User Instructions

ProfiSafe LSP 4L

Voltage-Continuity Tester

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LSP 4L_BA_06-2013

1 Test electrodes
2 Red LED ⚠ (LV indication)
for voltages ≥ 50 V AC / 120 V DC
3 Green LED „Ω“ signalizes continuity
0 ... 1000 kΩ
4 Indication of rotating field arrow left/right
5 Display (LCD)
6 Handgear
7 Connecting line

Symbols on the instrument

⚠ Attention! Observe user instructions!

Mark of approval from VDE test authority

CE Indicates EC conformity

TR_{on} On-time at highest nominal voltage

RT_{off} Recovery time after tests with highest nominal voltage

Device for live working

This devices may not be disposed with the domestic waste (WEEE 2012/19/EU).
Please contact service@tietzsch.de in regard to the return of old devices.

1. Application

The ProfiSafe LSP 4L is a two-pole voltage tester with digital display. It is maintenance-free and complies with DIN EN 61243-3 (VDE 0682 part 401). It is provided with a continuity and polarity tester, phase and phase sequence indicator.

With this device you can determine the existence and the strength of alternating and direct voltages within a range of 12 V to 690 V at frequencies up to 500 Hz.

For voltage tests the device does not need an additional energy source.

Voltage values are shown on the digital display between 12 and 690 V.

With the integrated continuity tester you can also measure resistances up to 1000 kΩ.

The Li-accu recharges during voltage tests and serves as energy source for continuity, phase and phase sequence tests. Due to its high protection category (IP 65) the ProfiSafe LSP 4L may even be used in rain.

1.1 Intended use

This device is intended for use in applications as described in the operating instructions only. Thus, it is imperative to observe the notes on safety and the technical data in conjunction with the ambient conditions.

Any other form of usage is not permitted and can lead to accidents or destruction of the unit.

Any misuse will result in the expiry of all guarantee and warrantly claims.

2. Safety Precautions

The voltage tester ProfiSafe LSP 4L has been approved by VDE test authorities for the application of VDE GS marking.

When used for its intended purpose, the safety of the operator, as well as that of the instrument, is assured.

In order to maintain flawless technical safety conditions, and to assure safe use, it is imperative that you read these operating instructions thoroughly and carefully before placing your instruments into service, and that you follow all instructions contained therein.

Observe the following safety precautions:

- The voltages indicated on the ProfiSafe LSP 4L are rated voltages. The voltage tester may only be used in systems working with those rated voltage ranges
- Faultless indication of display values is only guaranteed between -15° and +45°C.
- Hold the instrument by the handles only, to avoid covering the display and not touching the test electrodes before and during tests.
- The ProfiSafe LSP 4L has a maximum allowable on-time of 30 seconds.

- Only qualified persons may carry out work with these device. The user needs to be farmiliar with the risks for measuring voltage and compliance with safety regulations and the proper use of the voltage detector.
- Workings may only be performed with appropriate personal protective equipment.
  Observe the minimum object distance to other plant components that are energized or earthed and use personal protective equipment as specified by national accident prevention regulations (in Germany: BGV A3 or DIN EN 50110-1).
- The function of the voltage tester must be checked briefly before and whenever possible after the use. Carry out the function test and check the instrument at a known voltage source (AC and DC). If the indication of one or several systems fails in the course of checking, the instrument must not be used again.
- The red LED ((LV-indication) only serves as a indication for hazardous voltage and not as measurement value.
- This voltage detector may not permit to clearly indicate the absence of operating voltage in case of interference voltage because of its relatively high internal impedance.
  When the indication "voltage present" appears on a part that is expected to be disconnected of the installation, it is recommended confirming by an other means that there is no operating voltage on the part to be tested.
- With determination of phase conductors and phase sequence the perceptibility of the display may be impaired, e.g. when using insulating protective gears, in unfavourable locations, for example on wooden ladders or insulating floor coverings, as well as with unfavourable lighting conditions and in an improperly earthed AC voltage system.
- The voltage tester may only be dismantled by authorised personnal.
- Before using the device check the housing and connecting line for visible damage. If damages are visible the voltage tester may not be placed into operation. In case of strong dirt contamination, the tester must be cleaned before use.
- The tester has to be stored in a clean and dry environment.

3. Putting into operation

3.1 Accu

The innovative concept of the ProfiSafe LSP 4L allows voltage testing and indication even with entirely depleted accu.

For the additional test functions (phase, phase sequence and continuity) energy is supplied by the integrated Li-accu, which recharges automatically during voltage tests. Therefore, battery replacement is not neccessary.

Note:

Frequent use of the additional test functions may need supplementary battery charge (see section 6).

3.2 Testing display and function (self-test)
In accordance with DIN VDE 0105-100 voltage testers must be checked if they function correctly, briefly before and whenever possible after the use, for determining absence of voltage.

Step 1 - Checking the line / function

Hold the test electrodes together.
The display shows " - - - Ω".
At the same time, the green LED "Ω" lights up.
Separate the test electrodes.
The display shows „OL Ω".
Through this, the overall functions have been tested.

Note:

In case the battery symbol appears when holding the test electrodes together, the accu needs to be recharged (see section 6). Voltage tests can still be performed, even when accu is entirely depleted.

Step 2 - Test of the LV indication

Check the function of the LV indication (red LED) at a known voltage source (AC and DC).
At the same time, the voltage value is indicated on the display.

Attention!
If one of the displays fails during the self-test – even if only partial failure occurs – or if the instrument does not indicate a function standby, the voltage tester may not be placed into operation!

4. Testing

4.1 General Instructions
The voltage tester switches on automatically when a voltage of at least 12 V is applied. If the function continuity testing had been activated, the device switches automatically over to voltage testing. In order to extend battery life the instrument switches off automatically approximately 2 seconds after the last measurement.

4.2 Testing voltage an polarity
Securely contact the test electrodes with the test points. Voltage is indicated on the display.

Attention!
When a hazardous voltage (≥ 50 V AC / 120 V DC) is impressed, the red LED lights up and appears on the display.
The maximum allowable on-time for voltage testing is 30 seconds. (Exception: When charging the accu at a 230 V socket, see 4.1)

Note:
The LV indication (red LED) and the display remain in working order, even with empty battery.

Direct and alternating voltage, polarity
The type of voltage is indicated by the symbols "~" for AC and "-" for DC. When minus is connected to the test electrode with display part designated with "+", then the "-" leading sign appears. When plus is connected, then no leading sign appears left to the displayed value.

4.2.1 Voltages 12 ... 690 V AC / DC
(Nominal voltage range in accordance with IEC 61243-3)
The device indicates the type of voltage (AC / DC). The voltage level is digitally indicated in Volt between 12 ... 690 V on the display.

4.2.2 Voltages > 690 V AC / DC
"OL" flashing in the display warns against voltages exceeding 690 V AC / DC.
In this case, the test procedure must be stopped immediately!

4.3 Testing phase and phase sequence
Attention!
These tests can be performed at a nominal voltage of at least 165 V (50 Hz) against earth.
When performing these tests, the device must be hold closely at the handgear of the display part.
Note:
You may wear insulating gloves when performing the tests. Tests can be impaired by unfavourable locations, for example on wooden ladders or insulating floor coverings, as well as in improperly earthed AC voltage systems.

4.3.1 Phase test
Determination of the phase conductor occurs by applying the test electrode +L1 to the conductor. The conductor is live when "POL" appears on the display or the red LED lights up.
Attention!
Single pole tests are not suitable for identification the present of voltage.

4.3.2 Testing phase sequence
To determine the phase sequence between two phases in a earthed three-phase current system apply both test electrodes, clasp the handgear of the display part and proceed as follows (example 230/400 V):
- Search for the phase conductors using one pole (see phase test).
- Apply both test electrodes to the two phase conductors (display 400 V).
- When phase L1 is applied to the test electrode marked (+L1) and L2 to the other test electrode appears on the LC-display for rotation is clockwise. If is indicated direction of rotation is counter-clockwise.

The test result has to be checked by exchanging the two test electrodes. The opposite direction of rotation must be displayed.
If 230 V is displayed instead of 400 V, the neutral conductor may have been contacted with one of the test electrodes.

4.4 Continuity Test, Diode Test
Connect the test electrodes with the line to be tested. With a resistance of 0 up to about 1000 kΩ the rectangular green LED lights up and the display shows „- - - Ω".
The green rectangle lights up when the test electrode marked "+" of the ProfiSafe LSP 4L is applied to the anode of a semiconductor. Otherwise the semiconductor is connected in reverse direction.
Note!
In case, in this operation mode a voltage of 12 V or more is applied, the device automatically switches over to voltage testing, see section 3.

5. Technical data LSP 4L

Nominal voltage range:	12 ... 690 V AC / DC
Nominal frequency range:	0 ... 500 Hz
Measurment range:	DC: 12 ... 690 V (± 3 % + 4 D) AC: 12 ... 690 V (± 3 % + 4 D)
Input resistance:	approx 167 kΩ AC / DC at 690 V approx 200 kΩ AC / DC at 50 V
Current peak value I_s:	4,2 mA at 690 V AC / DC
On-time:	TR_{on} 30 s at 690 V RT_{off} max 240 s (recovery time)
Display:	1 red LED for voltage ≥ 50 V AC / 120 V DC 1 green LED for continuity 0 ... 1000 kΩ 1 Display (LCD) with backlight measuring rate 2/s
Power supply:	maintenance-free – without battery Voltage tests from the mains functions continuity/ phase/phase sequence by integrated Li-accu
Overvoltage category:	CAT IV 600 V / CAT III 690 V
Surge voltage strength:	>8 kV (1,2/50 µs)
Test voltage:	6 kV
Operating temperatures:	-15 ... + 45°C
Casing:	impact resistant, dust proof ABS plastic casing Display cover made of polycarbonate
Protection category:	IP 65
Connecting line:	PUR sheated cable 1000 V, 1 m
Standards:	IEC 61243-3:2009 EN 61243-3:2010 DIN-EN 61243-3:2011
EMV requirements:	DIN-EN 61326
Dimensions:	display part 231 x 48 x 37 mm
Weigth:	170 g

6. Testing and charging the accu

In case the battery symbol appears when holding the test electrodes together, the accu needs to be recharged.

Therefore plug the test electrodes of the ProfiSafe into a 230 V socket, so that the display shows 230 V. Complete recharge of the ProfiSafe takes at least 10 hours.

In this context the on-time of about 30 seconds is irrelevant.

Again perform the function test before putting the instrument into operation (see section 3.1).

7. Maintenance

7.1 General information

The ProfiSafe is absolutely maintenance-free. Nevertheless, observe the following information in order to maintain safe operation:

Always keep the voltage tester dry and clean. The housing can be cleaned with a cloth dampened with isopropyl (alcohol) or soapy water.

7.2 Repeated inspection

According to EN 61243-3 it is recommended to carry out repeated examinations.

It should not exceed the time-limit of 6 years.

Depending on operation conditions and frequency, a previous inspection may be recommendable.

The serial number with the date of manufacturing (WWYYNN=**W**eek **Y**ear **N**umber) is imprinted on the backside of the device. Repeated inspections are offered by the manufacturer and indicated by the inspection plate.

8. Repair

Repair is only allowed by the manufacturer or explicitly authorized repair shops.

In case of damages on the device or failure of the function test according to section 3.2 or for detailed inspection/calibration, please contact: ***service@tietzsch.de*** or send the device and a description of failure back to the manufacturer (address see page 1).

9. Limited warranty and limitation of liability

By continuous quality checks and production controls, most modern electronics and high quality materials we guarantee that the tester will be free from defects in material and workmanship for two years.

This warranty does not cover batteries, improper handling, not intended purpose, opening the housing, improper storage or damages from accidents.

No other warranties such as fitness for a particular purpose will be given.

We are not liable for any indirect, incidental or consequential damages or losses arising from any cause or theory.

10. Accessories optional
Extensions/Adapter:
Only attachable extensions/adapters LSP-S provided by the manufacturer may be used.
Extensions/adapters may only to be used, when mounted on the voltage tester. They need to be attached completely and securely to the LSP.
Perform the function test with mounted extensions (see section 3.2) before starting voltage testing.
The device with extensions has to be clean and dry before starting voltage tests.

Further information is available at
www.tietzsch.de

Available accessories

Art.no.	Type	Description
84313	LSP-S500-*	DSP / LSP extension 500 mm isulated stainless steel tube attachable, 1000 V
84013	DSP-S70	DSP / LSP pin prod for test holes and tight contacts, flexible pin 3 x 63 mm, CAT IV 600 V / CAT III 1000 V
84011	DSP-S-ADA	DSP / LSP attachable adapter with 4 mm-socet, CAT IV 600 V / CAT III 1000 V
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red
84020	DSP-ETU	Artificial leather case for DSP / LSP, 32 x 13 cm
85320	LSP-COR	Cloth bag Cordura for LSP, 29 x 14 cm
81035	SP-KLT-S600	Artifical leather bag for SPB / DSP and test probes to 600 mm, 65 x 17 cm
81031	S-HUELSE	Plastic casing for extension test probes up to 600 mm

Tietzsch
Measurement and testing devices
Quality creates safety.

CE

EC-Declaration of Conformity

in accordance with the EEC low-voltage directive 2006/95/EG with appendix III B; of 12. Dec. 2006

Hereby we explain that those corresponds to below designated products in its conception and design as well as in circulation the execution the fundamental safety and health requirements of the Community directive low-voltage brought by us. In the case of a change of the product not co-ordinated with us this explanation loses its validity.
This statement does not include a warranty of properties.

Manufactures name:
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Description of the electrical equipment:

- type/model: **ProfiSafe LSP 4B / LSP 4L**
- function: two-pole low voltage detector
- year of construction: from 2013 on

The agreement with further valid guidelines/regulations following for the product is explained:
- EMC-Directive (2004/108/EG) of 15. December 2004
- ROHS-Directive (2011/65/EU) of 8. June 2011
- WEEE-Directive (2012/19/EU) of 4. July 2012

Reference to the harmonized standards:
- Live working – Voltage detectors -
  Two-pole low-voltage type
  EN 61243-3:2010 (IEC 61243-3:2009)

Year of the CE characteristic assignment: 2012

Personal data of the signer:
Michael Tietzsch (CEO)

Ennepetal the 15.7.13