

# PLC INDUCTIVE VOLTAGE SENSOR FOR PRIME AND CENELEC-A FREQUENCY BAND



## DESCRIPTION OF SISP-1

Rev. 0 - January 2018

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## SAFETY SYMBOLS



**WARNING OR CAUTION:**

This symbol denotes a hazard. Not following the indicated procedure, operation or alike could mean total or partial breakdown of the equipment or even injury to the personnel handling it.



**NOTE:**

Information or important aspects to take into account in a procedure, operation or alike.

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# 1 INTRODUCTION

## 1.1 GENERAL CONSIDERATIONS

The SISP-1 is an inductive voltage sensor, completely insulated, and especially designed for sensing the Powerline Communications signal in the PRIME and CENELEC-A EN 50065 frequency band. It is intended for installation in Low-Voltage feeders and for use in line detection applications.

As can be seen in the application example of Figure 1, the PLC signal from the PRIME meters is sensed by the SISP-1 and received by the line detection nodes. A SISP-1 sensor connected to each line of a secondary substation will make it possible, by means of an intelligent algorithm in the concentrator, to detect the line to which the meters are connected. Furthermore, by connecting a SISP-1 to each of the phases of the line, it is possible to detect the specific phase of the feeder to which the meter is connected.

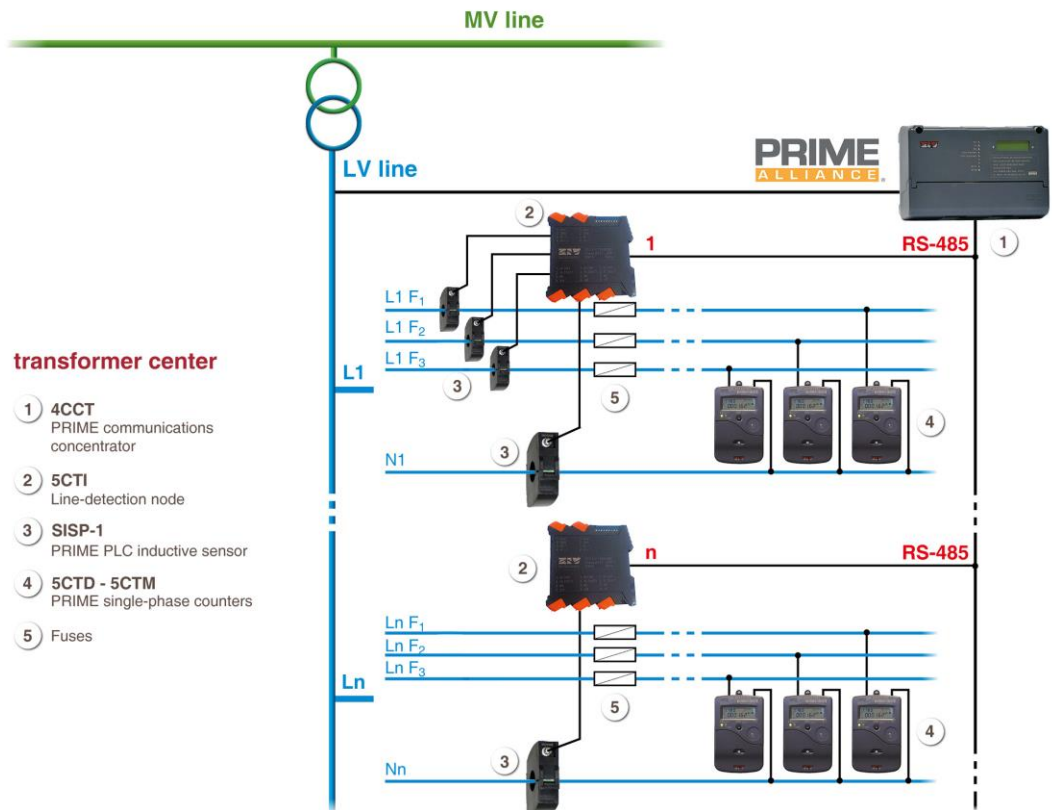


Figure 1 Detail of line detection application

## 1.2 CONSTITUTION

Figure 2 shows SISP-1 inductive voltage sensor.

The SISP-1 sensor is basically made up of a split core which includes the protection and PLC signal measurement elements. These elements together with the locking system (by side levers), and connector to communications terminal, form a compact unit.

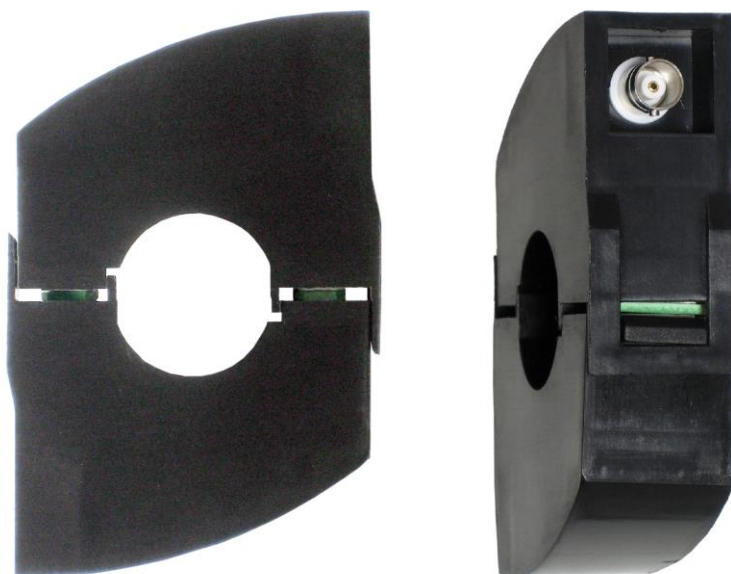


Figure 2 SISP-1 sensor

## 1.3 TECHNICAL CHARACTERISTICS

### 1.3.1 Electrical characteristics

Coupling type	Inductive (split-core type)
Connection type	Clamping the neutral or the phase (insulated cable) of a low-voltage feeder
System voltage (between phases)	Up to 400 V <sub>AC</sub>
Use	Indoor. Specially designed for use in the PRIME and CENELEC-A EN 50065 frequency band
Measured signal level (over 50 Ω load)	By injecting a PLC signal of 100 mA, the measured value is 111 mV (40 kHz ÷ 90 kHz)
Saturation current	450 A (the signal in the load is attenuated 1dB)
Insulation	5 kV <sub>rms</sub>

#### Gas surge arrester

Model	CG-230
Nominal voltage	230 VP
Nominal AC discharge current	20 A (10 x 1 s)
Nominal impulse discharge current	20 kA (10 impulses of 8/20 μs)

# SISP-1

## 1.3.2 Operating and storage conditions

Temperature	From -10°C to +60°C
Storage conditions	In accordance with EN 60870-2-2 class C3 (climatogram 1K5)

## 1.3.3 Mechanical characteristics

Dimensions	Height: 29 mm. Width: 72 mm. Depth: 108 mm See Figure 3
Communications equipment connection	By means of BNC and RG-58 cable. Others upon request
Locking system	By side levers
LV cable fixing	LK3X INSULOK clamp
Maximum LV cable diameter	30 mm
Material	Polyamide
Weight	300 g

# SISP-1

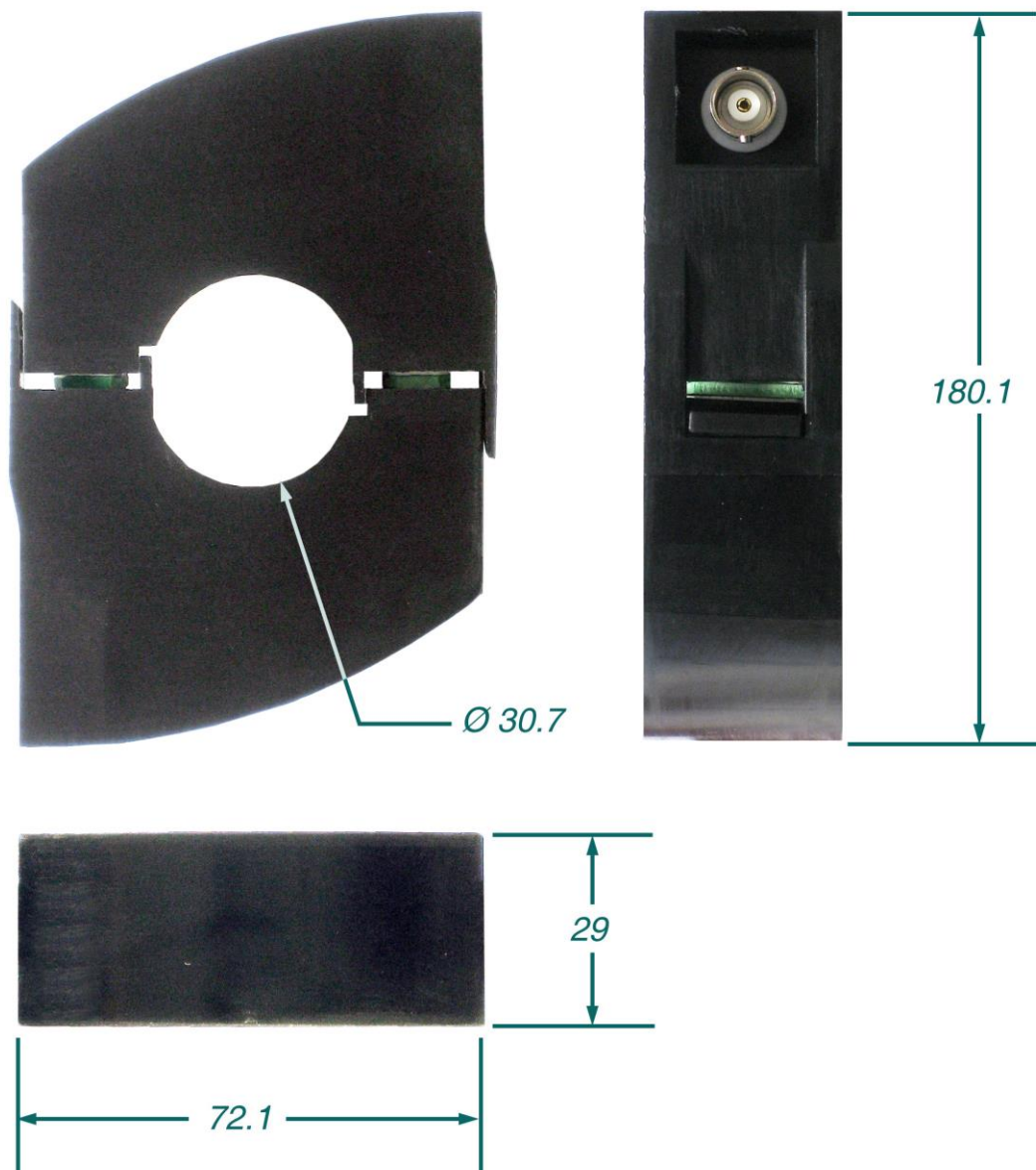


Figure 3 SISP-1 sensor overall dimensions



## 2 INSTALLATION OF THE SISP-1 SENSOR

### 2.1 WARNINGS BEFORE INSTALLATION



- !
1. Installation of the SISP-1 must comply with the Low Voltage safety standards and all safety and occupational workplace risk prevention measures established for this work environment by the electricity company using these devices.
  2. Specifically, for the installation and handling of the SISP-1 the following requirements must be satisfied:
    - Only qualified staff and personnel designated by the company owning the facility may perform the installation and handling of the SISP-1 sensor.
    - Prior to installation and handling of the SISP-1 sensor, disconnect the voltage from the LV line and connect it to ground.
    - The operating environment must be appropriate for the sensor, ensuring compliance with the conditions indicated in section 1.3, *Technical characteristics*.
  3. ZIV shall not be held liable for any harm or damages caused to people, facilities or third parties arising from any failure to comply with points 1 and 2 .

### 2.2 INSTALLATION INSTRUCTIONS

Installation of SISP-1 sensor involves several phases, starting with the phase of disassembling and fixing of the device to the LV cable, ending with the phase of connection to the communications equipment.

The SISP-1 sensor is installed in low-voltage feeders, in the neutral cable (line detection) or in the cable of each of the phases of the LV line (phase-line detection).

# SISP-1

## 2.2.1 LV cable connection

In order to install the device in the cable, it must be first disassembled.

The disassembling procedure of the SISP-1 sensor consists, as is shown in Figure 4, in lifting one of the levers up, using the fingers or a flat screwdriver, applying at the same time at both sides of the device an opposite force pair.

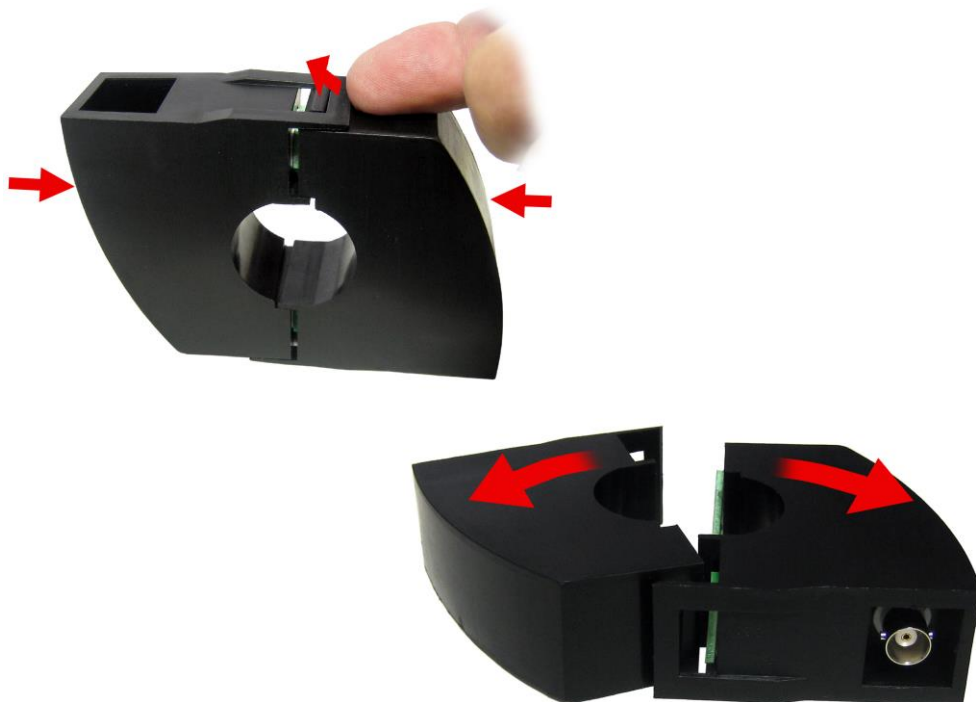


Figure 4 SISP-1 disassembling

## SISP-1

Once disassembled, clamp the SISP-1 sensor to the LV cable to which the PLC signal is desired to be sensed and then lock the system by using the levers. To do this, see Figure 5, clamp the lever of one of the cores to the lever of the other core. By using this union as a hinge, lock the other lever.

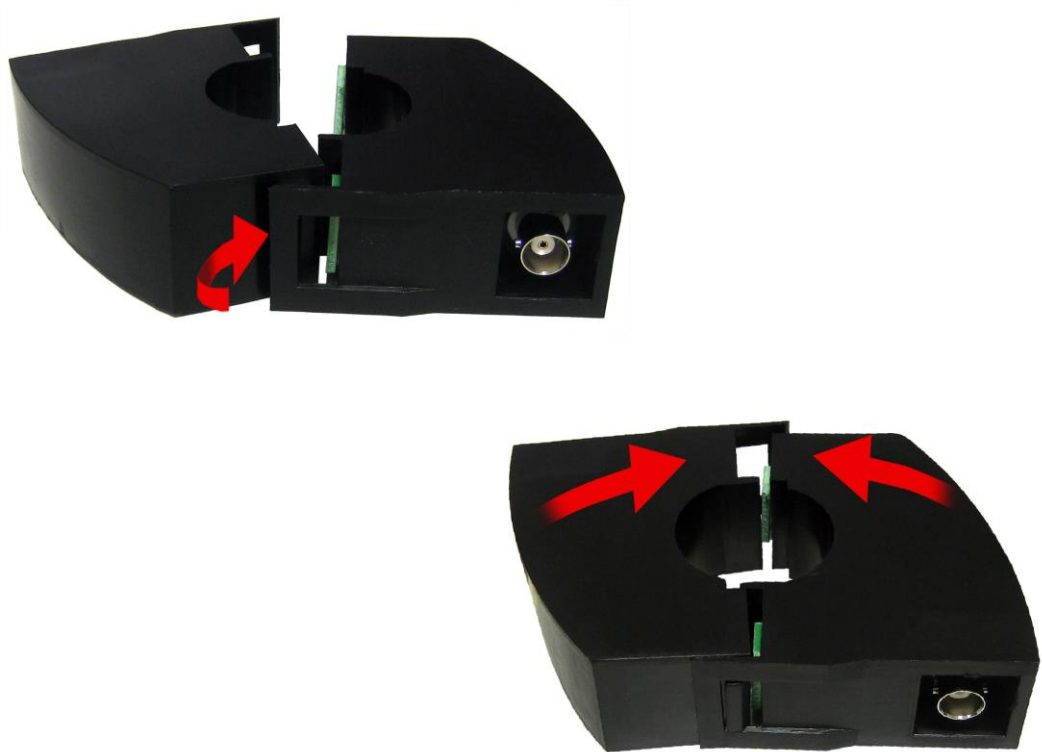


Figure 5 SISP-1 locking

If desired, the SISP-1 may be fixed to the LV cable (feeder). To do so, the method shown in Figure 6, in which a flange is used, is suggested. As is shown in the figure, the clamp is inserted through the center hole of the SISP-1 and closes embracing at the same time the cable and the sensor.

# SISP-1

## 2.2.2 Communications equipment connection

Once the SISP-1 is connected and fixed to the LV line, connect the BNC cable from the communications equipment.

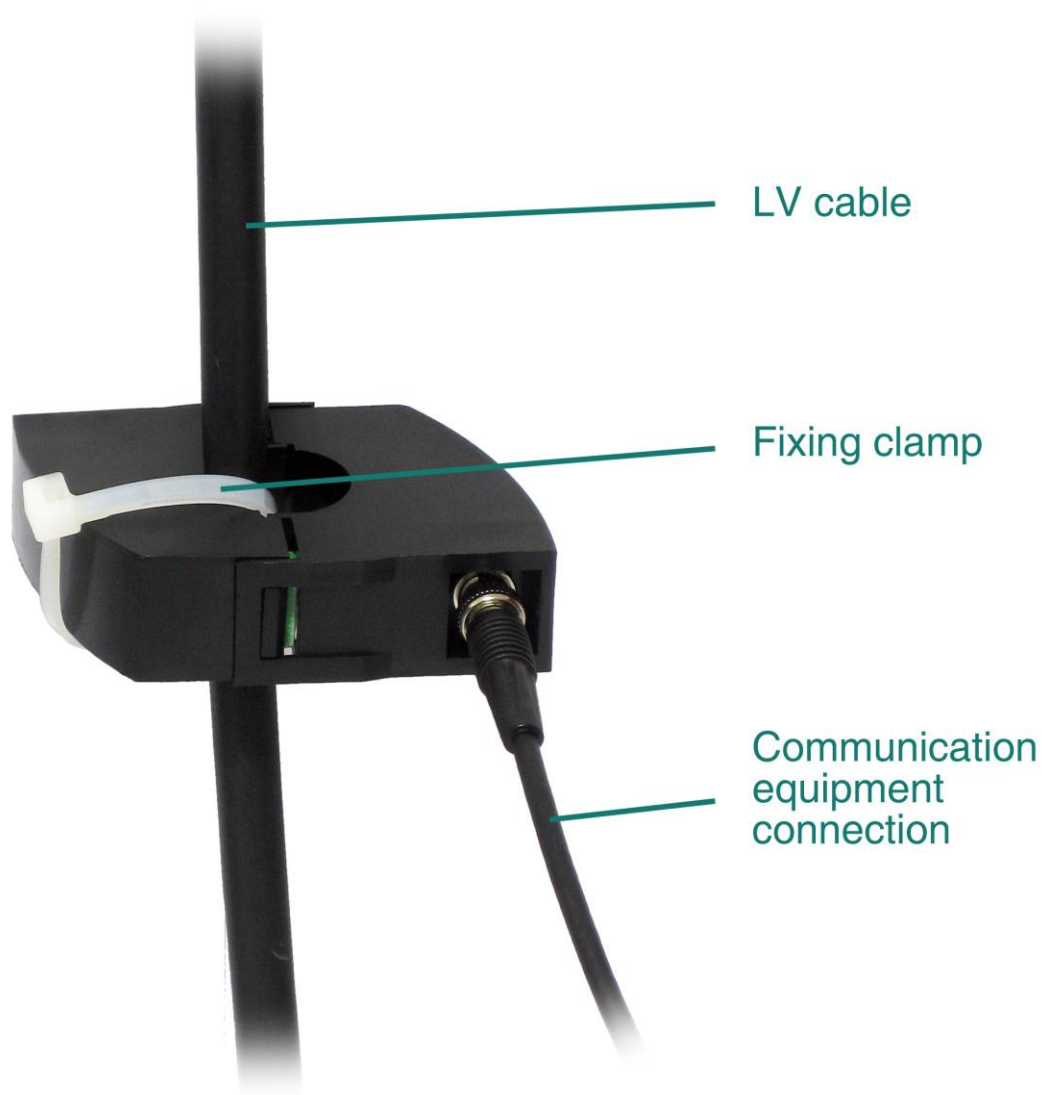


Figure 6 Detail of SISP-1 installation

## 3 MAINTENANCE

The SISP-1 sensor requires no preventive maintenance.

Generally speaking, verify the tightening of the device to the LV line (see Figure 6 if a clamp has been used).

Check the state of the coaxial cable that communicates the SISP-1 with the electronic communications equipment.

Check the state of the label identifying the equipment. Check that the label data can be read.