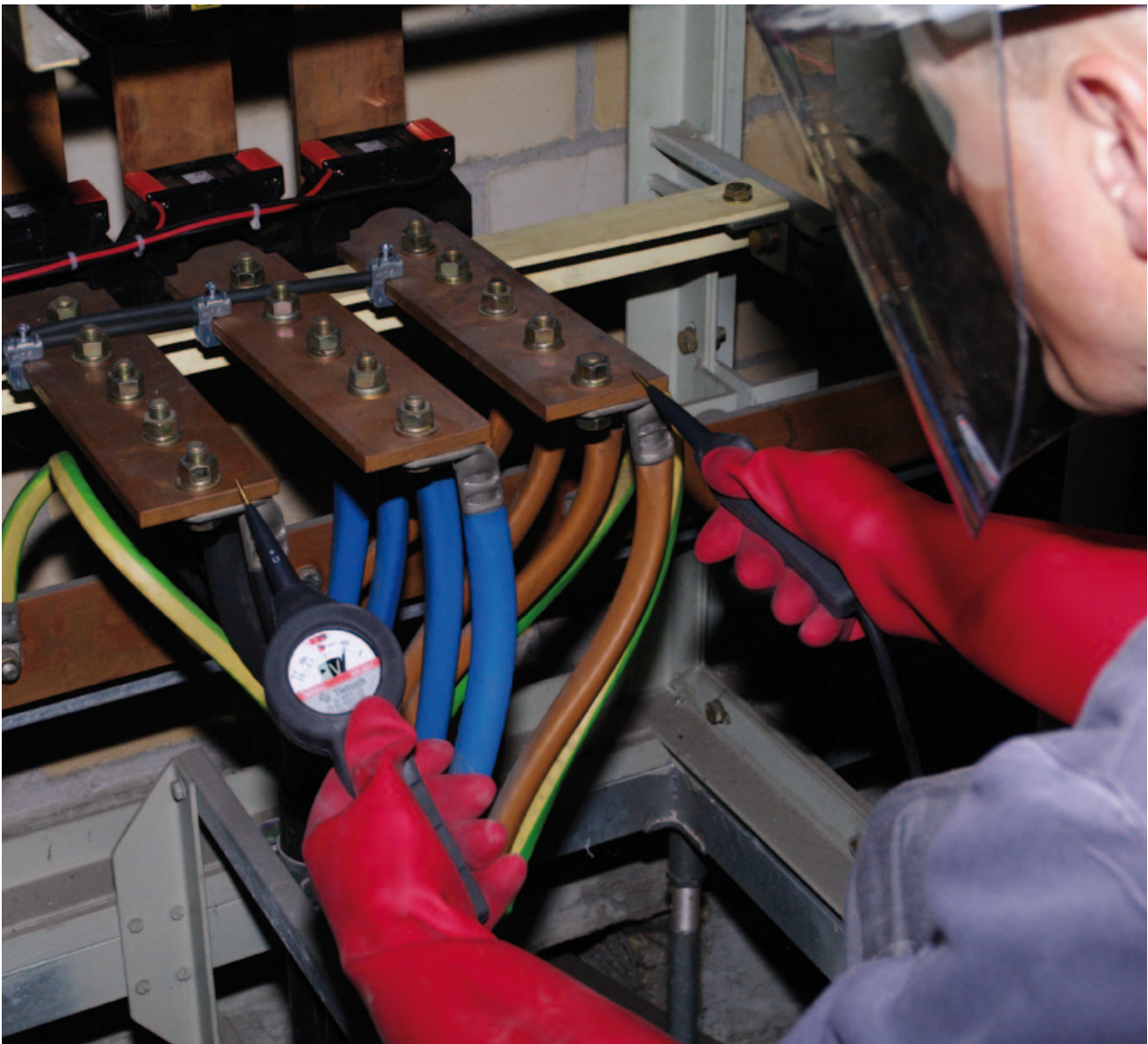


## Voltage tester up to 1 kV



# Part catalogue Voltage tester

## Voltage tester up to 1 kV

- 8 Prüfball SPB Analog with moving-iron instrument
- 10 Prüfball SPB Digital with LCD
- 12 Electricity meter Prüfball ZAP Analog
- 14 Electricity meter Prüfball ZAP Digital
- 16 Type overview Prüfball
- 18 MultiSafe DSP 3 with digital indication
- 20 MultiSafe DSP 4 with digital indication
- 22 ProfiSafe LSP 3 with LED indication
- 24 DSP 3TT1 Telescope voltage tester for light rail systems

## High voltage tester up to 36 kV

High-tension test probes DSP-HS5  
MultiSafe DSP 3HS11  
MultiSafe DSP 3HS36  
MultiSafe DSP 3TT36 Telescope type

## Ex-proof measuring and testing devices

Earth resistance tester  $\Omega$ MegaSafe EP  
Megohmmeter  $\Omega$ MegaSafe ISO  
Multimeter VarioSafe EXM 25  
Voltage and resistance measuring device VarioSafe EXM 24

## Accessories

- 48 Prüfball
- 50 MultiSafe / ProfiSafe
  - $\Omega$ MegaSafe
  - VarioSafe

## Info

- Customer specific solutions
- Service
- 58 Article list
- 63 Explanation of symbols

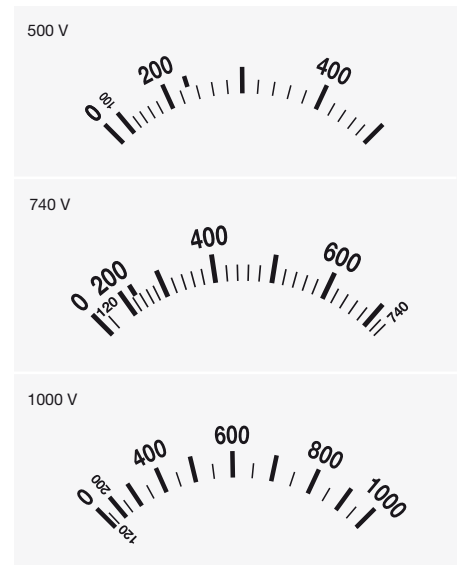
complete product overview see main catalogue

# Prüfball SPB Analog

Safety casing made of solid rubber



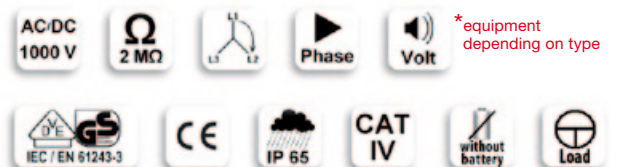
SPB 500P



Three measurement ranges are optionally available

The Prüfball SPB is the right tool for operation in energy supply - robust, precise and maintenance-free.

- Safety casing made of solid rubber extremely impact resistant, water and dust proof
- Wide range of types and three measurement ranges up to 1000 V
- Phase, phase sequence and continuity test, acoustic signal, RCD tripping\*
- Reliable testing without battery





### Instrument for professional use in power engineering

For more than 60 years, the Prüfball is successfully used in operating ranges with increasing requirements:

- energy providers with high safety requirements and high accuracy demands
- industrial firms with extreme ambient conditions
- service providers who prefer robust and long life test instruments

### Approved safety concepts

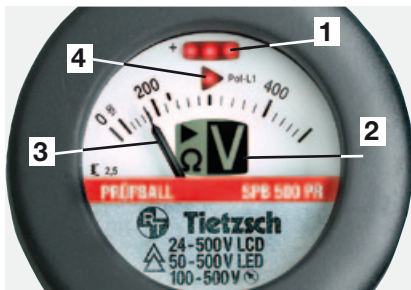
The case of solid rubber encloses the measuring system and switching mechanism:

- impact-resistant, impact-proof
- water- and dust-proof
- overvoltage protection - CAT IV
- secure two-hand tripping device for low resistive checks through patented special push-button with wide contact gap

### Exact, precise display

Reliable test by three display systems and connectible load:

- direct indication by LCD indicator and LEDs, clearly visible in bright and dark environments
- connectible low resistive measuring system indication and the additional load RCD tripping\*
- no battery required



- LED-signal at > 50 V without keypress with P/R types\* a third (center) LED lights up at > 24 V
- LCD indicator with big V at >24 V also for phase, phase sequence, continuity
- exact analogue display, connectible
- LED-triangle for phase/phase sequence\*



### Wide range of types

The Prüfball is available in diverse varieties, adapted to individual use:

- optional three measurement ranges up to 1000 V
- accessible electrode for phase and phase sequence test
- continuity test
- acoustic signal for voltages
- additional load for RCD tripping (residual-current-operated protective device)



### Wide range of accessories

- bags
- extensions for tests at overhead lines
- plastic casing for extensions
- test prods for test objects difficult to access
- insertion prods for underground cable
- adapter for the test lines with 4 mm standard plug

### Article number / Order data

Type overview on page 16

Accessories on page 48

### Technical data

Two-pole voltage tester Prüfball SPB tested and certified by VDE in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

#### Type / Nominal voltage

SPB 500 (P/PR/PRA)*	24 ... 500 V AC/DC
SPB 740 (P/PR)*	24 ... 740 V
SPB 1000 (P/PR)*	24 ... 1000 V

#### Display range scale

SPB 500 (P/PR/PRA)*	100 ... 500 V AC/DC
SPB 740 (P/PR)*	120 ... 740 V
SPB 1000 (P/PR)*	120 ... 1000 V

#### Frequency

0...100 Hz

#### Voltage indication

high-impedance, direct reading:  
LCD > 24 V, 2 LEDs > 50 V, PR\* + 1 LED > 24 V

⊕ low resistive connected:  
moving-iron instrument, large 90° scale  
100 ... 500 V, 120 ... 740 V, 120 ... 1000 V  
effective value accuracy

cl. 2.5: basic accuracy 2,5% + reading errors

Acoustic signal (SPB 500PRA)\*  
> 55,5 dB interval according to ISO 3744

#### Continuity\*

0 ... 2 MΩ Ω-symbol in LCD

#### Phase / Phase sequence\* / Polarity

LED and LCD triangle ≥ 165 V  
for phase unipolar with contact sensor  
for phase sequence two-pole with sensor  
type of voltage + / - / ~ by 2 LEDs

#### Input resistance

direct: depending on type 0,6 ... 0,8 MΩ  
⊕ switched: depending on type 54 ... 88 kΩ  
SPB 500PRA\* (acoustic) 20 kΩ  
PR type\* with additional load for RCD tripping of 30 mA RCDs 4,3...7 kΩ

#### Current peak value

direct: < 3,5 mA  
⊕ switched: 40 mA, PR\*: 300 mA  
(35 mA at 230 V – RCD tripping)

#### On-time

30 sec

#### Surge voltage strength

>12 kV case insulation to user  
>12 kV switching mechanism between test prods

#### Insulation test voltage

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

maintenance-free - without battery, test functions voltage and acoustic are supplied from the mains, continuity, phase and phase sequence by Li-storage, refreshable

#### Casing

solid rubber EPDM, unbreakable display cover made of indestructible polycarbonate

#### Protection category

IP 65, device can be used in moist environments

#### Line

PUR control cable, 1000 V, 1m

#### Dimensions / weight

274 x 75 x 47 mm (display part) / approx. 420 g

\* equipment depending on type:

P with phase and phase sequence tester  
R with continuity tester

A with acoustic signal for voltage  
500PR, 740PR, 1000PR with additional load

**Tietzsch** Made in Germany

# Prüfball SPB Digital

## Digital indication without battery



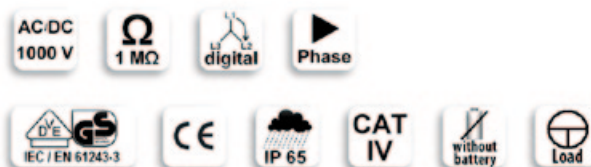
SPB 500L



Display of SPB 1000L

The Prüfball SPB digital combines the latest microcontroller applications with approved features of the analogue Prüfball - robust, precise and maintenance-free

- Safety casing made of solid rubber extremely impact resistant, water and dust-proof
- Maintenance-free – battery is not required
- Direct reading of all functions by LED and LCD without keypress
- Phase, phase sequence and continuity test, connectible 30 mA RCD tripping
- Reliable phase sequence test by microcontroller analysis, possible with gloves





### Instrument for professional use in power engineering

The Prüfball digital is a maintenance-free voltage-continuity tester for energy supply and industry:

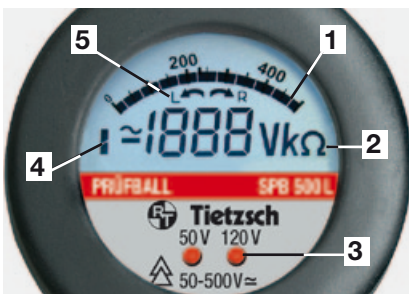
The new digital Prüfball supplements our analogue Prüfball series which is successful since 60 years.

The device provides direct reading without keypress. A load of approx. 35 mA at 230 V can be connected by actuating the push-button.

### Clear display

Reliable test by two display systems and connectible load:

- bright LEDs and illuminated LCD
- high accuracy
- connectible low resistive load for RCD tripping
- no battery required



1. Bargraph
2. large numerals and symbols for voltage AC/DC and resistance
3. Light diodes
4. Indication of connected load
5. arrow for phase sequence



6. Indication when test prod applied to phase

### Approved safety concepts

The case of solid rubber encloses the measuring system and switching mechanism:

- impact-resistant, impact-proof
- water- and dust-proof, outdoor type
- overvoltage protection - CAT IV
- current limiting safety components in accordance with latest standards – **without semiconductor**
- secure two-hand tripping device for low resistive checks through patented special push-button with wide contact gap

### Wide range of accessories

- bags
- extensions for tests at overhead lines
- plastic casing for extensions
- test prods for test objects difficult to access
- insertion prods for underground cable
- adapter for the test lines with 4 mm standard plug



### Technical data

Two-pole voltage tester Prüfball SPB-L tested and certified by VDE in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

#### Type / Nominal voltage

SPB 500L	50 ... 500 V AC/DC
SPB 1000L	50 ... 1000 V

#### Display range

SPB 500L	50 ... 500 V AC/DC
SPB 1000L	50 ... 1000 V
SPB 1000+L	24 ... 1800 V (special type)

#### Frequency

0 - 2000 Hz

#### Voltage indication

high-impedance, direct reading:

LED > 50 V ~ and > 120 V + -

LCD > 50 V backlight

(accuracy 2,5% + 5 digit)

⊕ low resistive connected:

additional display symbol for connected load

#### Continuity

0 ... 1000 kΩ (resolution 50 kΩ +/- 150 kΩ)

#### Phase / Phase sequence / Polarity

capacitive, without accessible electrode

arrows for phase sequence

POL for phase unipolar

tests possible with gloves

voltage type - / ~

#### Input resistance

direct: 500L: 150-190 kΩ,  
1000L: 300-350 kΩ

⊕ switched: 4,3...7 kΩ

#### Current peak value

direct: < 3,5 mA

⊕ switched: < 300 mA

(35 mA at 230 V – RCD tripping)

#### On-time

30 seconds

#### Surge voltage strength

> 12 kV case insulation to user

> 12 kV switching mechanism between test prods

#### Insulation test

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

maintenance-free - without battery,

test functions voltage, phase sequence are

supplied from the mains. Continuity by Li-accu with automatic charging function

#### Casing

solid rubber EPDM, unbreakable display cover made of indestructible polycarbonate

#### Protection category

IP 65, device can be used in moist environments

#### Line

PUR control cable, 1000 V, 1m

#### Dimensions / weight

274 x 75 x 47 mm (display part) / approx. 415 g

Article number	Type / Label
81322	Prüfball SPB 500L
81323	Prüfball SPB 1000L
81019	Thread test electrode
	Accessories on page 48

# Prüfball ZAP 350 Analog

## Electricity meter tester with 350 W load



ZAP 350

The Prüfball ZAP 350 is an extremely safe testing device for fast start-up tests at initial operation of electricity meters, combined with a high-quality voltage tester.

- Indication of voltages up to 500 V
- Connectible capacity of 350 W for fast start-up tests
- Phase, phase sequence and continuity tester
- Thermal and overvoltage protection
- No battery required





### Universal testing device for meter installation and network technology

Five important functions combined in one device

- Electricity meter tester for all directly measuring electricity meters
- Voltage tester 24 - 500 V
- Phase tester
- Phase sequence tester
- Continuity and self-tester

### Technology and safety

High-quality elements guarantee operation and safety under extreme conditions

- solid rubber case, dust and water-proof IP 65
- overvoltage protection – CAT IV
- maintenance-free - no battery required
- secure two-hand tripping device for low resistive checks through special push-button with wide contact gap in both handles
- Integrated thermo-switch to avoid overheating at multiple use
- voltage monitoring as protection against mistakes in voltage ranges (phase/phase) during load tests

### Exact, precise display

Reliable test by three display systems and connectible load:

- direct indication by LCD indicator and LEDs at > 24 / 50 V
- connection of measuring system and start-up load in two stages
- unambiguous direct indication of load with 350 W by load-LED 1,5 A
- high accuracy through moving-iron instrument class 2,5



### ZAP – line

The patented special cable allows space-saving and water-protected design

- fast start-up through high capacity
- no overheating of device or handles
- enclosed casing without ventilation

### Accessories

- leather bag  
Keeping the ZAP in the bag avoid the bending of the connection lead
- pin prod for tight contacts  
(see accessories for Prüfball SPB)



### Technical data

Electricity meter and voltage tester ZAP according to EN/IEC 61243-3 with special cable in accordance with BG test report

#### Nominal voltage

24 ... 500 V AC/DC

#### Display range scale

100 ... 500 V AC/DC

#### Frequency

0...100 Hz

#### Voltage indication

high-impedance, direct reading:  
1 LED and LCD  $\geq 24$  V 2 LEDs  $\geq 50$  V

⊕ low-resistive connected:  
moving-iron system 100 ... 500 V  
cl. 2,5: basic accuracy 2,5 % + reading errors  
large 90° scale, effective value display

#### Continuity

0 ... 2 M $\Omega$   $\Omega$ -symbol in LCD  
automatic switch-over to voltage

#### Phase / Phase sequence

LED and LCD triangle  $\geq 165$  V  
for phase unipolar and  
phase sequence bipolar with sensor

#### Input resistance

direct (high-impedance)	approx. 0,6 M $\Omega$
⊕ switched:	54 k $\Omega$
second stage (start-up)	150 $\Omega$

#### Current peak value

< 30 mA / 500 V  
with connected load approx. 1,5 A / 230 V

#### On-time

30 seconds

#### Connectible capacity

approx. 350 W at 230 V

#### Overvoltage protection

automatic switch-off of load at > 260 V

#### Overload protection

thermo-switch, thermo-point at >70°C

#### Surge voltage strength

12 kV case insulation to user  
12 kV switching mechanism between test prods

#### Insulation test voltage

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

maintenance-free - without battery,  
test functions voltage, phase sequence and acoustic  
signal are supplied from the mains,  
continuity by Li-storage, refreshable

#### Casing

solid rubber EPDM, unbreakable display cover made  
of indestructible polycarbonate

#### Protection category

IP 65, device can be used in moist environments

#### Line

patented thermo-line  $\varnothing$  10 mm / 1,8 m,  
twin insulated, PA-thermo protection meshwork

#### Dimensions / weight

274 x 75 x 47 mm (display part) / approx. 515 g

Article number	Type / Label
81314	Electricity meter tester ZAP 350
81019	Thread test electrode
	Accessories on page 48

# Prüfball ZAP 350L / 1050L Digital

Electricity meter tester with 350 W / 1050 W load



The Prüfball ZAP digital is an extremely safe testing device for fast start-up tests at initial operation of electricity meters, combined with a high-quality voltage tester.

- Direct indication of voltages up to 500 V
- Connectible capacity of 350 W / 1050 W for fast start-up tests
- Phase, phase sequence and continuity tester
- Thermal and overvoltage protection
- No battery required



### Universal testing device for meter installation and network technology

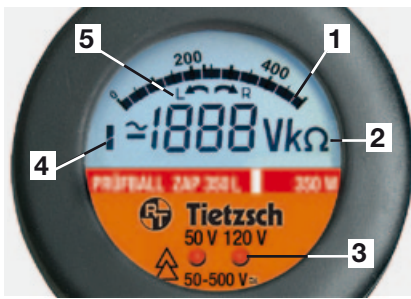
Five important functions combined in one device

- Electricity meter tester for all directly measuring electricity meters
- Voltage tester 24 ... 500 V
- Phase tester
- Phase sequence tester
- Continuity and self-tester

### Exact, precise display

Reliable test by two display systems and connectible load:

- direct indication by LEDs and LCD at > 50 V
- connection of start-up load
- unambiguous and direct indication of high accuracy



1. Bargraph
2. large numerals and symbols for voltage AC/DC and resistance
3. Light diodes
4. Indication of connected load
5. arrow for phase sequence



6. Indication if one test prod is applied to phase

### Technology and safety

High-quality elements guarantee operation and safety under extreme conditions

- solid rubber case, dust and water-proof IP 65
- overvoltage protection – CAT IV
- maintenance-free - no battery required
- secure two-hand tripping device for low resistive checks through special push-button with wide contact gap in both handles
- thermo-switch to avoid overheating at multiple use
- voltage monitoring as protection against mistakes in voltage ranges (phase/phase) during load tests



### ZAP – line

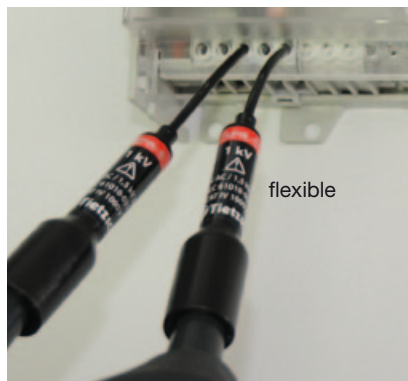
The patented special cable allows space-saving and water-protected design

- fast start-up through high capacity
- no overheating of device or handles
- enclosed casing without ventilation



### Accessories

- leather bag  
Keeping the ZAP in the bag avoid the bending of the connection lead
- pin prod for tight contacts  
(see accessories for Prüfball SPB)



Article number	Type / Label
81315	Electricity meter tester ZAP 350L
81316	Electricity meter tester ZAP 1050L
81019	Thread test electrode
81023	flexible pin prod
	Accessories on page 48

### Technical data

Electricity meter and voltage tester ZAP 350L (1050L) according to EN/IEC 61243-3 with special cable in accordance with BG test report

Nominal voltage

50 ... 500 V AC/DC

Display range

50 ... 500 V AC/DC

Frequency

0...2000 Hz

Voltage indication

high-impedance, direct reading:

LED  $\geq 50$  V – and  $\geq 120$  V + -

LCD  $\geq 50$  V backlit

(accuracy 2,5% + 5 digit)

⊕ low-resistive switched:  
additional display symbol for connected load

Continuity

0 ... 1000 k $\Omega$  (resolution 50 k $\Omega$  +/- 150 k $\Omega$ )

Phase / Phase sequence / Polarity

capacitive, without accessible electrode

arrows for phase sequence

POL for phase unipolar

tests possible with gloves

voltage type - / -

Input resistance

direct (high-impedance) approx. 150 - 190 k $\Omega$

⊕ switched (start-up): 150  $\Omega$  (50  $\Omega$ )

Current peak value

direct: < 3,5 mA

⊕ switched: 1,5 A / 230 V (4,6 A / 230 V)

On-time

30 seconds

Connectible capacity

approx. 350 W at 230 V (approx. 1050 W at 230 V)

Overvoltage protection

automatic switch-off of load at > 260 V

Overload protection

thermo-switch, thermo-point at > 70°C

Surge voltage strength

12 kV case insulation to user

12 kV switching mechanism between test prods

Insulation test voltage

6 kV unit inspection of case and line

Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

Operating temperature

-10°C ... + 55°C

Power supply

maintenance-free - without battery,  
test functions voltage, phase sequence is  
supplied from the mains, Continuity by Li-accu with  
automatic charging function

Casing

solid rubber EPDM, unbreakable display cover  
made of indestructible polycarbonate

Protection category

IP 65, device can be used in moist environments

Line

patented thermo-line  $\varnothing$  10 mm / 1,8 m,

( $\varnothing$  15 mm / 1,8 m)

twin insulated, PA-thermo protection meshwork

Dimensions / Weight

274 x 75 x 47 mm (display part) / 510 g (720 g)

## Type overview

### SPB Prüfball Analog



**SPB 500**  
Nominal voltage 24-500 V



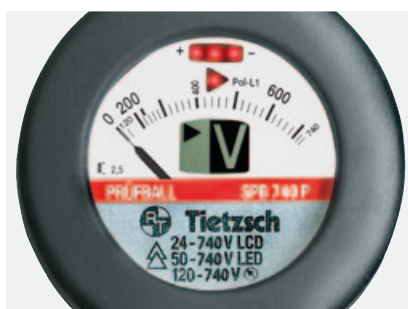
**SPB 500P**  
Nominal voltage 24-500 V  
Phase and phase sequence test



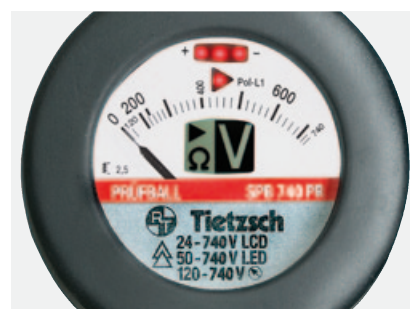
**SPB 500PR**  
Nominal voltage 24-500 V  
Phase and phase sequence test  
Continuity test  
RCD-tripping



**SPB 740**  
Nominal voltage 24-740 V



**SPB 740P**  
Nominal voltage 24-740 V  
Phase and phase sequence test



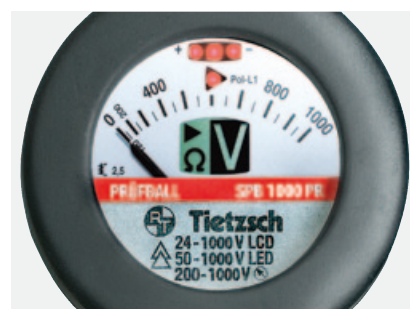
**SPB 740PR**  
Nominal voltage 24-740 V  
Phase and phase sequence test  
Continuity test  
RCD-tripping



**SPB 1000**  
Nominal voltage 24-1000 V



**SPB 1000P**  
Nominal voltage 24-1000 V  
Phase and phase sequence test



**SPB 1000PR**  
Nominal voltage 24-1000 V  
Phase and phase sequence test  
Continuity test  
RCD-tripping

## SPB Prüfball Digital



### SPB 500L

Nominal voltage 50-500 V  
Phase and phase sequence test  
Continuity test  
RCD-tripping



### SPB 1000L

Nominal voltage 50-1000 V  
Phase and phase sequence test  
Continuity test  
RCD-tripping

## SPB Prüfball Acoustic



### SPB 500PRA

Nominal voltage 24-500 V  
Phase and phase sequence test  
Continuity test  
Acoustic signal at voltage

## Order data

Article no.	Type
81301	SPB 500
81302	SPB 500P
81321	SPB 500PR
81305	SPB 740
81306	SPB 740P
81325	SPB 740PR
81307	SPB 1000
81308	SPB 1000P
81327	SPB 1000PR
81322	SPB 500L
81323	SPB 1000L
81313	SPB 500PRA
81314	ZAP 350
81315	ZAP 350L
81316	ZAP 1050L

## Electricity meter tester



### ZAP 350

Nominal voltage 24-500 V  
Phase and phase sequence test  
Continuity test  
Connectible load 350 W / 230 V



### ZAP 350L

Nominal voltage 50-500 V  
Phase and phase sequence test  
Continuity test  
Connectible load 350 W / 230 V



### ZAP 1050L

Nominal voltage 50-500 V  
Phase and phase sequence test  
Continuity test  
Connectible load 1050 W / 230 V

## MultiSafe DSP 3

Highest precision from 10 mV up to 1200 V



The MultiSafe DSP 3 is a versatile testing tool for all applications in industry and power engineering - multifunctional, precise, reliable.

- Precise indication of voltage from 10 mV up to 1200 V AC / 1500 V DC
- Phase, phase sequence and continuity test up to 6 MΩ, frequency up to 10 kHz
- Expandable up to 5 kV with high-tension test prods
- Highest degree of safety provided by protective resistors in both test prods
- Large illuminated display
- Phase sequence test applicable for unearthed IT-mains





### Seven test functions

Fast and safe measuring and testing of:

- Direct and alternating current
- Resistance / continuity
- Polarity
- Phase / phase sequence grounded
- Phase sequence ungrounded
- Frequency

### Easy operation

Fully automated test procedures obviate operating errors:

- At 8 V the MultiSafe switches on, or from continuity over to voltage testing
- Selection of correct measurement range
- Type of voltage and polarity are detected
- Assignable function key for: HOLD, phase sequence unearthed, frequency measurement, light on/off
- Self-test per keypress
- „DATA HOLD“

### Three readout systems

Unambiguous and rapid recognition of function and result:

1. Round red flares for voltage, green square symbol for resistance and red triangle for phase and phase sequence
2. The display shows precise values in V or k $\Omega$  as well as voltage type and polarity.
3. An acoustic signal indicates continuity up to 10 k $\Omega$ .



Display with illumination (can be switched off)

### Robust design

High quality elements guarantee function and safety under extreme conditions:

- Impact resistant plastic casing and break-proof display cover
- Dust and water proof (IP65, approved for operation in outdoor areas)
- Spring mounted test contacts
- Twin insulated PUR control cable



### Highest level of safety

- Protective resistors located directly behind both test electrodes protect user and device especially against dangerous voltage peaks and energy from external sources.
- CAT IV - highest overvoltage category, device is suitable for operation in all areas of power engineering.
- The MultiSafe has been tested and certified by VDE

### Reliable phase sequence test without earth

- Innovative measuring principle for phase sequence tests **in unearthed mains** from 165 V up to 1200 V, 50 Hz, applicable for IT-mains

### Wide range of safety accessories

- test prods for test objects that are difficult to access
- adapter for test lines with 4 mm standard plug
- extensions for tests at overhead lines
- bags
- tightly screwable test prods for voltages up to 5000 V



### Technical data

Two-pole voltage-continuity tester MultiSafe DSP 3 tested and certified in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

#### Nominal voltage

8 ... 1000 V AC / 1500 V DC  
(according to VDE: automatic switch on/over at  $\geq 8$  V)

#### Display range

0,01 V ... 1500 V DC  
0,6 V ... 1200 V AC

#### Frequency

0...10.000 Hz

#### Indication of voltage/phase/phase sequence

3 red LEDs for voltage 8, 230, 400 V  
LCD 3½-digit for V-measurement value and type of voltage +/- and additional functions  
red LED-triangle for phase and phase sequence

#### Measuring ranges - voltage

DC: 0,01...9,99/10,0...99,9/100...1500 V(1% + 2 D)  
AC: 0,6...99,9/100...1200 V (1% + 2 D)  
(TRMS 15...1800 Hz)  
15 ...1200 V (15% + 2D)  
(sineff > 1,8 ... 10 kHz)

#### Indication of resistance/continuity/diodes

green LED for continuity up to 5999 k $\Omega$  and diodes  
LCD 3½-digit for  $\Omega$ -measurement value  
buzzer signal,  $\leq 10$  k $\Omega$

#### Measuring ranges - resistance

0...9,9 k $\Omega$  measurement current 5  $\mu$ A (5% + 2 D)  
10...1999 k $\Omega$  measurement current 1  $\mu$ A (5% + 2 D)  
2,00...5,99 M $\Omega$  measurement current 0,035  $\mu$ A(5% + 2 D)

#### Measuring ranges - frequency

15 ... 1999 Hz, 2,00 ... 10,00 kHz

#### Input resistance

311 k $\Omega$  at 25 ... 1000 V  
protective resistors directly behind both test electrodes

#### Current peak value

3,2 mA at 1000 V

#### On-time

2 minutes

#### Surge voltage strength

> 12 kV case insulation to user  
> 12 kV switching mechanism between test prods  
tested with 14,8 kV 1,2/50  $\mu$ s surge

#### Insulation test voltage

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

9 V-block IEC 6 LR61 power saving circuit,  
automatic switch-off after 30 s without measuring  
indication of battery condition

#### Casing

ABS, display cover PC impact resistant, test electrodes spring-mounted, contact electrode (Pol-L1-sensor)

#### Protection category

IP 65, device can be used in moist environments

#### Line

PUR control cable, 1000 V, 1 m

#### Dimensions / weight

240 x 62 x 39 mm (device with display) / approx. 270 g

Article number	Type / Label
84301	MultiSafe DSP 3
	Accessories on page 50

## MultiSafe DSP 4

Highest precision from 10 mV up to 1200 V



The MultiSafe DSP 4 is a safe testing device for for all applications in power engineering – easy handling, precise, reliable.

- Precise indication of voltage from 10 mV up to 1200 V AC / 1500 V DC
- Phase, phase sequence and continuity tester (possible with gloves) continuity tester up to 2 MΩ
- Highest degree of safety provided by protective resistors in both test prods
- Easy operation  
large illuminated display





### Five test functions

Fast and safe measuring and testing of:

- Direct and alternating current
- Resistance / continuity
- Polarity
- Phase
- Phase sequence grounded

### Easy operation

Fully automated test procedures obviate operating errors:

- At 24 V the MultiSafe switches on, or from continuity over to voltage testing
- Automatic selection of correct measurement range.
- Type of voltage and polarity are detected
- Self-test per keypress
- „DATA HOLD“

### Three readout systems

Unambiguous and rapid recognition of function and result:

1. Round red flares for voltage, green square symbol for resistance and red triangle for phase and phase sequence.
2. The display shows precise values in V or k $\Omega$  as well as voltage type and polarity.
3. An acoustic signal indicates continuity up to 10 k $\Omega$ .



Display with illumination

### Robust design

High-quality elements guarantee function and safety under extreme conditions:

- Impact resistant plastic casing and break-proof display cover
- Dust and water proof (IP65, approved for operation in outdoor areas)
- Spring mounted test contacts
- Twin insulated PUR control cable



### Highest level of safety

- Protective resistors located directly behind both test electrodes protect user and device especially against dangerous voltage peaks and energy from external sources.
- CAT IV - highest overvoltage category, device is suitable for operation in all areas of power engineering.
- LED indication also without battery.
- The MultiSafe has been tested and certified by VDE.

### Phase sequence and continuity test without sensor

- Exact phase sequence test in grounded mains from 165 V up to 1200 V / 50 Hz by microcontroller analysis
- Phase sequence test possible with gloves

### Safety accessories

- test prods for test objects that are difficult to access
- adapter for test lines with 4 mm standard plug
- extensions for tests at overhead lines



Increased security of the connection through tightly screwable extensions. Thread set for MultiSafe test prods required (optionally).

### Technical data

Two-pole voltage-continuity tester MultiSafe DSP 4 tested and certified in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

#### Nominal voltage

24 ... 1000 V AC / 1500 V DC  
(according to VDE: automatic switch on/over at  $\geq 24$  V)

#### Display range

0,01 V ... 1500 V DC  
1 V ... 1200 V AC

#### Frequency

15 Hz ... 10 kHz < 500 V, 15 Hz ... 4 kHz > 500 V

#### Indication of voltage/phase/phase sequence

3 red LEDs for voltage 50 V + / - and 120 V  
LCD 3½-digit for V-measurement value and type of voltage -/AC and additional functions  
red LED-triangle for phase and phase sequence

#### Measuring ranges - voltage

DC: 0,01...8,99/10,0...99,9/100...1500 V (1,5% + 3 D)  
AC: 1...99,9/100...1200 V (1,5% + 3 D)  
(TRMS 15...1800 Hz)  
15 ...1200 V (15% + 3 D)  
(sineff > 1,8 ... 4/10 kHz)

#### Indication of resistance/continuity/diodes

green LED for continuity up to 1999 k $\Omega$  and diodes,  
LCD 3½-digit for k $\Omega$ -measurement value  
buzzer  $\leq 10$  k $\Omega$

#### Measuring ranges - resistance

0 ... 1999 k $\Omega$  (5% + 3 D)

#### Input resistance

412 k $\Omega$  at 50 V / 50 Hz  
311 k $\Omega$  at 1000 V, 720 k $\Omega$  at 1000 V DC  
protective resistors directly behind both test electrodes

#### Current peak value

3,2 mA at 1000 V

#### On-time

2 minutes

#### Surge voltage strength

> 12 kV case insulation to user  
> 12 kV switching mechanism between test prods  
tested with 14,8 kV 1,2/50  $\mu$ s surge

#### Insulation test voltage

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

9 V-block IEC 6 LR61 power saving circuit,  
automatic switch-off after 30 s without measuring  
indication of battery condition

#### Casing

ABS, display cover PC impact resistant, test electrodes spring-mounted

#### Protection category

IP 65, device can be used in moist environments

#### Line

PUR control cable, 1000 V, 1 m

#### Dimensions / weight

240 x 62 x 39 mm (device with display) / approx. 270 g

Article number	Type / Label
84302	MultiSafe DSP 4
84019	Thread set DSP
	Accessories on page 50

# ProfiSafe LSP 3

## Voltage tester with 6-step LED display



LSP 3-400:  
nominal voltage 12 – 400 V

LSP 3-690:  
nominal voltage 24 – 690 V



The ProfiSafe LSP 3 is an absolutely safe and manageable tester without battery, maintenance-free and environmentally friendly.

- Secure voltage indication without own energy source up to 400/690 V power supply from the mains
- Phase, phase sequence and continuity test maintenance-free due to accu, automatic recharge while voltage testing
- Environmentally friendly without battery





### Five test functions

Fast and safe testing of:

- Direct and alternating current
- Continuity
- Polarity
- Phase
- Phase sequence

### Highest level of safety

- CAT IV - highest overvoltage category, device is suitable for operation in all areas of power engineering.
- The ProfiSafe has been tested and certified by VDE.

### Clear signals

Unambiguous and rapid recognition:

- round red flares for voltage
- red triangle for phase and phase sequence
- green square symbol for continuity

### Maintenance-free

Lifelong indication of continuity, phase and phase sequence – **without battery**

- voltage tests can always be performed - even without accu (power supply from the mains)
- no battery required, environmentally friendly
- power supply for continuity, phase and phase sequence from high-performance accu
- accu is charged automatically during voltage tests

### Robust design

High-quality elements guarantee function and safety under extreme conditions:

- Impact resistant plastic casing
- Dust and water proof (IP65, approved for operation in outdoor areas)
- Spring mounted test contacts
- Twin insulated rubber sheathed cable

### Accessories

- extensions
- pin tip
- adapter
- bags



### Technical data

Two-pole voltage tester ProfiSafe LSP 3 tested and certified in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

#### Type / Nominal voltage

LSP 3-400	12 ... 400 V AC / DC
LSP 3-690	24 ... 690 V AC / DC

#### Display range

LSP 3-400	12 ... 400 V AC / DC
LSP 3-690	24 ... 690 V AC / DC

#### Frequency

0 ... 200 Hz

#### Indication of voltage

7 red LED for voltage in 6 steps and type of voltage + - ~

LSP 3-400	12, 24, 50, 230, 400 V
LSP 3-690	24, 50, 230, 400, 690 V

#### Phase / phase sequence

red triangle LED for phase unipolar and phase sequence two-pole with sensor

#### Continuity / diodes

green square LED for indication of continuity 0 ... 500 kΩ

#### Input resistance

LSP 3-400	117 kΩ at 400 V
LSP 3-690	202 kΩ at 690 V

#### Current peak value

3,4 mA by 400 / 690 V

#### On-time

30 seconds

#### Surge voltage strength

12 kV case insulation to user  
12 kV switching mechanism between test prods

#### Insulation test voltage

6 kV unit inspection of case and line

#### Overvoltage category

CAT IV in accordance with IEC 60664-1 (VDE 0110)

#### Operating temperature

-10°C ... + 55°C

#### Power supply

For voltage tests from the mains integrated lithium accu – for continuity / phase / phase sequence maintenance-free - without battery automatic recharge while voltage testing

#### Casing

ABS impact resistant, test electrodes spring-mounted, accessible electrodes (Pol-L1-sensor)

#### Protection category

IP 65, device can be used in moist environments

#### Line

PUR control cable, 1000 V, 1 m

#### Dimensions / weight

231 x 48 x 37 mm (device with display) / approx. 170 g

Article number.	Type / Label
85322	ProfSafe LSP 3-400
85321	ProfSafe LSP 3-690
	Accessories on page 50

# MultiSafe DSP 3TT1

Telescope voltage tester for light rail systems



The MultiSafe DSP 3TT1 is a safe equipment for fast voltage testing at overhead lines of light rail systems.

- Precise indication of voltage up to 1000 V
- Test height up to 6,2 meter variable height adjustment
- Highest degree of safety provided by protective resistors within test prod, maximum current < 3,2 mA
- Easy operation with one single push-button, self-test for testing function, protective resistors and proper ground connection



### Application

The MultiSafe DSP 3TT1 is a two-pole telescope voltage tester for voltages up to 1000 V AC / 1500 V DC.

It is particularly suitable to detect quickly and securely voltage at catenary lines of light rail systems.

The voltage tester consists of a telescopic tube with test electrode to be connected to the overhead line, a display part and a contact magnet for the grounded rail.

The display part was designed on the basis of the two-pole voltage tester MultiSafe DSP 3, which is certified by VDE in accordance with EN/IEC 61243-3. A high level of safety is provided by resistor decades that are moulded within the test probe. The current is securely limited to 3,2 mA.

### Three readout systems

Unambiguous and rapid recognition of function and result:

- round red flares for voltage, green square symbol for standby and absence of voltage
- illuminated display shows precise values in V or kΩ as well as voltage type and polarity
- acoustic signal > 50 V AC / 120 V DC.



The MultiSafe switches on at 50 V or more, or over from test function to voltage test.



### MultiSafe DSP 3TT1M

Protective resistors, function of the voltage tester and the connection between magnet and rail are checked easily and quickly with the self-test.



### MultiSafe DSP3TT1K

Contact terminal for rail foot (as an alternative to contact magnet).

### Easy operation

Simple test sequence in three steps:

1. Place the contact magnet / contact clip onto the grounded rail.
2. Perform self-test before voltage tests
3. Pull out the telescopic tube, mount the electrode to overhead line, voltage testing

### Robust design

High-quality elements guarantee function and safety:

- 4-part GRP-telescopic tube with variable height fixing
- Display part made of impact-proof plastic with break-proof display cover
- Dust and water proof, approved for operation in outdoor areas
- solid PUR control cable with contact magnet for grounded rail
- unscrewable display part and test electrode

### Accessories

- Bag with ring bolt and shoulder belt 176 x 24 cm
- Wall holder



Variable locking



Wall holder

### Technical data

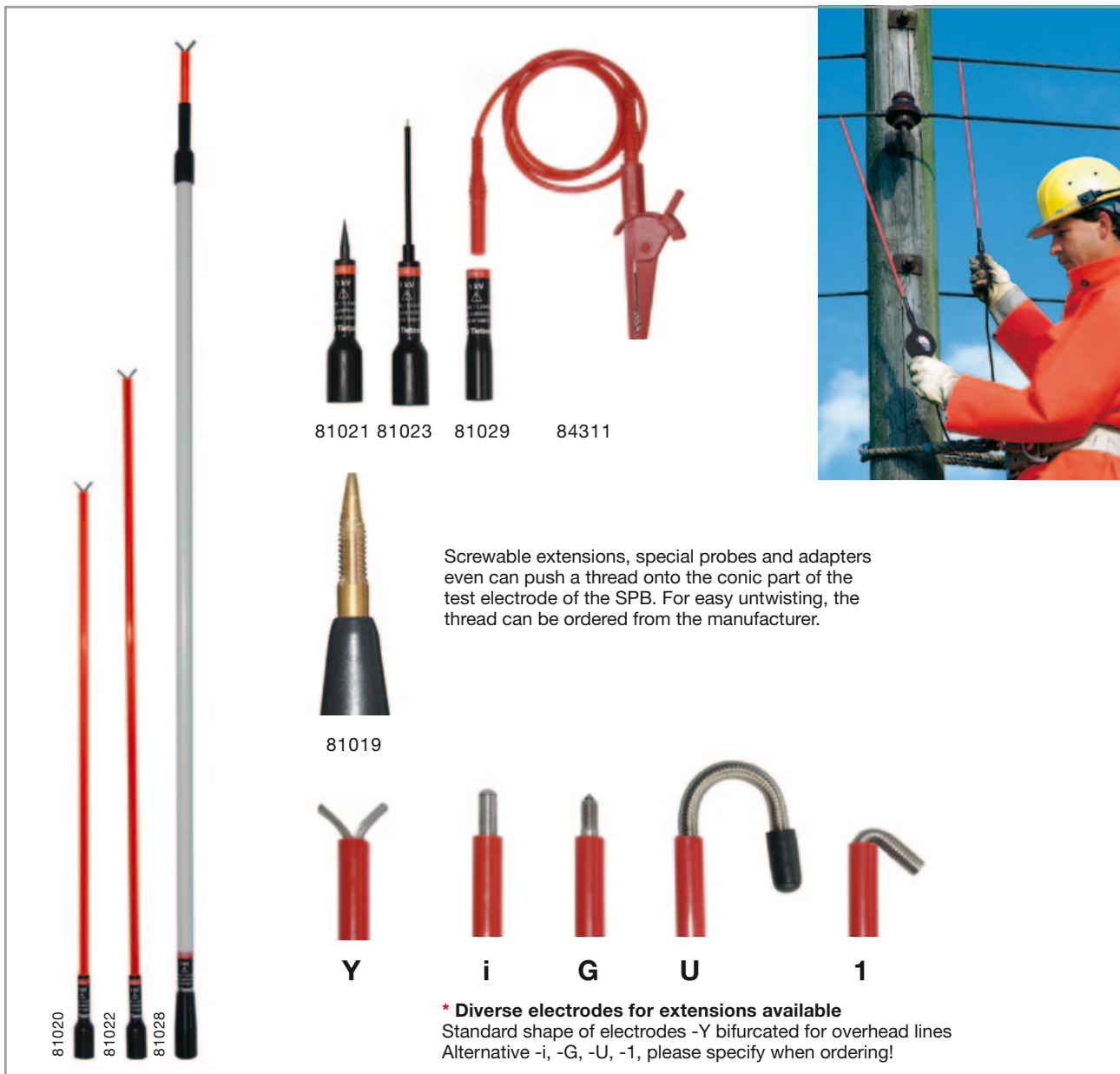
MultiSafe DSP 3TT1 Telescope voltage tester for light railway overhead lines

Nominal voltage	50 ... 1000 V AC / 1500 V DC
Display range	50 ... 1000 V AC / 1500 V DC
Frequency	0 ... 500 Hz
Indication of voltage	two redundant systems 1. LC-display at > 50 V auto-on (accuracy 3% + 5 digit) 2. LEDs at > 50 V Detection of operating mode +/- / - / ~
Self-test	function, protective resistors and ground contact
Input resistance	311 kΩ, therefore from 186 kΩ in the moulded resistance cartridge beneath the test electrode
Measurement current	3,2 mA at 1000 V AC/ DC
On-time	15 minutes
Surge voltage strength	> 12 kV case insulation to user > 12 kV switching mechanism between test prods tested with 14,8 kV 1,2/50 μs surge
Overvoltage category	CAT IV in accordance with IEC 60664-1 (VDE 0110)
Operating temperature	-10°C ... + 55°C
Power supply	9 V-block IEC 6 LR61 power saving circuit, automatic switch-off after 30 s without measuring indication of battery condition
Protection category	IP 65, device can be used in moist environments
Design	Two-pole voltage tester <b>Basic device DSP 3:</b> impact-proof, dust proof plastic casing with unbreakable display cover, protection category IP 65 <b>Extension DSP 3TT1:</b> 4-part telescopic tube made of GRP with integrated PUR spiral line moulded resistor decade, approx. 186 kΩ PUR control line with contact magnet/contact clamp
Standards	Basic device DSP 3 in accordance with EN/IEC 61243-3 Extension DSP 3TT1 in accordance with EN/IEC 61010-031 Surge voltage strength in accordance with EN/IEC 60071
Dimensions / weight	1740 x 120 x 110 mm run-out length up to 5,2 m device incl. line and magnet 2,3 kg device with clamp 2,6 kg
Article number	Type / Label
89306	MultiSafe DSP 3TT1M
89336	MultiSafe DSP 3TT1K
84332	Bag TT-KLT 176 x 24 cm
63042	Wall holder
further designs up to 3 kV are available on request	

## Accessories



# Accessories Prüfball SPB / ZAP



Article no.	Type	Description	SPB	ZAP
81019	SPB...G	Thread on both electrodes	<input type="checkbox"/>	<input type="checkbox"/>
81020	SPB-S500-*	SPB extension 500 mm, insulated stainless steel tube, 1000 V	<input type="checkbox"/>	
81022	SPB-S600-*	SPB extension 600 mm, insulated stainless steel tube, 1000 V	<input type="checkbox"/>	
81028	SPB-S900-*	SPB extension 900 mm, GRP tube, 1000 V	<input type="checkbox"/>	
81021	SPB-S20-A	SPB insertion prod for underground cables, 1000 V	<input type="checkbox"/>	
81023	SPB-S70	SPB pin prod for test holes and tight contacts, flexible pin 3 x 63 mm, CAT IV, 1000 V	<input type="checkbox"/>	<input type="checkbox"/>
81029	SPB-S-ADA	SPB srewable adapter with 4 mm socket, 1000 V	<input type="checkbox"/>	
84311	L-SETR	Test line 0.8 m with crocodile clip, 1000 V, CAT III, red	<input type="checkbox"/>	

■ included in the delivery

available accessories

\*standard shape of electrode Y, alternative i, G. Please specify!



Article no.	Type	Description	SPB	ZAP
81030	SP-LED	Leather bag for SPB / DSP / EP / ISO, 30 x 12 x 6 cm	<input type="checkbox"/>	
81032	SP-KLT	Artificial leather bag SPB / DSP, 30 x 12 x 6 cm	<input type="checkbox"/>	
81035	SP-KLT-S600	Artificial leather bag for SPB / DSP and test probes to 600 mm, 65 x 17 cm	<input type="checkbox"/>	
81033	Z350-LED	Leather bag for ZAP, 30 x 21 x 6 cm		<input type="checkbox"/>
81034	Z350-KLT	Artificial leather bag for ZAP, 30 x 21 x 6 cm		<input type="checkbox"/>
81031	S-HUELSE	Plastic casing for extension test probes up to 600 mm		<input type="checkbox"/>
81037	Z1050-LED	Leather bag for ZAP 1050, 36 x 21 x 6 cm		<input type="checkbox"/>

■ included in the delivery

available accessories

# Accessories MultiSafe DSP / ProfiSafe LSP

**Two connecting options to the MultiSafe:**

**1. Attachable connection (also for LSP)**  
Rubber profile for secure fixing on the test probes of the DSP.

**2. Screwable connection (only DSP)**  
Absolutely firm connection even at tensile load and vibration, water and dust proof.  
Therefore the MultiSafe must be equipped with thread at the test probes.  
Retrofitting possible. Attachable probes still do fit.

84313 attachable  
84010 screwable  
84014 screwable  
84316 screwable only DSP 3

84019

84013 84011 84312 84321 84311

Y i G U 1

**\* Diverse electrodes for extensions available**  
-Y, -i, -G, -U, -1, please specify when ordering!  
Standard with DSP-S500 und S900: -Y bifurcated for overhead lines  
Standard with DSP-HS5: -i = semicircular

Article no.	Type	Description	DSP	LSP
84019	DSP...G	Thread set for both probes of the DSP	<input type="checkbox"/>	
84313	LSP-S500-*	DSP / LSP extension 500 mm insulated stainless steel tube attachable, 1000 V	<input type="checkbox"/>	<input type="checkbox"/>
84010	DSP-S500-*	DSP extension 500 mm insulated stainless steel tube screwable, 1000 V	<input type="checkbox"/>	
84014	DSP-S900-*	DSP extension 900 mm GRP screwable, 1000 V	<input type="checkbox"/>	
84321	DSP-S20-A	insertion prod for underground cables screwable, 1000 V	<input type="checkbox"/>	
84013	DSP-S70	DSP / LSP pin prod for test holes and tight contacts, flexible pin 3 x 63 mm, CAT IV, 1000 V	<input type="checkbox"/>	<input type="checkbox"/>
84011	DSP-S-ADA	DSP / LSP attachable adapter with 4 mm-socket, 1000 V	<input type="checkbox"/>	<input type="checkbox"/>
84312	DSP-SADAS	DSP adapter screwable with 4 mm socket, 1000 V	<input type="checkbox"/>	
84316	DSP-HS5-*	High voltage test probe 5 kV, screwable, only DSP 3	<input type="checkbox"/>	
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red	<input type="checkbox"/>	<input type="checkbox"/>

■ included in the delivery

available accessories

\*standard shape of electrode Y, alternative i, G. Please specify!  
\*standard shape of electrode i, alternative Y, G. Please specify!



Article no.	Type	Description	DSP	LSP
81030	SP-LED	Leather bag for SPB / DSP, 30 x 12 x 6 cm	<input type="checkbox"/>	
81032	SP-KLT	Artificial leather bag SPB / DSP, 30 x 12 x 6 cm	<input type="checkbox"/>	
84020	DSP-ETU	Artificial leather case for DSP / LSP, 32 x 13 cm	<input type="checkbox"/>	<input type="checkbox"/>
84021	DSP-COR	Cloth bag Cordura for DSP, 30 x 16 cm	<input type="checkbox"/>	
85320	LSP-COR	Cloth bag Cordura for LSP, 29 x 14 cm		<input type="checkbox"/>
81035	SP-KLT-S600	Artificial leather bag for SPB / DSP and test probes to 600 mm, 65 x 17 cm	<input type="checkbox"/>	<input type="checkbox"/>
81031	S-HUELSE	Plastic casing for extension test probes up to 600 mm	<input type="checkbox"/>	<input type="checkbox"/>

■ included in the delivery

available accessories

# Article list

## Voltage tester

Art.-No.	Type	Description
<b>Prüfball SPB / ZAP</b>		
81301	SPB 500	Voltage tester analog 500 V
81302	SPB 500P	Voltage tester analog 500 V with phase and phase sequence indication
81321	SPB 500PR	Voltage tester analog 500 V with phase and phase sequence indication, continuity and self-test, RCD tripping
81313	SPB 500PRA	Voltage tester analog 500 V with phase and phase sequence indication, continuity and self-test, acoustic signal at voltage
81305	SPB 740	Voltage tester analog 740 V
81306	SPB 740P	Voltage tester analog 740 V with phase and phase sequence indication
81325	SPB 740PR	Voltage tester analog 740 V with phase and phase sequence indication, continuity and self-test, RCD tripping
81307	SPB 1000	Voltage tester analog 1000 V
81308	SPB 1000P	Voltage tester analog 1000 V with phase and phase sequence indication
81327	SPB 1000PR	Voltage tester analog 1000 V with phase and phase sequence indication, continuity and self-test, RCD tripping
81322	SPB 500L	Voltage tester digital 500 V with phase and phase sequence indication, continuity and self-test, RCD tripping
81323	SPB 1000L	Voltage tester digital 1000 V with phase and phase sequence indication, continuity and self-test, RCD tripping
81314	ZAP 350	Electricity meter tester analog 500 V, load 350 W at 230 V, with phase and phase sequence indication, continuity and self-test
81315	ZAP 350L	Electricity meter tester digital 500 V, load 350 W at 230 V, with phase and phase sequence indication, continuity and self-test
81316	ZAP 1050L	Electricity meter tester digital 500 V, load 1050 W at 230 V, with phase and phase sequence indication, continuity and self-test
<b>Accessories SPB / ZAP</b>		
81019	SPB...G	Thread on both electrodes
81020	SPB-S500-*	SPB extension 500 mm, insulated stainless steel tube, 1000 V
81022	SPB-S600-*	SPB extension 600 mm, insulated stainless steel tube, 1000 V
81028	SPB-S900-*	SPB extension 900 mm, GRP tube, 1000 V
81021	SPB-S20-A	SPB insertion prod for underground cables, 1000 V
81023	SPB-S70	SPB pin prod for test holes and tight contacts, flexible pin 3 x 63 mm, CAT IV, 1000 V
81029	SPB-S-ADA	SPB srewable adapter with 4 mm socket, 1000 V
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red
81030	SP-LED	Leather bag for SPB / DSP / EP / ISO, 30 x 12 x 6 cm
81032	SP-KLT	Artificial leather bag SPB / DSP, 30 x 12 x 6 cm
81035	SP-KLT-S600	Artificial leather bag for SPB / DSP / LSP and test probes to 600 mm, 65 x 17 cm
81033	Z350-LED	Leather bag for ZAP 350, 30 x 21 x 6 cm
81034	Z350-KLT	Artificial leather bag for ZAP 350, 30 x 21 x 6 cm
81037	Z1050-LED	Leather bag for ZAP 1050, 36 x 21 x 6 cm
81031	S-HUELSE	Plastic casing for extension test probes up to 600 mm

\* standard shape of electrode Y, alternative i, G. Please specify!

Art.-No.	Type	Description
<b>MultiSafe DSP</b>		
84002	DSP 2	MultiSafe 1000 V AC / 1500 V DC with phase and phase sequence indication, continuity and self-test
84301	DSP 3	MultiSafe 1000 V AC / 1500 V DC extra-low voltage 0,01...9,99 V, LCD lighted with phase and phase sequence indication, continuity and self-test, expandable with DSP-HS5 5 / 7 kV
84302	DSP 4	MultiSafe 1000 V AC / 1500 V DC extra-low voltage 0,01...8,99 V, LCD backlighted with phase and phase sequence indication, continuity and self-test, LED indication without battery

### Accessories DSP

84019	DSP...-G	Thread set for both probes of the DSP
84313	LSP-S500-*	DSP / LSP extension 500 mm insulated stainless steel tube attachable, 1000 V
84010	DSP-S500-*	DSP extension 500 mm insulated stainless steel tube screwable, 1000 V
84014	DSP-S940-*	DSP extension 940 mm GRP screwable, 1000 V
84321	DSP-S20-A	insertion prod for underground cables screwable, 1000 V
84013	DSP-S70	DSP / LSP pin prod for test holes and tight contacts, flexible pin 3 x 63 mm, CAT IV, 1000 V
84011	DSP-S-ADA	DSP / LSP attachable adapter with 4 mm socket, 1000 V
84312	DSP-S-ADAS	DSP adapter screwable with 4 mm socket, 1000 V
84316	DSP-HS5-**	High voltage test probe 5 kV screwable for DSP 3-G with thread (84019), 5 kV AC / 7 kV DC, 2 extensions essential!
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red
81030	SP-LED	Leather bag for SPB / DSP / EP / ISO, 30 x 12 x 6 cm
81032	SP-KLT	Artificial leather bag SPB / DSP, 30 x 12 x 6 cm
84020	DSP-ETU	Artificial leather case for DSP / LSP, 32 x 13 cm
84021	DSP-COR	Cloth bag Cordura for DSP, 30 x 16 cm
81035	SP-KLT-S600	Artificial leather bag for SPB / DSP / LSP and test probes to 600 mm, 65 x 17 cm
84022	ALU-KOF-KL	Solid box for HS5, 42 x 32 x 11 cm
81031	S-HUELSE	Plastic casing for extension test probes up to 600 mm

### ProfiSafe LSP

85322	LSP 3-400	ProfiSafe 12-400 V LED steps with phase and phase sequence indication, continuity and self-test
85321	LSP 3-690	ProfiSafe 24-690 V LED steps with phase and phase sequence indication, continuity and self-test

### Accessories LSP

85320	LSP-COR	Cloth bag Cordura for LSP, 29 x 14 cm
84313	LSP-S500-*	DSP / LSP extension 500 mm insulated 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, 1000 V
84011	DSP-S-ADA	DSP / LSP attachable adapter with 4 mm socket, 1000 V
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red

\* standard shape of electrode Y, alternative i, G. Please specify!

\*\* standard shape of electrode i, alternative Y, G. Please specify!

# Article list

## High voltage testers / Telescope voltage testers / Special types

Art.-No.	Type	Description
<b>High voltage testers</b>		
89305	DSP 3HS3M	High voltage tester 3 kV AC / DC with backlighted LCD, self-test, contact magnet
89335	DSP 3HS3K	High voltage tester 3 kV AC / DC with backlighted LCD, self-test, universal clamp
84316	DSP-HS5-**	High voltage test probe 5 kV screwable for DSP 3-G with thread (84019), 5 kV AC / 7 kV DC, 2 extensions essential!
89304	DSP 3HS11	High voltage tester 11 kV AC / 16 kV DC with backlighted LCD, self-test
89308	DSP 3HS36	High voltage tester 36 kV AC / DC with backlighted LCD, self-test, frequency indication, universal clamp
<b>Telescope voltage testers</b>		
89306	DSP 3TT1M	Telescope voltage tester 1 kV AC / 1,5 kV DC with backlighted LCD, self-test, contact magnet, test height up to 6,2 m
89336	DSP 3TT1K	Telescope voltage tester 1 kV AC / DC with backlighted LCD, self-test, clamp for the rail foot, test height up to 6,2 m
89307	DSP 3TT3M	Telescope voltage tester 3 kV AC / DC with backlighted LCD, self-test, contact magnet, test height up to 6,2 m
89337	DSP 3TT3K	Telescope voltage tester 3 kV AC / DC with backlighted LCD, self-test, clamp for the rail foot, test height up to 6,2 m
89309	DSP 3TT36	Telescope voltage tester 36 kV AC / DC with backlighted LCD, self-test, frequency indication, clamp for the rail foot, test height up to 6,2 m
<b>Special types</b>		
81388	SPB 1000UB1	Voltage tester analog 1000 V with continuity and self-test, additional with green LED, acoustic signal at voltage, clamp for the rail foot, curved probe for testing of underground
<b>Accessories</b>		
84331	DSP-HS-KLT	Artificial leather bag for HS3 / 11, 111 x 28 cm
84022	ALU-KOF-KL	Solid box for HS5, 42 x 32 x 11 cm
84330	ALU-KOF-MI	Solid box for HS3 / 11 / 36, 124 x 27 x 12 cm
84332	TT-KLT	Artificial leather bag for Telescope tester, 176 x 24 cm
63042	TT-WAND	Wall holder / 2 spring clips for TT
<b>Electrodes</b>		
89311	ELEK-i	Electrode-i for HS5 / SPB-S900 / DSP-S900 for testing conductor rails
89312	ELEK-iHS	Electrode-i for HS3 / HS11 / HS36 for testing conductor rails
89313	ELEK-G	Electrode-G for HS5 / SPB-S900 / DSP-S900 for special applications
89314	ELEK-GHS	Electrode-G for HS3 / HS11 / HS36 for special applications
89315	ELEK-Y	Electrode-Y for HS5 / SPB-S900 / DSP-S900 for testing overhead lines
89316	ELEK-YHS	Electrode-Y for HS3 / HS11 / HS36 for testing overhead lines
89317	ELEK-1	Suspension test electrode (small) for SPB-S900 / DSP-S900
89318	ELEK-U	Suspension test electrode for Telescope tester for testing overhead lines

\*\* standard shape of electrode i, alternative Y, G. Please specify!

## Ex-proof and measuring devices

Art.-No.	Type	Description
<b>ΩMegaSafe EP</b>		
83302	EP 4	Earth resistance tester 0,01 Ω - 1999 kΩ in accordance with EN 61557-4, incl. test line
83301	EP 4Ex	Ex-Earth resistance tester 0,01 Ω - 1999 kΩ in accordance with EN 61557-4, incl. test line

### Accessories EP

62013	BAT-AIMn	Battery Daimon MN 1604, Al-Mn-block 9 V, yellow
73009	EP-LEI	Test line for EP 4, CAT II, with protective cap CAT III, 1000 V, black
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red
84314	L-SETS	Test line 0.8 m with crocodile clip 1000 V, CAT III, black
73021	EP-LED	Leather bag for EP / ISO, 37 x 20 x 12 cm
81030	SP-LED	Leather bag for SPB / DSP / EP / ISO, 30 x 12 x 6 cm
73006	EP-DH50	50 m measuring line on wire reel
73004	EP-RH50	50 m measuring line on decoiler. NOT for ex-areas!
73001	EP-EK	Earth clamp with 4 mm standard socket
73007	EP-SAW	Sawtooth test prod for EP, attachable, CAT II

### ΩMegaSafe ISO

83310	ISO 1Ex	Ex-Megohmmeter 1 kΩ - 2 TΩ in accordance with EN 61557-2, incl. test lines
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### Accessories ISO

62013	BAT-DAIM	Battery Daimon MN 1604, Al-Mn-block 9 V, yellow
84311	L-SETR	Test line 0.8 m with crocodile clip 1000 V, CAT III, red
84314	L-SETS	Test line 0.8 m with crocodile clip 1000 V, CAT III, black
73021	EP-LED	Leather bag for EP / ISO, 37 x 20 x 12 cm
81030	SP-LED	Leather bag for SPB / DSP / EP / ISO, 30 x 12 x 6 cm
73008	ISO-PROBE	Attachable test probe for ISO 1Ex, CAT III
73010	ISO-TOL	Terraohm line for high bleeder resistors
73011	ISO-ELR	Annular electrode for surface resistance and volume resistivity, delivery in solid box with calibration plate in accordance with EN 61340-5-1 / 61340-2-3
73012	ISO-ELVO	Electrode for surface resistance in accordance with EN 61340-4-1 and 61340-2-3
73013	ISO-3FUSS	Tripod electrode for floors and surfaces in accordance with EN 1081













# Article list

## Ex-proof measuring and testing devices











Art.-No.	Type	Description
<b>VarioSafe EXM</b>		
82024	EXM 24A	Ex-voltage and resistance measuring device with NiMH-accu / T4 incl. test line, without Plug-in power supply NG4
82023	EXM 24LB	Ex-voltage and resistance measuring device with lithium battery / T6 incl. test line
82025	EMX 25A	Ex-Multimeter with NiMH-accu / T4 incl. test line, without Plug-in power supply NG4
82026	EMX 25LB	Ex-Multimeter with lithium battery / T6 incl. test line
<b>Accessories EXM</b>		
72025	AK72025/T4	EXM NiMH-accu , 9 V, 170 mAh / 40 h operation
72026	LB72026 Li/T6	EXM Lithium-battery 3,6 V, 2400 mAh / 300 h operation
82010	WID	Test lines for resistance and current
72010	SPA	Voltage test prods for EXM 3,4,5,24,25, 1000 V, CAT IV
72011	SPA-HS2	Voltage test prods for EXM 25, 2000 V
72012	SPA-HS7	Voltage test prods for EXM 25, 7000 V, only Ex I limited
82011	EXM-LED	Ever-ready bag (leather) for EXM, 18 x 19 x 5 mm
72328	NG4	Plug-in power supply NG4 for charging the NiMH-accu
82318	TMZ 25	Temperature measurement accessory for EXM 25, without sensor
82107	EXM-TFU	Universal sensor for TMZ, 250 mm
82108	EXM-TFO	Surface sensor for TMZ, 110 mm
82319	MZ 1005	clamp-on ammeter for EXM 25, 1000 A AC / DC, incl. accu and charger
62022	AKKU-MZ	NiMH-accu, 9 V, 170 mAh for MZ 1005

# Explanation of symbols

## Functions

	Voltage testing up to ... V
	Continuity / Self-test up to ... kV
	Phase tester
	Phase sequence tester
	Digital evaluated rotating field without accessible electrode
	Acoustic signal at voltage
	Acoustic signal at continuity
	Frequency measurement
	Current measurement
	Temperature measurement
	Voltage tests work without battery
	Push-button for load

## Safety / Range of application

	EC conformity
	Mark of approval from VDE in accordance with IEC/EN 61243-3
	Overvoltage category
	Can be used in moist environments Protection category
	For indoor and outdoor applications
	Approved for Ex-areas
	Suitable for grounded voltage
	Suitable for non-grounded voltage
	Suitable for tests in accordance with VDE 0413-4 / protective conductor test
	Suitable for tests in accordance with VDE 0413-2 / Insulation test

# Equipment labelling

	Attention! Observe user instructions!		Device for live working
	Mark of approval from VDE test authority		Push-button (switched)
	EC conformity		This devices may not be disposed with the domestic waste (WEEE 2002/96 EG).
	On-time for voltage testing		Approved for Ex-areas in accordance with ATEX (DIN IEC 60079-0 and DIN IEC 60079-11)

**Quality creates safety.**

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