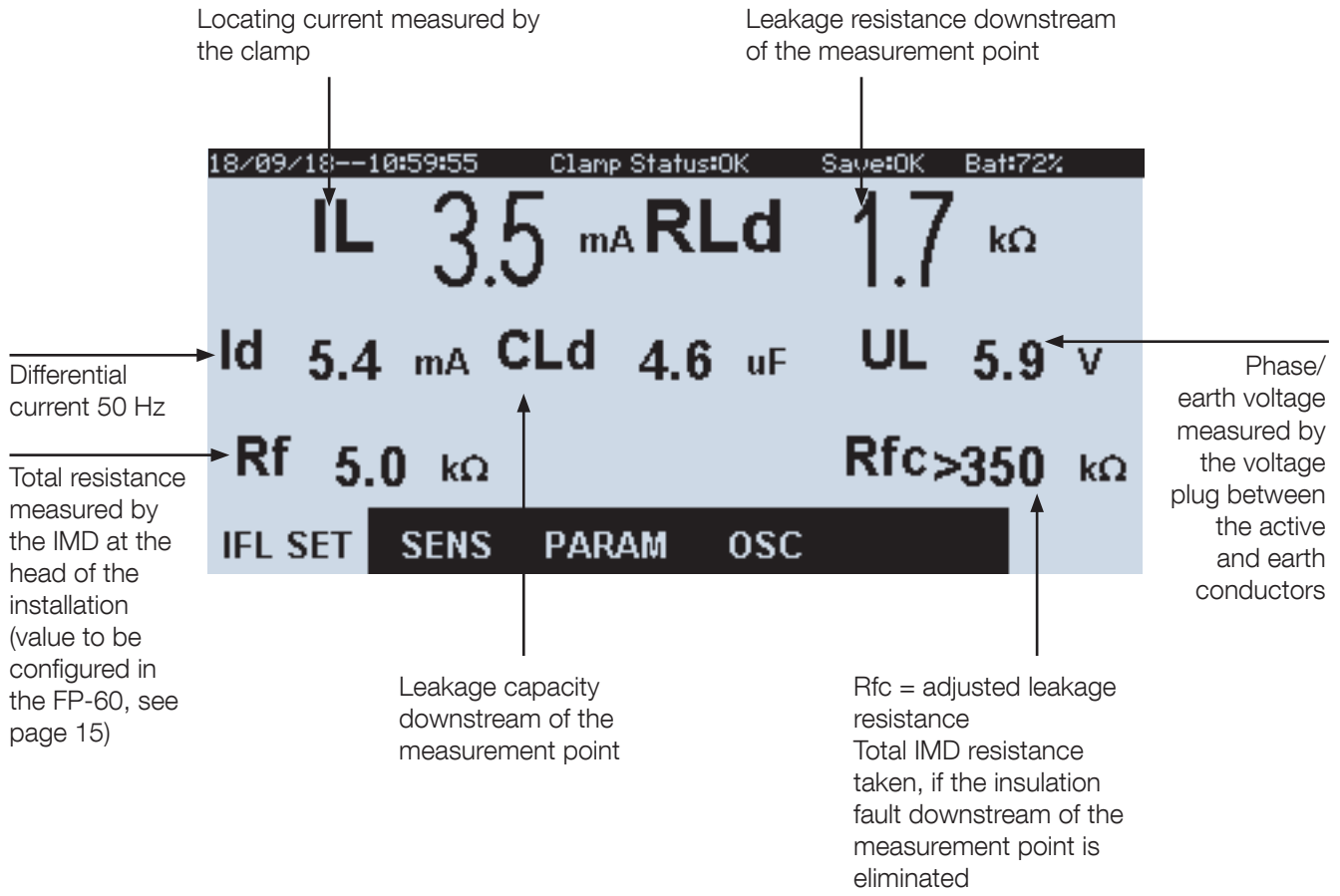
- PARAM: View the general settings of the portable device
see page 16

↑

- OSC: Go into oscilloscope mode
see page 16

6.2.3. IFL screen

This screen shows the key details relating to the system fault search.



Accessible values	Clamp connection	Clamp connection + voltage ports
IL	X	X
RLd		X
Id	X	X
CLd		X
Vmc or UL		X
Rf		X
Rfc		X

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 on its own can locate clear faults
- Connecting the clamp and the voltage plug allows us to interpret the insulation level of each circuit, up to 350 KOhms.
- Press the "QUICK-ACCESS" key to go back to this IFL screen at any time

6.2.4. IFL SET screen

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

Total resistance measured by the IMD or the JP-61

Limited max. locating current IL to configure as per JP-61 settings

Alarm threshold on locating current IL. The buzzer sounds if the locating current measured is above the set value.

Go back to IFL screen

Use the EDIT tab to change settings

Period of analysis: to configure following the JP-61 settings (for a DC network set the period of analysis of the L-60 at 24 s and 12 s on the FP-60)

6.2.5. DIRECTION screen

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

Clamp connection status: (see page 13)

Inductance of the clamp

Internal resistance of the clamp

Number of turns of the clamp

Calibration mode: automatic or manual. Auto mode can only be used with SOCOMEC clamps

Use the EDIT tab to change settings

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 first screenshot shows the following settings:

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

The second screenshot shows the following settings:

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

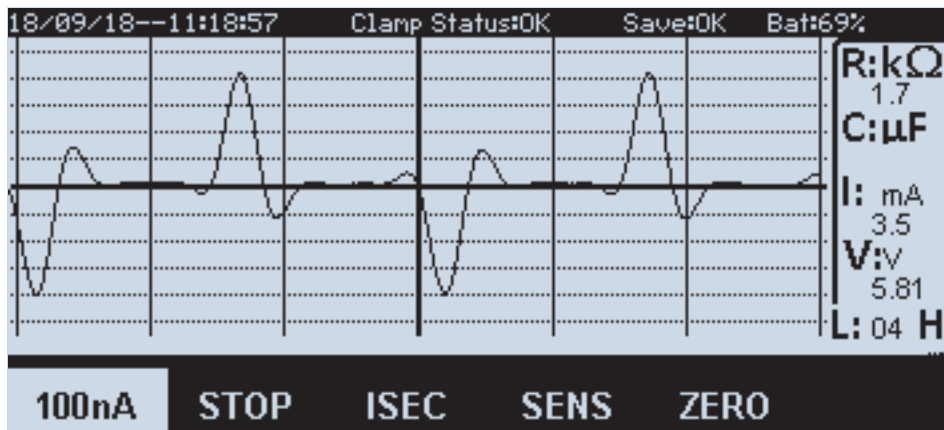
Annotations for the first screenshot:

- 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 second screenshot:

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

6.2.7. OSC screen

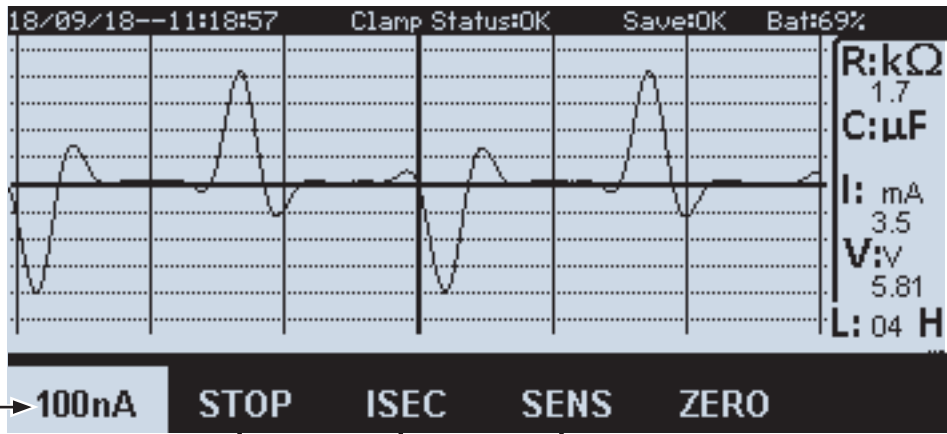


This screen shows the type of locating current measured by ISOM FP-60.

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 capacity 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.



Ordered sizes (unit of measurement after selecting the size shown)

Display management:

- RUN: flow
- STOP: stop

Select the size shown:

- ISEC: current measured at the clamp secondary section
- IPRI: current taken at the clamp primary section
- UL: zero-sequence voltage

DIRECTION menu (see page 15)

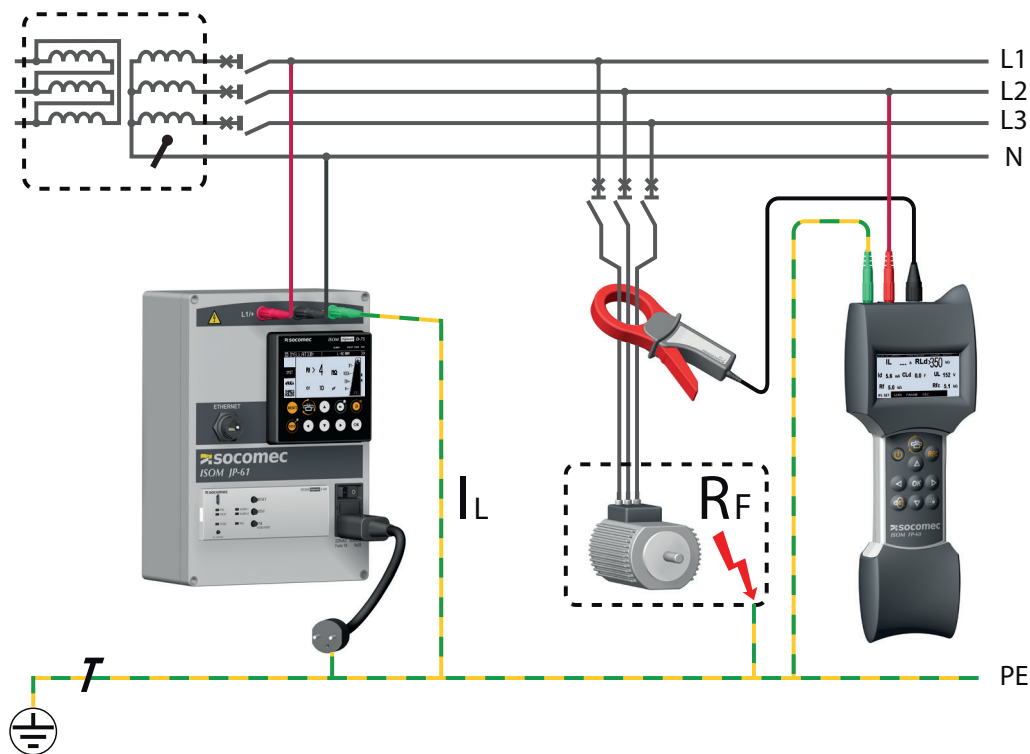
Reset to zero on-screen

7. HOW IT WORKS

7.1. General concept

Step 1	Wiring
Step 2	Clamp calibration
Step 3	Insulation measurement at booster level + configuration of the network profile (distribution, control/command)
Step 4	Records the insulation reading read on the local IMD or on the ISOM JP-61 in the FP-60 locating device
Step 5	Starts up the booster
Step 6	Use the clamp to check the insulation levels by circuit and to locate insulation faults

7.2. Connection



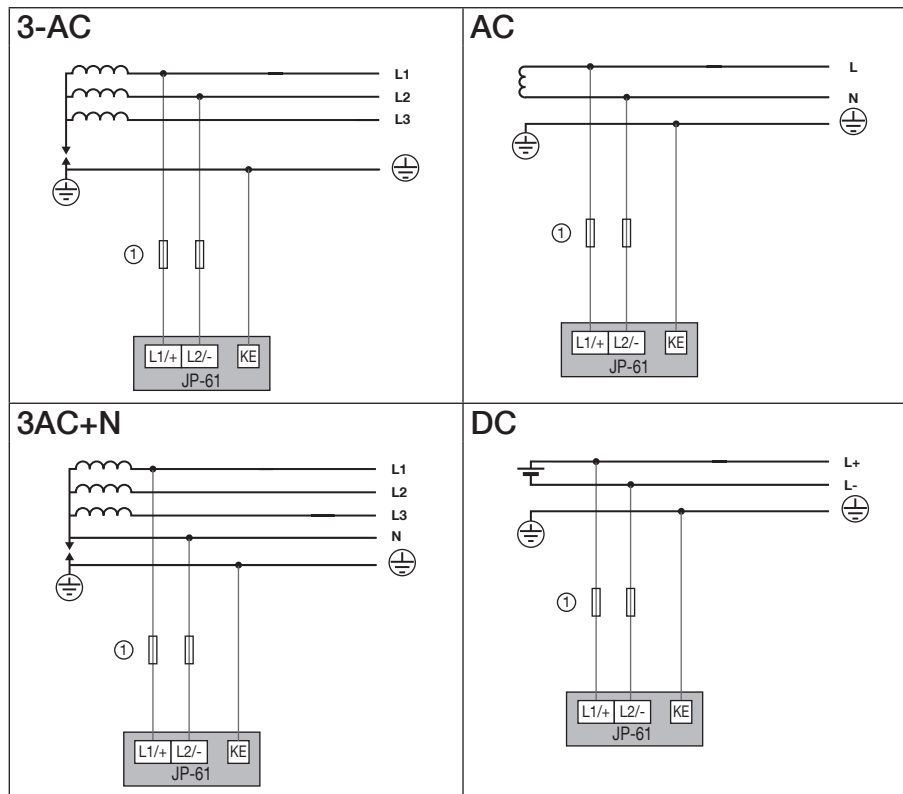
Disconnect the IMD and stop any work with ISOM JP-61. Voltage range on the network monitored AC 24 ... 480 V / DC 24 ... 480 V. If, for usage reasons, the device is connected by terminals L1, L2 to a powered IT network, the terminal KE should not be separated from the protective conductor (PE). KE and 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-61 auxiliary power supply is the same as the protective earth of the IT network being monitored)
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 on the locating current)
7. Use the clamp (see the following sections)

Disconnecting ISOM JP-61

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

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-61.

As a general rule:

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

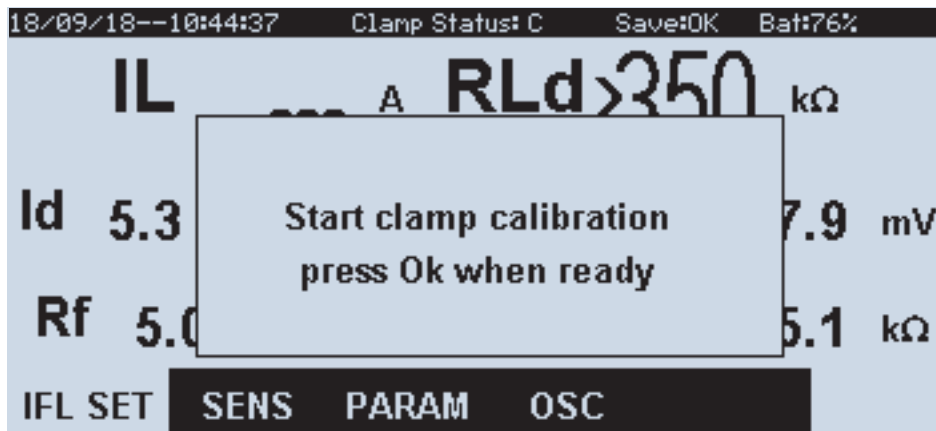
You can make these settings on the JP-61 screen:

- 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-61 booster (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

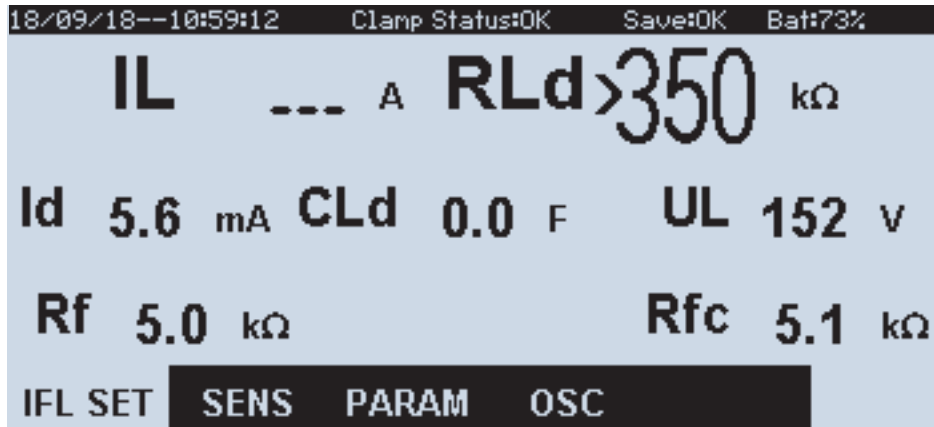
Note: The analysis period of the ISOM FP-60 must be the same as the boost period of the ISOM JP-61 or the IMD ISOM Digiware L-60 in place; either 6, 12 or 24 seconds.

7.7. Operation

7.7.1. What to do if there is no fault

In this case:

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

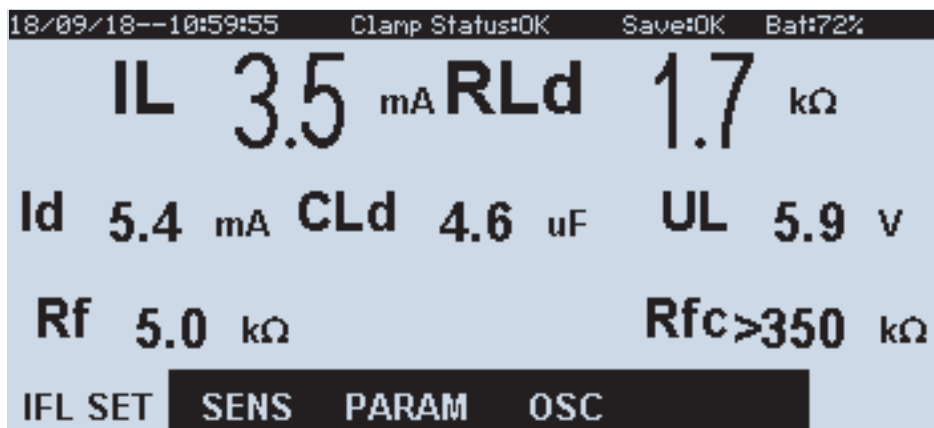


7.7.2. What happens if there is a fault

In this case:

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

Note: The insulation reading RLd is only important 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. SPECIFICATIONS

8.1. ISOM JP-61

Power supply	
Power supply U_s	230 VAC 50-60 Hz overvoltage category II
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	IK08
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-61 must be connected to a power supply of overvoltage category II.

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 μ 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
Clamp diameter 20 mm	
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
Clamp diameter 52 mm	
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
Clamp diameter 115 mm	
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-61

Type	Case
Dimensions W x H x D	546 x 347 x 247 mm
Hardware	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
CEM	Conformity with Directive CEM 2014/30/EU

8.6. Other features

Environment	<ul style="list-style-type: none"> - Altitude ≤2000m - Degree of pollution 2 - Relative humidity 90% - Voltage network tolerance ±10%
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MAIN OFFICE, CONTACT:
SOCOMECSAS
1-4 RUE DE WESTHOUSE
67235 BENFELD, FRANCE

<http://www.socomec.com>

