



Tietzsch

2019 / 2020



Voltage tester

High voltage tester

Ex-testing devices

Quality creates safety

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Quality creates safety

Quality is a precondition for safe products



As a family enterprise, we set extraordinary standards in the quality and safety of our measuring and testing equipment. With our high-quality products, we provide our customers maximum safety within electrical systems. Tradition and innovation, complete manufacturing and quality control in Germany, as well as customer-specific solutions in various application areas are the strengths and the guarantee of the quality promise of Tietzsch.

Tradition and innovation

Already in **1953**, we were able to manufacture the particularly robust and safe „Prüfball“ with its innovative dust-proof rubber housing.

Today, we develop and produce voltage testers, high voltage testers and explosion-proof devices under highest quality and safety requirements and offer customised solutions tailor-made applications. Easy operation and reliable displays underline the functionality of our devices and correspond with today's customer requirements.



Certified safety and quality



Our measuring and testing equipment is subject to constant quality control. Regular production monitoring is carried out by VDE, UL and DEKRA.

- **VDE** certificates for voltage testers and their annual production control
- **UL / CSA** certificate for the USA-Canada version of the MultiSafe
- **DEKRA-EXAM** and **TÜV** certificates for explosion-proof measuring instruments and the annual QM auditing of the production facility

Manufacturing „Made in Germany“

All our products are „Made in Germany“. Based on complete in-house manufacturing process, we ensure the highest level of quality and provide you with special tailor-made solutions. This includes the careful selection of high-quality materials and the complete testing of each individual device.



Company headquarters and production in Ennepetal



Mechanical processing for accessories according to customer requirements



Ensuring quality through our own electronics production



Assembly of highly complex measuring systems



Tests up to 70 kV in our high voltage laboratory



100% inspection of each device

Technical support / service



In addition to our high-quality products, we offer comprehensive and professional customer service and technical support.

Our contact persons and specialists will be gladly available for your questions concerning our products and services.

Technical hotline +49 2333 861 77 03

Repeated examination and calibration



For voltage testers over 1 kV, the period of repeated examination may not exceed 6 years. This is also recommended for voltage testers up to 1000V.

Depending on the area of application and the demands on the measuring and testing equipment, a repeated examination or a recalibration within a shorter period of time may be advisable.

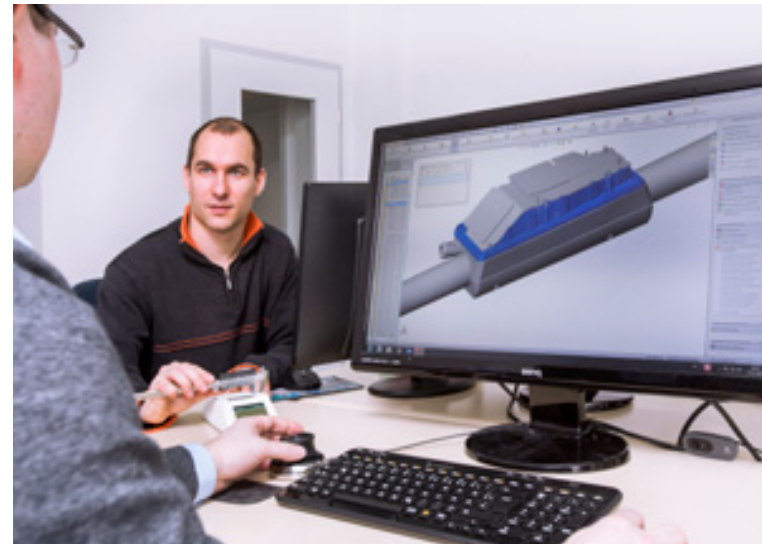
We will find your solution

Are you looking for measuring and testing equipment for special applications?

Our service:

We would be pleased to advise you on specific problems and find tailor-made solutions. With our team of specialists and many years of experience, we demonstrate our strength and flexibility, even in small series.

We look forward to new challenges.



We have very high demands on our measuring and testing equipment, which is subject to constant quality control.

Most modern electronics and high-quality materials guarantee a long life.

If a tester shows a damage or malfunction, you can have it repaired quickly and unbu-reaucratically.

Repair



On site for you



Specific application place special demands on the measuring and testing equipment.

We would be glad to come to you to support you in special applications and develop joint solutions.

Please send back the device to:

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Willringhauser Str. 18
58256 Ennepetal

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Mo. - Thu. 8:00 am - 4:00 pm

Fr. 8:00 am - 2:00 pm

Social responsibility



To assume social responsibility means to deal with ecological resources in a responsible manner. In this sense, we have developed completely maintenance-free voltage testers with innovative and particularly power-saving circuits. These work with all additional functions without batteries.

For production processes in our company, we have taken voluntary measures to reduce CO₂ emissions. We almost exclusively use regenerative energies.

Electricity, which can not be generated by own solar systems, is supplemented by regional green power.

Additionally we installed heat pumps, which operate with regenerative energy and therefore are a significant contribution to environmental protection.



aus der Region für die Region

Urkunde

Seit dem **1. April 2012** fördert die Firma
Rudolph Tietzsch GmbH & Co. KG
Willringhauser Straße 18
58256 Ennepetal

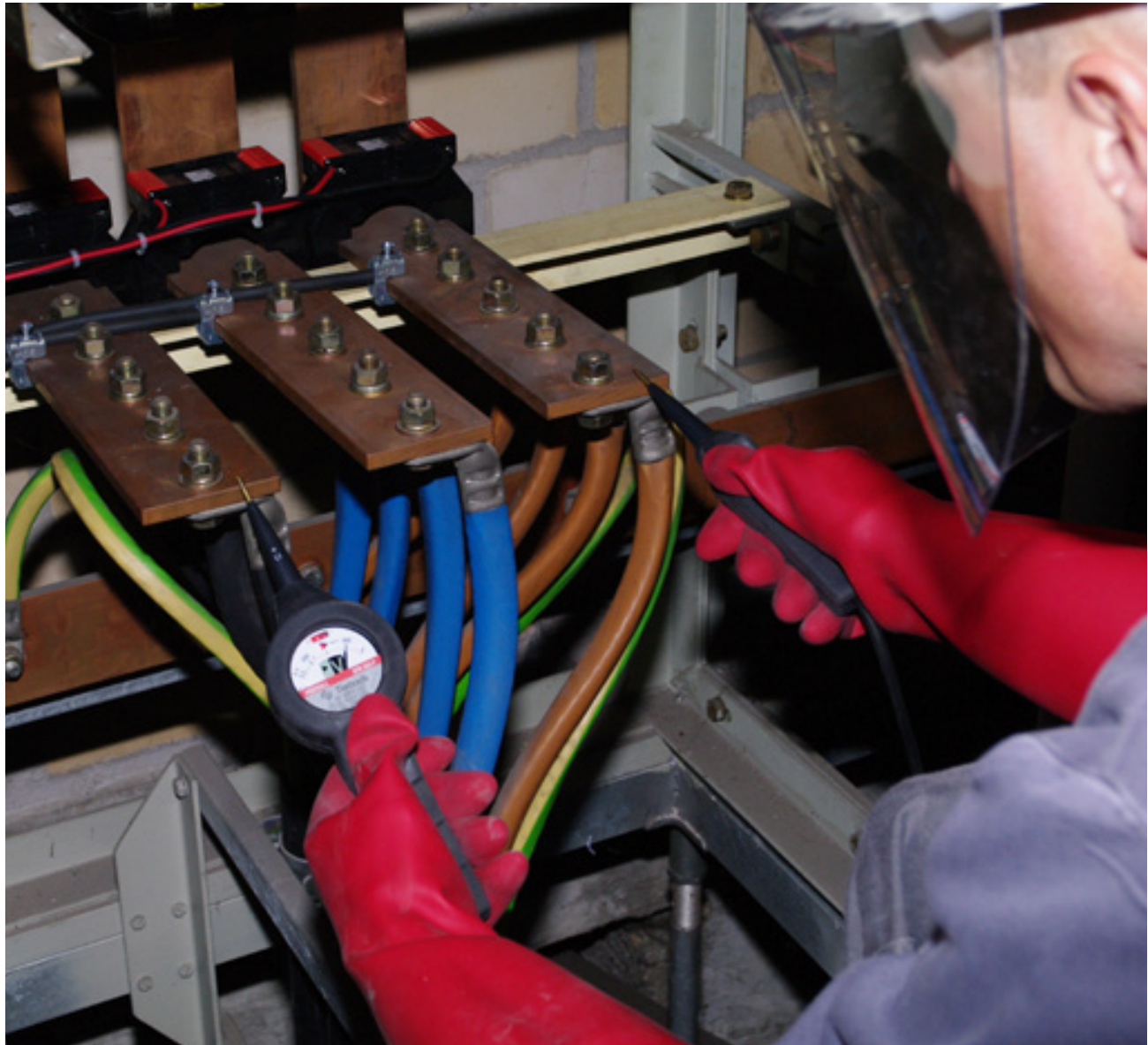
als grünstrom-Kunde Projekte und Modellvorhaben,
die einen Beitrag zum Klimaschutz
und zur Senkung der CO₂-Emissionen leisten.

Gevelsberg, 14. Dezember 2016


Uwe Träris, Vorstand

AVU...
ENergie – wir denken weiter

Voltage tester up to 1 kV



Type overview voltage tester up to 1 kV

Prüfball SPB Analog



- One-piece casing made of rubber
- Extremely safe and robust
- Maintenance-free without battery

Prüfball SPB Digital



- Casing made of rubber
- Backlit LC-Display
- Maintenance-free

Prüfball ZAP



- Robust rubber casing
- Integrated test for electricity meter
- Maintenance-free

	500B	500PR	1000B	1000PR	500PRA
Indicating range	20-500 V		50-1000 V		20-500 V
Voltage warning LED without battery	■	■	■	■	■
Voltage indication with value without battery	■	■	■	■	■
Connectible load for 30 mA RCD		■		■	■
Connectible load for electricity meter					
Vibration at load		■		■	
Acoustic signal at load					■
Phase test single-pole	■	■	■	■	■
Phase sequence test	■	■	■	■	■
Continuity test	■	■	■	■	■
Resistance measuring device					
Frequency meter					
Front spot lighting					
Backlighting LCD					
Protection category	IP 65				
Power supply	without battery*				
Overvoltage category	CAT IV 500 V		CAT IV 1000 V		CAT IV 500V
VDE GS in accordance with IEC 61243-3	■	■	■	■	■
Article number	81411	81401	81414	81404	81402

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	500L	1000L
Indicating range	50-500 V	50-1000 V
Voltage warning LED without battery	■	■
Voltage indication with value without battery	■	■
Connectible load for 30 mA RCD	■	■
Connectible load for electricity meter		
Vibration at load		
Acoustic signal at load		
Phase test single-pole	■	■
Phase sequence test	■	■
Continuity test	■	■
Resistance measuring device		
Frequency meter		
Front spot lighting		
Backlighting LCD	■	■
Protection category	IP 65	
Power supply	Longlife battery**	
Overvoltage category	CAT IV 500 V	CAT IV 1000 V
VDE GS in accordance with IEC 61243-3	■	■
Article number	81422	81423

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	ZAP 350	ZAP 350L	ZAP 1050L
Indicating range	20-500 V	50-500 V	
Voltage warning LED without battery	■	■	■
Voltage indication with value without battery	■	■	■
Connectible load for 30 mA RCD	■	■	■
Connectible load for electricity meter	350 W		1050 W
Vibration at load			
Acoustic signal at load			
Phase test single-pole	■	■	■
Phase sequence test	■	■	■
Continuity test	■	■	■
Resistance measuring device			
Frequency meter			
Front spot lighting			
Backlighting LCD		■	■
Protection category	IP 65		
Power supply	without battery*	Longlife battery**	
Overvoltage category	CAT IV 300 V CAT III 500 V	CAT IV 500 V	
VDE GS in accordance with IEC 61243-3			
Article number	81314	81315	81316

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MultiSafe DSP 4



- Precise display
- Large measuring range
- Large illuminated LCD

	4	4F	4ST	4FST
Indicating range	1-1200 V AC / 0,03 - 1500 V DC			
Voltage warning LED without battery	■	■	■	■
Voltage indication with value without battery				
Connectible load for 30 mA RCD				
Connectible load for electricity meter				
Vibration at load				
Acoustic signal at load				
Phase test single-pole	■	■	■	■
Phase sequence test	■	■	■	■
Continuity test	■	■	■	■
Resistance measuring device	1 - 1999 kΩ			
Frequency meter		■		■
Front spot lighting				
Backlighting LCD	■	■	■	■
Protection category	IP 65			
Power supply	Battery 9V 6LR61			
Overvoltage category	CAT IV 600 V CAT III 1000 V			
VDE GS in accordance with IEC 61243-3	■	■	■	■
Article number	84402	84403	84405	84406

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MultiSafe DSP 5



- Precise display
- Very versatile
- 2-colour LC display

	5B	5	5ST
Indicating range	0,15 - 1200 V AC / 0,03 - 1500 V DC		
Voltage warning LED without battery	■	■	■
Voltage indication with value without battery			
Connectible load for 30 mA RCD		■	■
Connectible load for electricity meter		approx. 15 W	
Vibration at load			
Acoustic signal at load			
Phase test single-pole	■	■	■
Phase sequence test	■	■	■
Continuity test	■	■	■
Resistance measuring device	0,01 - 999 kΩ		
Frequency meter	■	■	■
Front spot lighting	■	■	■
Backlighting LCD	■	■	■
Protection category	IP 65		
Power supply	Battery 2x 1,5 V AAA		
Overvoltage category	CAT IV 1000 V		
VDE GS in accordance with IEC 61243-3	■	■	■
Article number	84502	84501	84503

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LSP 4



- Compact
- Lightweight
- Maintenance-free

	LSP 4L
Indicating range	12-690 V
Voltage warning LED without battery	■
Voltage indication with value without battery	■
Connectible load for 30 mA RCD	
Connectible load for electricity meter	
Vibration at load	
Acoustic signal at load	
Phase test single-pole	■
Phase sequence test	■
Continuity test	■
Resistance measuring device	
Frequency meter	
Front spot lighting	
Backlighting LCD	■
Protection category	IP 65
Power supply	without battery*
Overvoltage category	CAT IV 600 V CAT III 690 V
VDE GS in accordance with IEC 61243-3	■
Article number	85422

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Floodwater

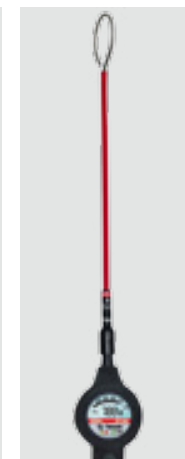


- Easy handling
- Illuminated LCD
- Safe test

	DSP-HW	SPB-HW
Indicating range	25-690 V	50-500 V
Voltage warning LED without battery		■
Voltage indication with value without battery		■
Connectible load for 30 mA RCD		
Connectible load for electricity meter		
Vibration at load		
Acoustic signal at load		
Phase test single-pole		
Phase sequence test		
Continuity test	■	■
Resistance measuring device		
Frequency meter		
Front spot lighting		
Backlighting LCD	■	■
Protection category	IP 65	
Power supply	Longlife battery**	
Overvoltage category	CAT IV 600 V	CAT IV 500 V
VDE GS in accordance with IEC 61243-3		
Article number	81337	81317

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Subway



- Rubber casing
- Illuminated
- Maintenance-free

	1000L-UB-S
Indicating range	50-1000 V
Voltage warning LED without battery	■
Voltage indication with value without battery	■
Connectible load for 30 mA RCD	■
Connectible load for electricity meter	
Vibration at load	
Acoustic signal at load	
Phase test single-pole	■
Phase sequence test	
Continuity test	■
Resistance measuring device	
Frequency meter	
Front spot lighting	
Backlighting LCD	■
Protection category	IP 65
Power supply	Longlife battery**
Overvoltage category	CAT IV 1000 V
VDE GS in accordance with IEC 61243-3	■
Article number	81391

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* Maintenance-free due to integrated Lithium accu for additional functions, which recharges during voltage tests

** Maintenance-free due to integrated Longlife battery for additional functions

Prüfball SPB Analog

Extreme robust safety casing made of solid rubber



500 V or 1000 V measurement range available

NEW

Direct voltage indication
without push buttons

B-Type without push buttons (additional load)

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

- One-piece safety casing made of rubber, extremely voltage-proof, unbreakable dust- and waterproof
- Easy operation, clear indication
- Phase, phase sequence and continuity tester, RCD-tripping
- Reliable phase sequence test with fault detection, possible with gloves
- Without battery, maintenance-free lifelong
- CAT IV 1000 V



EN/IEC 61243-3

CAT IV 1000 V



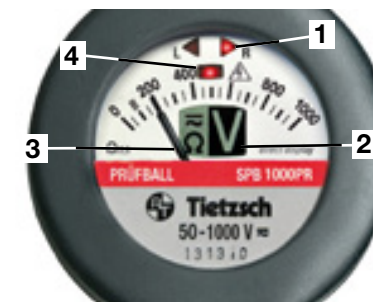
Approved safety concepts

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

- Impact resistant, shockproof
- Dust- and waterproof
- Overvoltage protection

Exact, precise display

Reliable test by three display systems:



1. LED-triangle for phase sequence
2. LCD indicator with big V for hazardous voltage, type of voltage and continuity
3. Exact analog display, direct-display
4. LED-signal for hazardous voltage between 50 V AC / 120 V DC and for phase indication

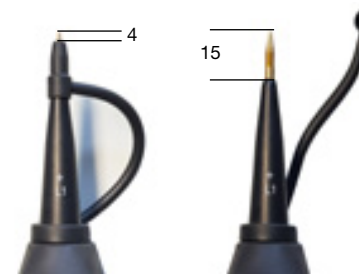
Additional functions

- Reliable phase- and phase sequence test with new error detection for reliable indication, possible with gloves
- Continuity tester
- PR-type with additional load and vibration indication for tripping RCDs (Residual Current Device)
- PRA-type with additional load and acoustic signal for tripping RCDs (Residual Current Device)

Maintenance-free

The display of the voltage is supplied from the mains when checking. Also for the additional functions the Prüfball does not need a battery. The integrated Li-battery is charged with every voltage test.

Type	Article no.	Phase- / phase sequence test	Continuity test	Additional load 30 mA-RCD-tripping	Vibration indication for load	Acoustic indication for load
SPB 500B 50-500 V	81411	■	■			
SPB 1000B 50-1000 V	81414	■	■			
SPB 500PR 50-500 V	81401	■	■	■	■	
SPB 1000PR 50-1000 V	81404	■	■	■	■	
SPB 500PRA 50-500 V	81402	■	■	■		■



Electrode shortening to avoid short circuits due to new protective cap

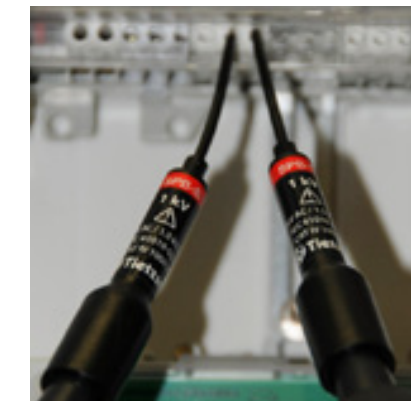


Extensions for higher safety during test at overhead lines and busbars

Wide range of accessories

Accessories are not included in scope of delivery

- Bage
- 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 test lines with 4-mm-standard plug



Close contacts are well reached with flexible pin prods

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 500B / PR / PRA	50 ... 500 V AC/DC
SPB 1000B / PR	50 ... 1000 V AC/DC

Display range scale

SPB 500B / PR / PRA	20 ... 500 V AC/DC
SPB 1000B / PR	50 ... 1000 V AC/DC

Frequency

DC / 15...500 Hz

Voltage indication

High-impedance, direct reading:
LCD-indicator, LED ≥ 50 V AC / 120 V DC moving-coil instrument, large 90°-scale
50 ... 500 V or 50 ... 1000 V, effective value accuracy cl 2,5; basic accuracy 2,5% + reading errors
⊕ low-impedance, switched additional load:
vibration-indicator in the handgrip > 180 V (for PR)
acousticsignal > 57 dB interval (PRA)

Continuity

Ω-symbol in LCD 0 ... 1 MΩ

Phase / Phase sequence / Polarity

LED- and LCD triangle ≥ 165 V

for phase unipolar

for phase sequence two-pole

type of voltage + / - / ~ by LCD signs

Input resistance

Direct:	SPB 500PR/PRA: 245 kΩ bei 500 V
	SPB 500B: 245 kΩ bei 500 V
	SPB 1000PR: 315 kΩ bei 1000 V
	SPB 1000B: 315 kΩ bei 1000 V
⊕ switched:	4,3...7 kΩ tripping of 30 mA-RCDs

Current peak value

Direct:	< 3,5 mA
⊕ switched:	< 300 mA at 1000 V
	35 mA at 230 V - RCD-tripping

On-time

120 s

Overvoltage category

CAT IV 500 V / CAT IV 1000 V

Surge voltage strength

19,2 kV case insulation to user
12 kV circuit between test prods

Insulation test voltage

6 kV-unit inspection of case and line

Operating temperature

-15°C ... + 45°C

Standards

EN/IEC 61243-3

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

Unbreakable silicone rubber, display cover made of indestructible polycarbonate

Protection category

IP 65, device can be used in moist environments

Line

PUR sheathed cable, 1000 V, 1m

Dimensions / Weight

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

Prüfball SPB Digital

Precise display in casing made of rubber



SPB 500L



500 V- or 1000 V-LCD available

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

- One-piece safety casing made of rubber, extremely voltage proof, unbreakable, dust- and waterproof
- Direct reading of all functions without pressed buttons
- Phase, phase sequence and continuity test,
- Additional load (RCD-tripping)
- Reliable phase sequence test by microcontroller analysis, possible with gloves
- Maintenance-free
- CAT IV 1000 V

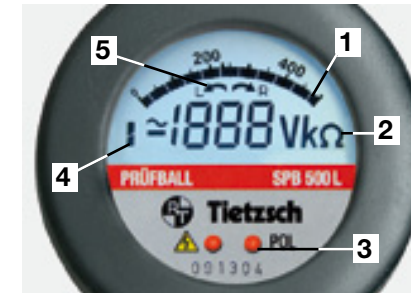


Direct voltage indication without pressed buttons

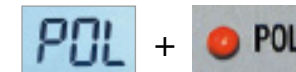
Clear indication

Reliable test by two display systems and connectable load:

- Bright LEDs and illuminated LCD
- High accuracy
- Additional load for tripping RCDs and to determine interference voltages



1. Bargraph
2. Large numerals and symbols for voltage AC/DC and resistance
3. LEDs
4. Indication of connected load
5. Arrows for phase sequence



LCD and LED indication when test prod applied to phase

Maintenance-free

The display is supplied from the mains while performing tests. The additional functions are powered by a Longlife battery.

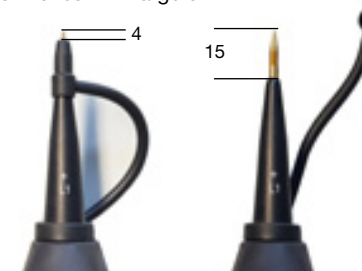


Extensions for higher safety during test at overhead lines and busbars

Approved safety concepts

The case encloses the measuring system and switching mechanism:

- Impact resistant, shockproof
- Dust- and waterproof
- Overvoltage protection
- Current-limiting safety components for CAT IV 1000 V
- Safe two-hand operation for the low-resistance test with special switches with large contact distance



Electrode shortening to avoid short circuits due to new protective cap

Wide range of accessories

Accessories are not included in scope of delivery

- Bags
- Extensions for tests at overhead lines
- Plastic sleeve for extensions
- Test prods for test objects difficult to access
- Insertion prods for underground cable
- Adapter for 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 AC/DC
Display range	
SPB 500L	24 ... 500 V AC/DC
SPB 1000L	24 ... 1000 V AC/DC
Frequency	
DC / 15...2000 Hz	
Voltage indication	
high-impedance, direct reading: LED ≥ 50 V AC and ≥ 120 V DC LCD ≥ 50 V backlight	
(accuracy 2,5 % + 5 digit)	
⊕ low-impedance, switched: symbol for connected load	
Continuity	
0 - 1000 k Ω (resolution 50 k Ω +/- 150 k Ω)	
Phase / Phase sequence / Polarity	
capacitive, without accessible electrode arrows for phase sequence POL for phase single-pole tests possible with gloves voltage type - / ~	
Input resistance	
direct:	500L: 150 - 190 k Ω , 1000L: 300 - 350 k Ω
⊕ switched:	4,3...7 k Ω
Current peak value	
direct:	< 3,5 mA
⊕ switched:	< 300 mA (35 mA at 230 V - RCD-tripping)
On-time	
120 s	
Overvoltage category	
CAT IV 500 V / CAT IV 1000 V	
Surge voltage strength	
19,2 kV case insulation to user circuit between test prods: 8 kV, SPB 500L, 12 kV SPB 1000L	
Insulation test	
6 kV unit inspection of case and line	
Operating temperature	
-15°C ... + 45°C	
Standards	
EN/IEC 61243-3	
Power supply	
maintenance-free - without battery, test functions voltage, phase sequence are supplied from the mains, continuity by Li-Longlife battery	
Casing	
unbreakable silicone rubber, display cover made of indestructible polycarbonate	
Protection category	
IP 65, device can be used in moist environments	
Line	
PUR sheathed cable, 1000 V, 1m	
Dimensions / Weight	
274 x 75 x 47 mm (display part) / 415 g	

Prüfball ZAP 350 Analog

Electricity meter tester with 350 W load



NEW direct voltage indication **without** push buttons!

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.

- Direct indication of voltage up to 500 V
- Connectible load of 350 W for fast start-up tests of electricity meters
- Phase, phase sequence and continuity tester
- Thermal and overvoltage protection
- Without battery, maintenance-free lifelong



Integrated 350W-load for fast start-up tests at electricity meters

Universal testing device for meter installation and power suppliers

- Five important functions combined in one device
- Electricity meter tester for all directly measuring electricity meters
 - Voltage tester 50 - 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 waterproof 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 50 V
- Direct indication of analog measuring system
- Direct indication of load with 350 W by load-LED 1,5 A
- High accuracy through moving-coil instrument class 2,5

Maintenance-free

The display of the voltage is supplied from the mains when checking. Also for the additional functions the Prüfball does not need a battery. The integrated Li-battery is charged with every voltage test.



ZAP - line

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

- Fast start-up test through high power
- No overheating of device or handles
- Enclosed casing without ventilation

Accessories

Accessories are not included in scope of delivery

- Bag of leather or artificial leather keeping the ZAP in the bag avoid bending the connection line
- Pin prod for tight contacts (see accessories for Prüfball SPB)



Flexible pin prods for tight contacts



Technical data

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

Nominal voltage	
50 ... 500 V AC/DC	
Display range	
20 ... 500 V AC/DC	
Frequency	
DC / 15...500 Hz	
Voltage indication	
High-impedance, direct reading: 1 LED and LCD-indicator ≥ 50 V, moving-coil instrument 50 ... 500 V	
CI 2,5: basic accuracy 2,5 % + reading errors large 90°-scale, effective value display	
⊕ low resistive connected: load LED 1,5 A	
Continuity	
Ω-symbol in LCD 0 ... 1 MΩ automatic switch-over to voltage	
Phase / Phase sequence	
LED- and LCD-triangle ≥ 165 V for phase single-pole and for phase sequence two-pole	
Input resistance	
Direct (high-impedance)	245 kΩ
⊕ switched load for start-up test	150 Ω
Current peak value	
< 30 mA / 500 V with connected load approx. 1,5 A / 230 V	
On-time	
120 s	
Connectible load	
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	
Overvoltage category	
CAT IV 300 V in accordance with IEC 60664-1 (VDE 0110)	
Surge voltage strength	
8 kV case insulation to user 6 kV circuit between test prods	
Insulation test voltage	
6 kV unit inspection of case and line	
Operating temperature	
-15°C ... + 45°C	
Standards	
EN/IEC 61243-3	
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	
Unbreakable silicone rubber, display cover made of indestructible polycarbonate	
Protection category	
IP 65, device can be used in moist environments	
Line	
Patented thermo-line Ø 10 mm / 1,8 m, twin insulated, PA-thermo protection meshwork	
Dimensions / Weight	
274 x 75 x 47 mm (display part) / 515 g	

Type	Article no.	Phase- / phase sequence test	Continuity test	Additional load	Direct analog indication
ZAP 350 50-500 V	81314	■	■	350 W	■

Prüfball ZAP 350L / 1050L Digital

Electricity meter tester with 350 W or 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 load of 350 or 1050 W for fast start-up tests
- Phase, phase sequence and continuity tester
- Thermal and overvoltage protection
- Without battery, maintenance-free lifelong

Universal testing device for meter installation and power suppliers

Five important functions combined in one device

- Electricity meter tester for all directly measuring electricity meters
- Voltage tester 50 ... 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
- Clear indication of load
- 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
Indication if one test prod is applied to phase



LCD and LED indication when connecting phase to one electrode

Technology and safety

High-quality elements guarantee operation and safety under extreme conditions

- Solid rubber case, dust- and waterproof 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

Maintenance-free

The display of the voltage is supplied from the mains when checking. The additional functions are powered by a Longlife battery.



Integrated load up to 1050 W for fast start-up of electricity meters.

ZAP - line

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

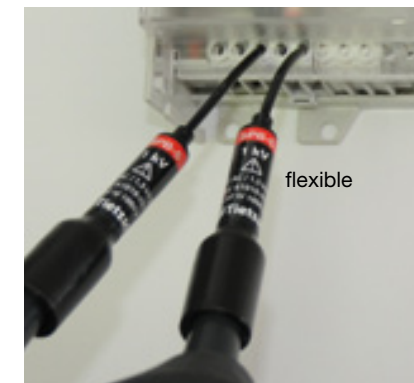
- Fast start-up through high capacity
- No overheating of device or handles
- Enclosed casing without ventilation



Accessories

Accessories are not included in scope of delivery

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



Technical data

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

ZAP 1050L

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 ≥ 50 V ~ and ≥ 120 V + - LCD ≥ 50 V backlighted	(accuracy 2,5 % + 5 Digit)
⊕ low resistive switched: additional display symbol for connected load	
Continuity	
0 ... 1000 k Ω	(resolution 50 k Ω +/- 150 k Ω)
Phase / Phase sequence / Polarity	
Capacitive, without accessible electrode arrows for phase sequence POL for phase single-pole tests possible with gloves voltage type - / ~	
Input resistance	
Direct (high-impedance) approx. 150 - 190 k Ω ⊕ switched: (start-up test) 150 Ω	50 Ω
Current peak value	
Direct: < 3,5 mA ⊕ switched: 1,5 A / 230 V	4,6 A / 230 V
On-time	
120 s	
Connectible load	
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 approx 70°C	
Overvoltage category	
CAT IV 500V according to IEC 60664-1 (VDE 0110)	
Surge voltage strength	
12 kV case insulation to user 8 kV circuit between test prods	
Insulation test voltage	
6 kV unit inspection of case and line	
Operating temperature	
-15°C ... + 45°C	
Standards	
EN/IEC 61243-3	
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	
Unbreakable silicone rubber, 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	Article no.	Phase- / phase sequence test	Continuity test	Additional load	LCD display with value
ZAP 350L 50-500 V	81315	■	■	350 W	■
ZAP 1050L 50-500 V	81316	■	■	1050 W	■

Accessories Prüfball SPB / ZAP



The Prüfball SPB and ZAP is equipped with a thread for fast and safe extension with test probes. With the test probes, the Prüfball can be used perfectly and safely in various applications.

Extensions

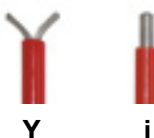


With screwed-on extensions, it is possible to work at a safe distance from open circuits and current rails in switchgear.

Nominal voltage
50 ... 1000 V AC / 1500 V DC

Insulating strength
> 6000 V

available shape
of electrodes



81020 SPB-S500-Y 515 mm



81022 SPB-S600-Y 615mm



81028 SPB-S820-Y 820 mm



Flexible pin prods



With screwed pin prods tight terminal strips or contacts at test holes can be contacted.

In addition, the bare electrode length is shortened to <4 mm in order to minimize the risk of short circuits in narrow switchgears.

Nominal voltage
50 ... 1000 V AC / 1500 V DC

Insulating strength
> 6000 V

flex



81023 SPB-S65 Flexible pin prod 65 mm



Adapter and accessories



The Prüfball SPB can be used with adapters, cables and accessories for various test tasks.

81041 SP 200 Testbox



84311 L-SETR Test line



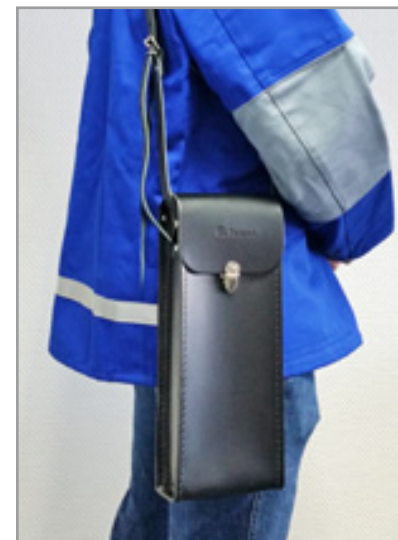
81029 SPB-S-ADA Screwable adapter with 4 mm socket



81021 SPB-S20-A Insertion prod 20 mm



Bags and storage



Various bags and containers facilitate the transport and protect the Prüfball SPB and accessories.

81031 S-HUELSE Plastic sleeve for extension and test probes



Bags for every requirement on page 76



MultiSafe DSP 4

Precise indication up to 1200 V AC / 1500 V DC



DSP 4-F
with **push button F** for:
phase sequence tests in ungrounded
mains, frequency measurement or data hold



DSP 4ST - Slide tip
with adjustable electrode length to
4 mm or 16 mm

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

- Precise indication of voltage from
1 V up to 1200 V AC
30 mV up to 1500 V DC
- Phase and phase sequence tests
(possible with gloves)
continuity tester 1 kΩ up to 2000 kΩ
- Highest degree of safety provided by
protective resistors in both test prods
- Easy operation
large illuminated display



EN/IEC 61243-3
CAT IV 600 V



Many test-functions

Fast and safe measuring and testing of:

- Direct and alternating voltage
- Resistance / continuity
- Polarity
- Phase
- Phase sequence grounded
- Phase sequence test ungrounded
for IT mains
- Frequency measurement

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
- Indication of voltage and polarity
- Self-test per keypress
- Hold-function

Three readout systems

Unambiguous and rapid recognition of
function and result:

- Round red flares for voltage, green
square symbol for resistance and two
red triangles for phase sequence.
- The display shows precise values in V
or kΩ as well as voltage type and polarity
- An acoustic signal indicates continuity
up to 10 kΩ.

Robust design

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

- Impact resistant plastic casing and
break-proof display cover
- Dust- and waterproof (IP 65,
approved for operation in outdoor areas)
- Spring-mounted test contacts
- Twin insulated PUR sheathed 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
- Clear LED indication of hazardous
voltages > 50 V AC / 120 V DC,
which works without battery
- The MultiSafe has been tested and
certified by VDE

Phase sequence test

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

DSP 4-F additionally:

- New measuring principle for
phase sequence tests works also in
unearthed mains,
applicable for IT mains

Safety accessories

Accessories are not included in scope of
delivery

- Pin prod, adapter and extensions
(page 30)



Technical data

Two-pole voltage tester
MultiSafe DSP 4 / DSP 4-F tested and
certified by VDE 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 ≥ 24 V)

Display range

1 V ... 1200 V AC
0,03 V ... 1500 V DC

Frequency

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

Indication of voltage/phase/phase sequence

4 LEDs for voltage, continuity, phase sequence
LCD digital indication, backlit
7-segment display, 2 lines, 0 ... 1999 digit

Measuring ranges - voltage

AC: 1,0...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)
DC: 0,03...8,99/9,0...99,9/100...1500 V (1,5% + 3 D)

Indication of resistance/continuity/diodes

Green LED for continuity up to 1999 kΩ and diodes,
LCD 3½-digit for kΩ-measurement value
buzzer ≤ 10 kΩ

Measuring range - resistance

0 ... 1999 kΩ (5 % + 3 D)

Measuring ranges - frequency

Only DSP 4-F: 15 ... 1999 Hz, 2,00 ... 10,00 kHz

Input resistance

412 kΩ at 50 V / 50 Hz
311 kΩ at 1000 V AC, 720 kΩ at 1000 V DC
protective resistors directly behind both test electrodes

Current peak value

3,2 mA at 1000 V

On-time

30 s

Overvoltage category

CAT IV 600 V / CAT III 1000 V
in accordance with IEC 60664-1 (VDE 0110)

Surge voltage strength

>12 kV case insulation to user
> 8 kV circuit between test prods

Insulation test voltage

6 kV unit inspection of case and line

Operating temperature

-15°C ... + 45°C

Standards

DSP 4/DSP 4-F: EN/IEC 61243-3 (VDE 0682 Teil 401)
DSP 4ST: additionally according to UK HSE GS38
DSP 4UL: UL 61010-1, 3rd Edition
CAN/CSA-C22.2 No. 61010-1, 3rd Edition

Power supply

9 V-block IEC 6LR61 / 6LF22 / 6LP3146 energy-
saving circuit, automatic switch-off after 30 s
without measuring, multi-stage battery indicator

Casing

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

Protection category

IP 65, device can be used in moist environments

Line

PUR sheathed cable, 1000 V, 1 m
with protective cap for electrodes

Dimensions / Weight

240 x 62 x 39 mm (display part) / 270 g

Type	Article no.	Phase- / phase sequence test	Phase sequence test for IT power grids	Continuity test with value	Additional load 30 mA-RCD-tripping	Slide tip 4 / 16 mm
DSP 4						
1 - 1200 V AC	84402	■		■		
0,03 - 1500 V DC						
DSP 4F						
1 - 1200 V AC	84403	■	■	■		
0,03 - 1500 V DC						
DSP 4ST						
1 - 1200 V AC	84405	■		■		■
0,03 - 1500 V DC						
DSP 4FST						
1 - 1200 V AC	84406	■	■	■		■
0,03 - 1500 V DC						

MultiSafe DSP 5

Highest precision and safety up to 1200 V AC / 1500 V DC

NEW



DSP 5ST - Slide tip with adjustable electrode length 4 mm / 16 mm



Colour change of the LCD lighting during voltage

Der MultiSafe DSP 5 is a safe testing device for all applications in power engineering - easy handling, high-precision, multifunctional and reliable.

- Precise indication of voltage from 150 mV up to 1200 V AC
30 mV up to 1500 V DC
- Extended measuring range for low- and battery-voltage up to 19,99 V
- Phase, phase sequence tester (possible with gloves)
- Fast continuity test 0,01 kΩ up to 1000 kΩ
- Easy operation, large illuminated display with two colour display
- Additional load to determine interference voltages and RCD-tripping (not DSP 5B)



EN/IEC 61243-3
CAT IV 1000 V



Many functions

Fast and safe measuring and testing of:

- Direct and alternating voltage (TRMS)
- Resistance / continuity
- Polarity
- Phase
- Phase sequence grounded from 165 up to 1200 V / 50 Hz
- Phase sequence ungrounded (IT power grids)
- Frequency measurement
- Monitored additional load / RCD-tripping (push button on the back)*
- Additional load for start-up tests of electronic electricity meters*
- Front spot lightning
- Integrated self-test by buttonpress
- One-hand operation for testing sockets
- Adjustable electrode length*
- Belt clip for easy transport

* Type-dependent, see table



Spotlight and illuminated LCD for dark environments



extremely robust for use in all weather conditions

Highest level of safety

- Large protective resistors protect the user and device especially against dangerous voltage peaks and energy from external sources, CAT IV 1000 V.
- Large two-colour display for hazardous voltages > 50 V AC / 120 V DC, and LED-warning which works without battery
- The MultiSafe has been tested and certified by VDE



One-hand operation for testing sockets

Safety accessories

Accessories are not included in scope of delivery

- Pin prods for measuring points that are difficult to reach
- Adapter for test lines with 4 mm plug
- Extensions for overhead lines

Technical data

Two-pole voltage- and continuity tester
MultiSafe DSP 5 / DSP 5B / DSP 5ST
tested and certified by VDE in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

Nominal voltage
12 ... 1000 V AC / 1200 V DC DSP 5 / DSP 5ST
12 ... 1000 V AC / 1500 V DC DSP 5B
(according to VDE: automatic switch on / over >12 V and additional load up to max. 1200 V AC / DC)

Display range
0,15 V ... 1200 V AC
0,03 V ... 1500 V DC

Frequency
15 Hz ... 10 kHz < 500 V,
15 Hz ... 2 kHz > 500 V

Indication of voltage/phase/phase sequence
Red LED for voltage, green for continuity, yellow for phase sequence, LC display, two color backlit 7-segment-letters, 2 lines, 0 ... 1999 Digit

Measuring ranges - voltage
AC: 0,10...19,99/20,0...99,9/100...1200 V
TRMS 15... 500 Hz (1,5% + 3 D)
sineff > 500 Hz (15% + 3 D)
DC: 0,01...19,99/20,0...99,9/100...1500 (1,5% + 3 D)

Indication of resistance/continuity/diodes
Green LED for continuity up to 1000 kΩ and diodes, LCD 3½-digit for kΩ-measurement value, buzzer ≤ 10,00 kΩ

Measuring range - resistance
0,01 ... 1000 kΩ (5 % + 4 D)

Measuring ranges - frequency
15,0 ... 99,9 Hz / 100 ... 9999 Hz

Input resistance
412 kΩ at 50 V / 50 Hz
200 kΩ at 1000 V AC, 720 kΩ at 1000 V DC

Current peak value
5 mA at 1000 V direct
< 300 mA at 1000 V switched (not for DSP 5B)

On-time t_{on} / recover-time t_{off}
at 230 V / 400 V unlimited
at U_N 2 min t_{on} / 2 min t_{off}

Overvoltage category
CAT IV 1000 V
in accordance with IEC 60664-1 (VDE 0110)

Surge voltage strength
>19,2 kV case insulation to user
>12 kV circuit between test prods

Insulation test voltage
6 kV unit inspection of case and line

Operating temperature
-15°C ... + 55°C

Power supply
2 x 1,5 V AAA energy- saving circuit, automatic switch-off after 30 s without measuring multi-stage battery indicator

Standards
DSP 5B / DSP 5: EN/IEC 61243-3 (VDE 0682 Teil 401)
DSP 5ST: in addition to UK HSE GS38

Casing
ABS-PC/ TPE , display cover PC impact resistant, handgrip to clip in, belt clip

Protection category
IP 65, device can be used in moist environments

Connection line
PUR sheathed cable, 1000 V, 1 m, with protective cap

Repeated inspection / calibration
Recommended every 6 years

Dimensions / Weight
275 x 89 x 35 mm (handgrip and display part)
275 x 60 x 35 mm (display part)
270 g

ProfiSafe LSP 4

Compact and maintenance-free voltage tester



The ProfiSafe LSP 4 is an particularly managable and safe tester without battery, maintenance-free and environmentally friendly

- Voltage indication from 12 V up to 690 V AC / DC
- backlighted LCD
- Phase, phase sequence and continuity test
- Reliable phase sequence test by microcontroller analysis, test possible with gloves
- limited test current without FI / RCD tripping
- Without battery, maintenance-free lifelong



Five test functions

- Fast and safe testing of:
- Direct and alternating current
 - Continuity
 - Polarity
 - Phase
 - Phase sequence

Highest level of safety

With CAT IV / 600 V, the device is in the highest overvoltage category, and can be used in all areas of energy engineering. The ProfiSafe has been tested and certified by VDE.

Clear signals

- Unambiguous and rapid recognition:
- Red round LED warns against hazardous voltages
 - Green square symbol for continuity
 - Backlighted display for all functions

Maintenance-free

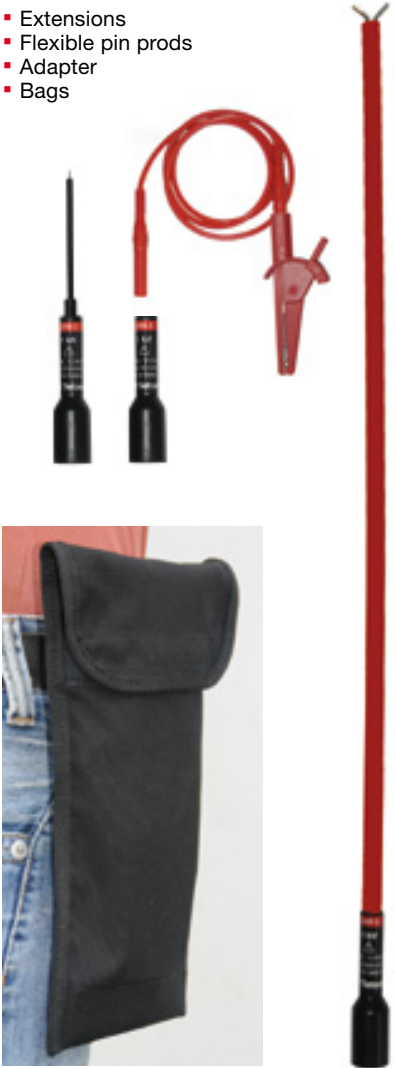
- Lifelong indication of continuity, phase and phase sequence – function without battery
- Voltage tests can always be performed power supply from the mains
 - Without battery, maintenance-free lifelong environmentally friendly
 - Power supply for continuity, phase and phase sequence from highperformance 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 waterproof (IP 65, approved for operation in outdoor areas)
 - Spring-mounted test contacts
 - Twin insulated PUR sheated cable

Accessories

- Accessories are not included in scope of delivery
- Extensions
 - Flexible pin prods
 - Adapter
 - Bags



Technical data

Two-pole voltage tester ProfiSafe LSP 4B / 4L tested and certified by VDE in accordance with EN/IEC 61243-3 (VDE 0682 part 401)

Nominal voltage range
12 ... 690 V AC / DC
Display range
DC: 12 ... 690 V (± 3 % + 4 D) AC: 12 ... 690 V (± 3 % + 4 D)
Frequency
DC / 15... 500 Hz
Continuity test
0 ... 1 MΩ by green LED
Input resistance
Approx. 167 kΩ AC / DC at 690 V approx. 200 kΩ AC / DC at 50 V
Current peak value Is
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
Red LED for voltage ≥ 50 V AC / 120 V DC green LED for continuity 0 ... 1000 kΩ 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
> 12 kV case insulation to user > 8 kV circuit between test electrodes
Insulation test voltage
6 kV unit inspection of case and line
Operating temperatures
-15°C ... + 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 with protective cap for electrodes
Standards
IEC 61243-3:2009 EN 61243-3:2010 DIN-EN 61243-3:2011
EMV requirements
DIN-EN 61326
Dimensions / Weigth
231 x 48 x 37 mm (display part) / 170 g

Type	Article no.	Phase- / pha- se sequence test	Continuity test	Additional load 30 mA-RCD- tripping	LCD value
LSP 4L 12 - 690 V	85422	■	■		■

Accessories MultiSafe DSP / ProfiSafe LSP

- | | | |
|---|--|--|
|  | <ul style="list-style-type: none"> Standard probe without thread
DSP 4 / DSP 4F / LSP 4 | Only attachable DSP-accessories can be used. |
|  | <ul style="list-style-type: none"> Standard probe with thread set
DSP 4 / DSP 4F / LSP 4 | Attachable DSP-accessories or screwable DSP accessories can be used. |
|  | <ul style="list-style-type: none"> Slide-tip probe with thread set
DSP 4ST / DSP 4FST / DSP 4UL | Only screwable DSP-accessories can be used. |

Extensions



With screwed-on extensions, it is possible to work at a safe distance from open circuits and current rails in switchgear.

Nominal voltage	50 ... 1000 V AC / 1500 V DC
Insulating strength	> 6000 V

available shape of electrodes

Y **i**

84313 LSP-S500-Y 505 mm attachable

84010 DSP-S550-Y 550 mm screwable

84014 DSP-S850-Y 850 mm screwable

Flexible pin prods



With screwed pin prods tight terminal strips or contacts at test holes can be contacted. In addition, the bare electrode length is shortened to <4 mm in order to minimize the risk of short circuits in narrow switchgear.

Nominal voltage	50 ... 1000 V AC / 1500 V DC
Insulating strength	> 6000 V

flex

84013 DSP-S57 flexible pin prod 57 mm attachable

84318 DSP-S110 flexible pin prod 110 mm screwable

Complete accessories list starting on page 74

Adapter and accessories



The MultiSafe DSP can be used with adapters, cables and accessories for various test tasks.

81041 SP 200 Testbox

84311 L-SETR Test line

84312 DSP-S-ADAS Screwable adapter with 4 mm socket

84321 DSP-S20-A Insertion prod 20 mm screwable

Bags and storage



Various bags and containers facilitate the transport and protect the MultiSafe DSP and accessories.

81031 S-HUELSE Plastic sleeve to store extensions

Bags for every requirement on page 76

Prüfball SPB-HW / MultiSafe DSP-HW

Voltage tester for flooded cellars or maintenance shafts



Flooded electrical installations, such as house connections or feed-in of solar systems, can cause life-threatening voltage in the water. As soon as the safety elements are flooded, they cannot provide protection any longer. Before entering the danger zone and inserting pumps, the voltage tester warns the user of voltage in the water.

- easy and fast testing for electrical hazards in the water
- direct voltage display by red LED and LCD with backlight
- integrated self-test to check the function and ground connection by green LED and LCD
- very easy to read in dark surroundings



Ground connection, e.g. on the mast or with earth spike through clamp with strain relief

DSP-HW

Flood voltage tester based on the MultiSafe DSP



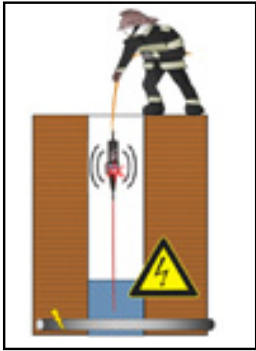
Display

Illuminated, two-color LCD display, red LED for voltage green LED for no voltage



Field of application:

- flooded cellars
- flooded electrical systems
- flooded maintenance shafts



Functions:

- Self-test and checking the earth connection
- battery-powered, multi-level battery indicator
- plastic housing, IP 65
- voltage indication: 25 - 690 V AC / DC
- voltage warning: red LED and acoustic
- absence of voltage: green LED / 0 V-display
- stores the highest measured value
- continuous monitoring for up to 30 minutes

Article no. Type	30 m cable with clamp	Extension 600 mm	Screw on clamp	Bag	Earthing spike
81337 DSP-HW	■	■			
81418 SET DSP-HW	■	■	■	■	
81317 SPB-HW	■	■			
81417 SET SPB-HW	■	■	■	■	

SPB-HW

Flood voltage tester based on the Prüfball SPB



Display

Illuminated LCD display red LED for voltage



Field of application:

- flooded cellars
- flooded electrical systems



Functions:

- Self-test and checking the earth connection
- maintenance-free due to integrated longlife battery
- rubber housing, IP 65
- voltage indication: 50 - 500 V AC / DC
- voltage warning: red LED
- absence of voltage: none / LCD off
- Warning with broken earth connection > 165 V AC

Integrated self-test

The integrated self-test checks the function, display and ground connection.



Self-test with the help of the PE contact of a socket

Accessories

Accessories not included

- Bag for device and accessories *
- Screw clamp for contacting masts *
- earthing spike

* included in the set

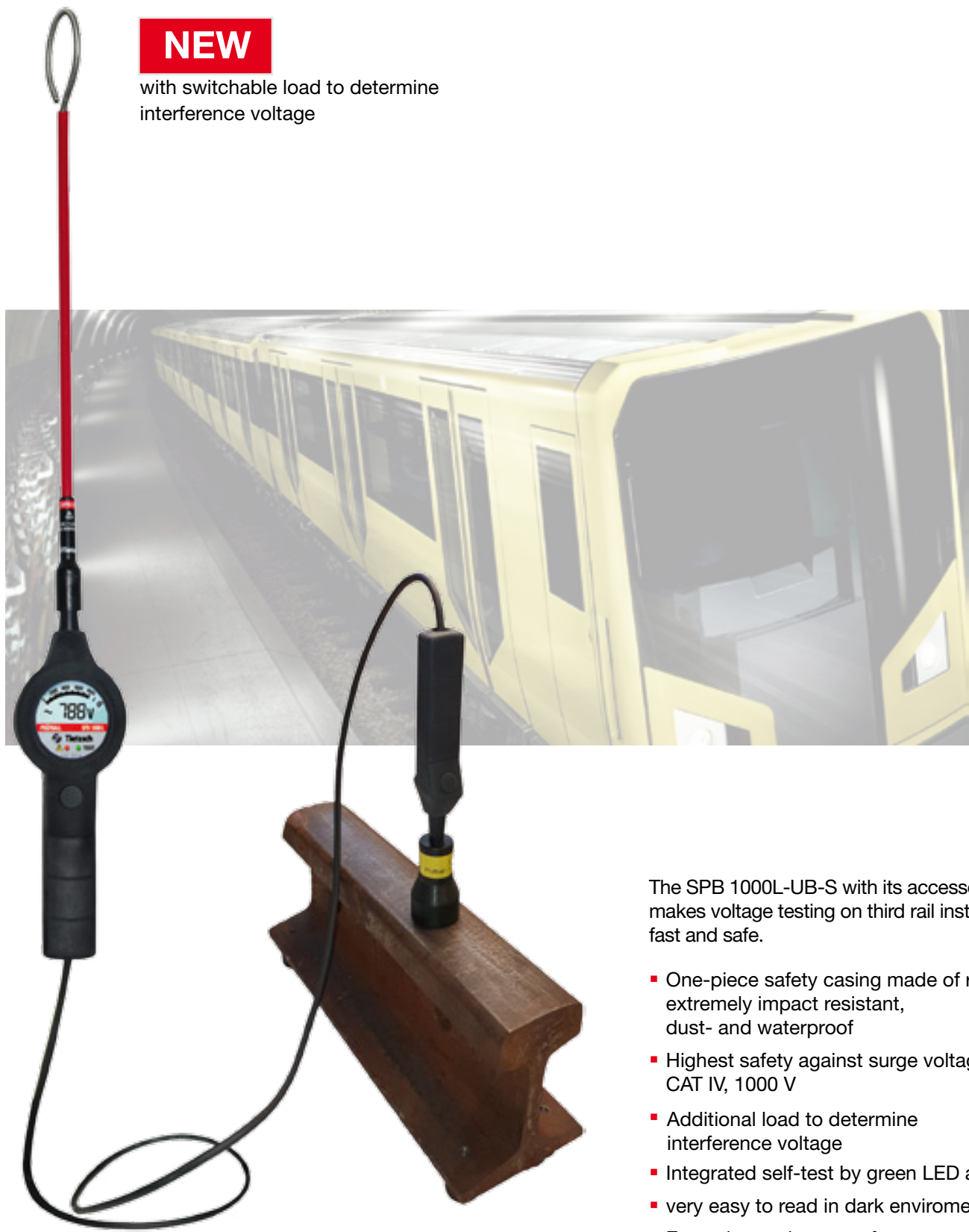


Technical data

	SPB-HW	DSP-HW
Voltage warning	LED LCD	LED LCD acoustic
Nominal voltage	50 - 500 V AC/DC	25 - 690 V AC/DC
Power supply	maintenance-free, no bat Li-Longlife-battery only for self-test	9 V battery multi-level battery indicator
Memoryfunction	no	yes
Self-test	integrated self-test with test of the earth connection	
Casing	rubber, impact resistant display (PC)	ABS impact resistant display (PC)
Protection category	IP 65	
Earth connection	30 m PUR sheathed cable, 1000 V with earthing clamp with safety rope	
Extension	insulated stainless steel tube, screwable, 60 cm	
Dimensions / Weight	180 x 240 x 360 mm / 3,2 kg (Set)	

Prüfball SPB-UB-S for subways

Voltage testing on railways with a third rail and installations



NEW
with switchable load to determine interference voltage

The SPB 1000L-UB-S with its accessories makes voltage testing on third rail installations fast and safe.

- One-piece safety casing made of rubber, extremely impact resistant, dust- and waterproof
- Highest safety against surge voltage CAT IV, 1000 V
- Additional load to determine interference voltage
- Integrated self-test by green LED and LCD
- very easy to read in dark environments
- Extension and magnet for easy testing at third rails



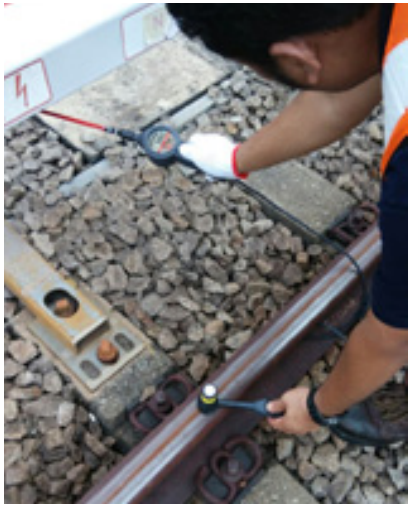
EN/IEC 61243-3
CAT IV 1000 V

Field of application:

Due to the modular design, the SPB-UB can be adapted to different areas of application for testing.
The extension allows greater safety distances to the side busbar.
With the magnet, the grounded side can be firmly connected. The user can focus better on the voltage test.

Clear display

Reliable test with two display systems and switchable load:
▪ bright LEDs and illuminated LCD
▪ high accuracy
▪ switchable low-impedance load for the detection of interference voltages



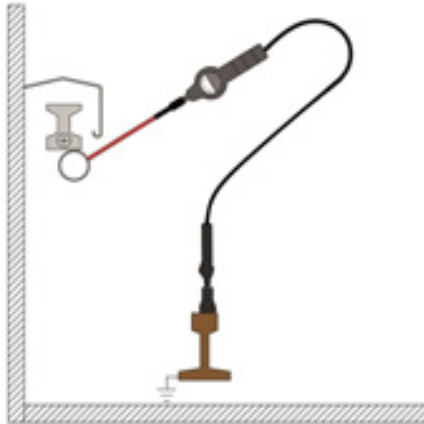
Highest level of safety

- CAT IV 1000 V - VDE certificated
- integrated self-test for checking function and earth connection
- Extension with ring-shaped electrode for always safe contact with the busbar



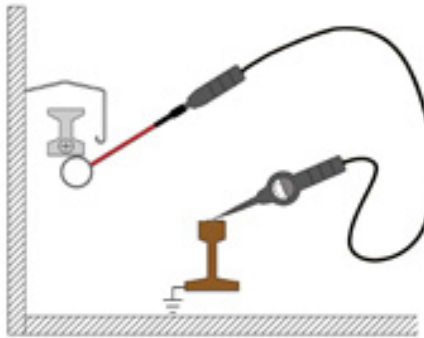
Check on side busbars with extension and magnet

The extension increases the safety distance to the side busbar and the magnet allows the fixed connection to the grounded rail.



Check on side busbars with extension

The extension ensures a greater safety distance to the busbar. With the test electrode, the rail is touched by hand.



Check without accessories

Without accessories, the SPB-UB can be used as a universal and safe voltage tester up to 1000 V AC / DC.



Technical data SPB 1000L-UB-S

Nominal voltage	
50 –1000 V AC / DC	indication up to 1500 V DC
Display range	
LED ≥ 50 V AC / 120 V DC	
LCD ≥ 50 V backlighted	
accuracy 2,5 % + 5 Digit	
Self test	
Checking function and earth connection Display by LCD and green LED	
Additional load	
Switch for 7kΩ load	
LCD symbol as load indication	
Casing	
unbreakable silicone rubber, display cover made of indestructible polycarbonate	
Earth connection	
sheathed cable, 1000 V AC / 1500 V DC, 1m	
Accessories	
Insulated stainless steel tube, attachable, O-formed, 400 mm / 500 mm, screwable magnet for rail	
Dimensions / Weight	
274 x 75 x 47 mm / 400 g (basic unit)	

Accessories

Accessories are not included in scope of delivery

- Extensions with ring electrode for testing on covered busbars, length 400 mm / 500 mm
- Magnet for rail
- Bag for device, extension and magnet



Type	Article no.	Self-test with green LED	Single pole voltage warning	Additional load, to determine interference voltage	Extension	Magnet for rail	Bag
SPB 1000L-UB-S 50 - 1000 V	81391	■	■	■			
SPB-S-400-O	81094				400 mm, screwable		
SPB-S-500-O	81093				500 mm, screwable		
SPB-S-MA	81095					screwable	
HSS-KLT	84333						■

Telescope voltage tester 1 kV up to 36 kV



Type overview telescope voltage tester 1 up to 36 kV

TT 1



Telescopic voltage tester for testing on trams.

TT 3



Telescope voltage tester for testing on suburban trains up to 3 kV.

TT 36



Telescopic voltage tester for testing on railways and switchgear up to 36 kV.

TT - FL



Telescopic voltage tester for testing on overhead lines for low voltage and medium voltage.

TT - OB



Telescopic voltage tester for testing on trolley buses.

	S	M	L	XL
Nominal voltage range	50 - 1000 V AC 50 - 1500 V DC			
Voltage warning LED red / green		■		
LCD-backlighted red / green		■		
360° LED indication red / green		■		
Response voltage (red / green change)		250 V *		
Voltage indication with value		■		
Acoustic voltage warning		■		
Integrated self-test		■		
Frequency indication		■		
Telescope / max. test height	1,30 m	1,61 m	1,61 m	2,10 m
Test height up to approx.	6,2 m	6,2 m	8,2 m	10 m
Telescopic tube	6-part	4-part	6-part	6-part
Weight	4,1 kg	3,5 kg	4,5 kg	5,5 kg
Voltage test	bipolar contact overhead line against earth			
Ground connection by	magnet or railfoot clamp or universal clamp			
Power supply	Battery 6 x AA 1,5V			
Article number without additional load	89370	89371	89372	89373
Article number with additional load	89374	89375	89376	89377
Page	40			

	S	M	L	XL
Nominal voltage range	50 - 3000 V AC 50 - 3000 V DC			
Voltage warning LED red / green		■		
LCD-backlighted red / green		■		
360° LED indication red / green		■		
Response voltage (red / green change)		400 V *		
Voltage indication with value		■		
Acoustic voltage warning		■		
Integrated self-test		■		
Frequency indication		■		
Telescope / max. test height	1,35 m	1,65 m	1,65 m	2,14 m
Test height up to approx.	6,2 m	6,2 m	8,2 m	10 m
Telescopic tube	6-part	4-part	6-part	6-part
Weight	4,1 kg	3,5 kg	4,5 kg	5,5 kg
Voltage test	bipolar contact overhead line against earth			
Ground connection by	magnet or railfoot clamp or universal clamp			
Power supply	Battery 6 x AA 1,5V			
Article number without additional load	89380	89381	89382	89383
Article number with additional load	not available			
comparable to TT 1	40			

	S	M	L	XL
Nominal voltage range	50 - 36000 V AC 50 - 36000 V DC			
Voltage warning LED red / green		■		
LCD-backlighted red / green		■		
360° LED indication red / green		■		
Response voltage (red / green change)		1200 V *		
Voltage indication with value		■		
Acoustic voltage warning		■		
Integrated self-test		■		
Frequency indication		■		
Telescope / max. test height	1,43 m	1,74 m	1,74 m	2,23 m
Test height up to approx.	6,2 m	6,2 m	8,2 m	10 m
Telescopic tube	6-part	4-part	6-part	6-part
Weight	4,1 kg	3,5 kg	4,5 kg	5,5 kg
Voltage test	bipolar overhead line / measuring point against earth			
Ground connection by	magnet or railfoot clamp or universal clamp			
Power supply	Battery 6 x AA 1,5V			
Article number without additional load	89384	89385	89386	89387
Article number with additional load	not available			
	42			

	L	XL	XL
Nominal voltage range	50 - 1000 V AC / DC		50 - 36000 V AC / DC
Voltage warning LED red / green		■	
LCD-backlighted red / green		■	
360° LED indication red / green		■	
Response voltage (red / green change)	50 V *		1200 V *
Voltage indication with value		■	
Acoustic voltage warning		■	
Integrated self-test		■	
Frequency indication		■	
Telescope / max. test height	1,61 m	2,10 m	2,23 m
Test height up to approx.	8,2 m	10 m	10 m
Telescopic tube	6-part	6-part	6-part
Weight	5,2 kg	6,2 kg	6,2 kg
Voltage test	bipolar contact overhead line against earth		
Ground connection by	universal clamp with earth spike		
Power supply	Battery 6 x AA 1,5V		
Article number without additional load	89344	89343	89397
Article number with additional load	not available		
	44		

	S	M
Nominal voltage range	50 - 1000 V AC 50 - 1500 V DC	
Voltage warning LED red / green		■
LCD-backlighted red / green		■
360° LED indication red / green		■
Response voltage (red / green change)		50 V *
Voltage indication with value		■
Acoustic voltage warning		■
Integrated self-test		■
Frequency indication		■
Telescope / max. test height	1,35 m	1,65 m
Test height up to approx.	6,2 m	6,2 m
Telescopic tube	6-part	4-part
Weight	4 kg	3,5 kg
Voltage test	for paired overhead lines	
Ground connection by	-	
Power supply	Battery 6 x AA 1,5V	
Article number without additional load	89357	89356
Article number with additional load	not available	
	46	

* other response voltage from 50 V on on request

MultiSafe TT 1

Telescope voltage tester for light rail systems

NEW

also available as a short version
only 1.3 m for easy transport
Test height up to 6.2 m

optionally with additional load
for detection of residual and
interference voltages

* Type-dependent

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

- Precise indication of voltage up to 1000 V AC / 1500 V DC
- Testing height up to 6,2 m variable height adjustment
- Highest degree of safety provided by protective resistors within the test prod, maximum current below 3,2 mA
- Easy operation with one single push button, self-test for testing function, protective resistors and proper ground connection
- Interchangeable test line with magnet or clamp
- Additional load for detection of residual and interference voltages

Application

The MultiSafe TT 1 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.



Direct indication of voltage on the LCD and warning by LED and acoustic signal.

Easy operation

Easy test sequence in three steps:

- Place the contact magnet on the grounded rail or screw the contact clamp on the rail foot
- Perform the selftest
- Pull out the telescope for length and insert the electrode into the overhead line

Three display systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > U_t

Robust design

High-quality elements guarantee function and safety:

- 4- / 6-part GRP-telescope tube with variable height adjustment
- Display part made of impact resistant plastic with break-proof display cover
- Dust- and waterproof
- Solid PUR hose cable with contact magnet or clamp, easily exchangeable

Accessories

Accessories are not included in scope of delivery

- Bag with ring bolt and shoulder belt
- Wall holder
- Robust aluminum frame case



Complete self-test of device function and contact with the rail within seconds



MultiSafe TT 1-MA with magnet

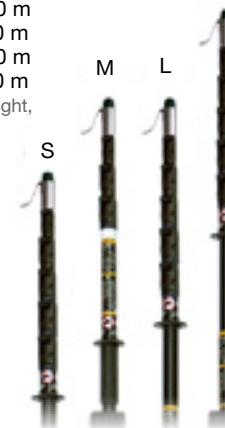


MultiSafe TT 1-SK with rail foot clamp

Transport length / max. test height

- S = 1,31 / 6,20 m
- M = 1,61 / 6,20 m
- L = 1,61 / 8,20 m
- XL = 2,10 / 10,0 m

Due to its high weight, the XL size is recommended only for use above 8 m.



Technical data

MultiSafe TT 1, telescope voltage tester for tram overhead lines

Nominal voltage range

50 ... 1000 V AC / 1500 V DC

Display range

30 ... 1000 V AC / 1500 V DC (5 % + 5 D)

Frequency

DC / 15 ... 500 Hz

Response voltage U_t (change green / red)

240 V

Display

- red LEDs for voltage > U_t
green LED for standby / absence of voltage
- two-line LCD with backlight for indication of voltage, frequency, type of voltage and battery status
- acoustic signal > U_t

Self-test

Testing function, grounding and protective resistors

Input resistance

311 kΩ

Current peak value

3,2 mA at 1000 V AC/ DC

On-time

15 min

Overvoltage category

CAT IV

Surge voltage strength

>19,2 kV case insulation to user
> 12 kV circuit between test prod and ground

Operating temperature

-15°C ... + 55°C

Power supply

6 x AA 1,5 V
multi-stage battery indicator

Protection category

IP 65, device can be used in moist environments

Design

Two-pole voltage tester
impact-resistant, dust-proof plastic housing with unbreakable display cover,
4- / 6- part telescope made of GRP with with moulded resistor decade approx. 272 kΩ,
PUR sheathed cable with clamp or magnet

Standards

Display / function and test technology based on EN/IEC 61243-3 and 61243-2
Extension and telescopic tube in accordance with EN/IEC 61010-1, Surge voltage strength in accordance with EN/IEC 60071

Dimensions / Weight

1300 (S) / 1610 (M/L) / 2100 (XL) x 120 x 110 mm
run-out length up to 5,1 (S/M) / 7,1 (L) / 9 (XL) m
device with magnet approx. 3,5 kg - 5,5 kg
device with clamp approx. 4,2 kg - 6,2 kg

MultiSafe TT 36

Telescopic voltage tester for catenaries and switchgear up to 36 kV AC/DC



With the MultiSafe TT 36, voltages up to 36 kV against ground can be tested safely and quickly. The voltage level and frequency are displayed on the large display.

- For test heights up to 6,2 m, 8,2 m or 10 m variable height adjustment
- Precise indication of voltages up to 36 kV AC and DC
- Highest degree of safety provided by moulded protective resistor in the GRP-tube, surge voltage strength > 200 kV

Earth connection by magnet or clamp



Application

The MultiSafe TT 36 is a two-pole voltage tester for alternating and direct voltages up to 36 kV against ground. It is particularly suitable for quickly and reliably determining the voltages between the overhead line and the rail of railway systems and voltages in switchgears.



Test at a 36 kV compensation system

Design

High-quality elements guarantee function and safety:

- Telescope tube with variable height adjustment 6,2 / 8,2 m / 10 m test height
- Moulded resistor decade made of GRP-tube
- Water- and dust-proof display part in unbreakable housing
- Twin insulated line with universal clamp for secure grounding

Safety

- Surge voltage strength > 200 kV due to moulded protective resistors
- Integrated self-test to test the protective resistors, function and connection to earth
- Redundate test system with continuous self-monitoring for indicating the absence of voltage

Three display-systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > U_t



Test at a rail overhead line



Earthing to grounding cable or fixed ballpoint with universal clamp (TT 36UK)

Alternative:

Grounding with magnet or rail foot clamp

Accessories

Accessories are not included in scope of delivery

- Bag with ring bolt and shoulder belt
- Wall holder
- Robust case

Transport length / max. test height

Four sizes of TT are available:

- S = 1,44 - 6,20 m
- M = 1,74 - 6,20 m
- L = 1,74 - 8,20 m
- XL = 2,23 - 10,0 m

Due to its high weight the XL size is recommended only for use above 8 m.



Technical data

MultiSafe TT 36, telescope voltage tester for rail overhead lines and switchgears

Nominal voltage range	50 ... 36000 V AC / DC
Display range	40 ... 36000 V AC / DC (5 % + 5 D)
Frequency	DC / 15 ... 200 Hz
Response voltage U_t (change green / red)	1200 V (specify other values when ordering)
Display	1. red LEDs for voltage > U_t green LED for standby / absence of voltage 2. two-line LCD with backlight for indication of voltage, frequency, type of voltage and battery status 3. acoustic signal > U_t
Self-test	Testing function, grounding and protective resistors
Input resistance	105 MΩ
Current peak value	< 0,5 mA at 36000 V AC/ DC
On-time	15 min
Overvoltage category	- high voltage tester -
Surge voltage strength	> 200 kV (test report available)
Operating temperature	-15°C ... + 55°C
Power supply	6 x AA 1,5 V multi-stage battery indicator
Protection category	IP 65, device can be used in moist environments
Design	Two-pole voltage tester impact-resistant, dust-proof plastic housing with unbreakable display cover, 4- / 6- part telescope made of GRP with moulded resistor decade approx. 105 MΩ, PUR sheathed cable with clamp or magnet
Standards	Display / function and test technology based on EN/IEC 61243-2 Extension and telescopic tube in accordance with EN/IEC 61010-1, Surge voltage strength in accordance with EN/IEC 60071
Dimensions / Weight	1430 (S) / 1740 (M/L) / 2230 (XL) x 120 x 110 mm run-out length up to 5,1 (S/M) / 7,1 (L) / 9 (XL) m device with magnet approx. 3,5 kg - 5,5 kg device with clamp approx. 4,2 - 6,2 kg

MultiSafe TT 1FL / TT 36FL

Telescopic voltage tester for low and medium voltage overhead lines



NEW



The MultiSafe TT 1FL / TT 36FL is a very safe voltage tester for safe and fast testing of low and medium voltage overhead lines.

- best personal protection and highest safety by displaying AC and DC voltages from 50 V to ground
- Precise indication of voltages up to 1000 V AC / 1500 V DC or 36000 V AC / DC
- For test heights up to 10 m variable height adjustment
- Self-test to check function, protective resistors and correct earthing connection on site
- time-saving test without working platform, e.g. in woodcut work in forest aisles
- no danger by climbing rotten masts

Application

The MultiSafe TT 1FL / TT 36FL is a two-pole voltage tester for alternating and direct voltages up to 1000 V AC / 1500 V DC or 36 000 V AC / DC against ground. It is particularly suitable for determining the voltage on power overhead lines. By the ground reference on site testing is very safe and ideal for personal protection. The integrated self-test checks the grounding, the display and measurement technology. Without additional aids, tests up to 10 m height can be safely tested.

Test procedure

Simple test procedure in three steps:

1. Insert two earthing spikes with 2 m distance into the ground.
2. Connect the clamp to a earthing spike, contact the other earthing spike with the test electrode, and perform a function test.
3. Extend the telescope to length and attach the electrode to the overhead line.



Three display-systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > U_t

Robust design

High-quality elements guarantee function and safety:

- 6-part GRP-telescope tube with variable height adjustment
- Display part made of impact resistant plastic with break-proof display cover
- Dust- and waterproof
- Solid PUR hose cable with contact magnet or clamp, easily exchangeable

Accessories

Accessories are not included in scope of delivery

- Bag with storage compartments for earthing spikes and shoulder belt



Earth connection with earthing spike and universal clamp



Check earth by second earth spike

Transport length / max. test height XL

Two sizes of TT-FL are available:

- L = 1,74 - 8,20 m
 - XL = 2,19 - 10,0 m
- Due to its high weight, the XL size is recommended only for use above 8 m.



Technical data

MultiSafe TT 1FL / TT 36FL
telescope voltage tester for overhead lines

Nominal voltage range
50 ... 1000 V AC / 1500 V DC
50 ... 36000 V AC / DC

Display range
30 ... 1000 V AC / 1500 V DC
50 ... 36000 V AC / DC

Frequency
DC / 15 ... 500 Hz
DC / 15 ... 200 Hz

Response voltage U_t (change green / red)
240 V
1200 V

Display
1. red LEDs for voltage > U_t
green LED for standby / absence of voltage
2. two-line LCD with backlight for indication of voltage, frequency, type of voltage and battery status
3. acoustic signal > U_t

Self-test
Testing function, grounding and protective resistors

Input resistance
311 k Ω
105 M Ω

Current peak value
3,2 mA at 1000 V AC/ DC
< 0,5 mA at 36 kV

On-time
15 min

Overvoltage category
CAT IV
- high voltage tester -

Surge voltage strength
>19,2 kV case insulation to user
> 12 kV circuit between test prod and ground
> 200 kV (test report available)

Operating temperature
-15°C ... + 55°C

Power supply
6 x AA 1,5 V
auto power off after 8 min. without voltage, multi-stage battery indicator

Protection category
IP 65, device can be used in moist environments

Design
Two-pole voltage tester
impact-resistant, dust-proof plastic housing with unbreakable display cover,
6- part telescope made of GRP with with moulded resistor decade approx. 272 k Ω / 105 M Ω
PUR sheathed cable with clamp

Standards

Display / function and test technology based on EN/IEC 61243-3 and 61243-2
Extension and telescopic tube in accordance with EN/IEC 61010-1, Surge voltage strength in accordance with EN/IEC 60071

Dimensions / Weight
1610 (L) / 2100 (XL) 2190 (XL) x 120 x 110 mm
run-out length up to 7,1 (L) / 9(XL) m
device with clamp approx. 5,2 kg (L)
device with clamp approx. 6,2 kg (XL)

MultiSafe TT-OB

Telescopic Voltage Tester for Trolleybusses



Clear voltage indication:

- 360°-LED-light strip red / green
- two colour LC-display
- acoustic voltage warning

The MultiSafe TT OB is a safe equipment for quick voltage testing on overhead lines of trolleybusses. Its compact design allows transport in the car and fast on-site use without any additional tools.

- Risk-free testing with safety distance
- Precise indication of voltage up to 1000 V AC / 1500 V DC
- Testing height up to 6,5 m variable height adjustment
- Ideal for emergency service and fire brigade
- Easy operation with one single push button, self-test for testing function, protective resistors
- Thanks to the telescopic system and removable crosstubes, it is quick and easy to store compactly



Catenary distances 600, 700 or 800 mm possible through different cross tubes

Application

The MultiSafe TT OB is a two-pole telescope voltage tester for overheadlines of trolleybuses. Through his telescope design, the absence of voltage can be detected quickly and safely from the ground without further aids. The protective resistors are cast unbridgeable in the transverse tubes.

Easy operation

Easy test sequence in three steps:

1. Assembly of the crosstubes
2. Perform the self-test
3. Pull out the telescope for length and insert the electrodes into the overhead lines.



Clear indication of voltage by LCD, LED and acoustic signal.



Quick and easy installation of the crosstubes with bayonet locks



Variable test height up to 6,5 m and compact design thanks to telescope system in two sizes

Accessories

Accessories are not included in scope of delivery

- Bag with ring bolt and shoulder belt Art.no.: 84338



Transport length / max. test height

Two sizes of the TT-OB are available:

- S = 1,35 / 6,20 m
- M = 1,65 / 6,20 m



Technical data

MultiSafe TT-OB, telescope-voltage tester for overheadlines of trolley busses

Nominal voltage range	50 ... 1000 V AC / 1500 V DC
Display range	30 ... 1000 V AC / 1500 V DC (5 % + 5 D)
Frequency	DC / 15 ... 500 Hz
Response voltage U_i (change green / red)	240 V
Display	1. red LEDs for voltage > U_i green LED for standby / absence of voltage 2. two-line LCD with backlight for indication of voltage, frequency, type of voltage and battery status 3. acoustic signal > U_i
Self-test	Testing function, protective resistors
Input resistance	311 kΩ
Current peak value	3,2 mA bei 1000 V AC/ DC
On-time	15 min
Overvoltage category	CAT IV
Surge voltage strength	>19,2 kV case insulation to user > 12 kV circuit between test prod and ground
Operating temperature	-15°C ... + 55°C
Power supply	6 x AA 1,5 V multi-stage battery indicator
Protection category	IP 65, device can be used in moist environments
Design	Two-pole voltage tester impact resistant plastic housing with unbreakable display cover, 4- or 6- part telescope mdade of GRP, crosstubes with moulded resistor decade approx. 135 kΩ each, bayonet locks
Standards	Display unit, function and test procedure EN/IEC 61243-3 and 61243-2 Extension and telescopic tube in accordance with EN/IEC 61010-1 Surge voltage strength in accordance with EN/IEC 60071
Dimensions / Weight	TT-M-OB: 1650 x 120 x 110 mm; 3,50 kg TT-S-OB: 1350 x 120 x 110 mm; 4,00 kg run out length 5,1 m for test heights up to 6,2 m

NEW

High voltage tester up to 36 kV AC/DC Two-pole



Type overview high voltage tester up to 36 kV

MultiSafe HS 5



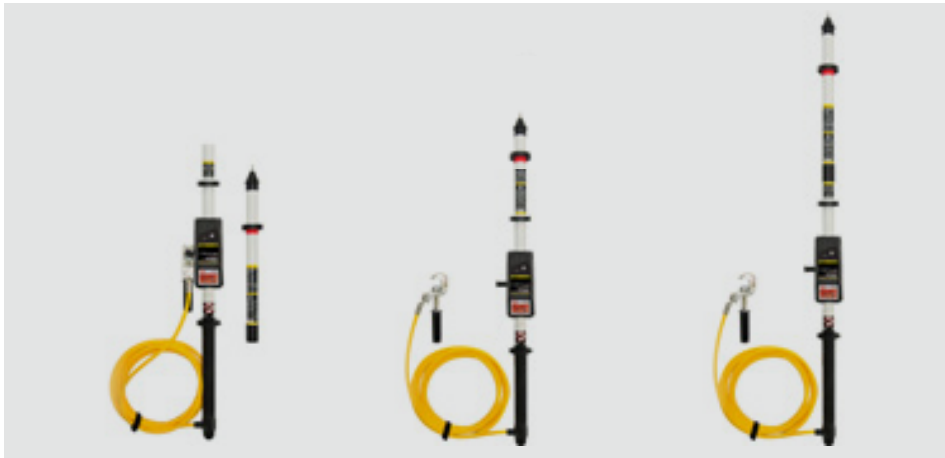
- Compact high voltage tester
- Ideal for narrow power stations
- Voltage tester for AC and DC

MultiSafe HS 11



- Universally applicable
- Ideal for all types of switchgears
- Voltage tester for AC and DC

MultiSafe HS 36



- Wide measuring range
- Large illuminated LCD
- Voltage tester for AC and DC

	HS 5	HS 5MA	HS 5UK
Nominal voltage range	50 - 5 000 V AC 50 - 7 000 V DC		
Voltage warning LED red / green	■		
LCD-backlighted red / green	■		
360° LED indication red / green			
Voltage indication with value	■		
Acoustic voltage warning	■		
Integrated self-test	■		
Frequency indication	■		
Test distance, handle - red limiting mark	190 mm		
Transportlength	550 mm		
Weight	0,54 kg	0,70 kg	1,30 kg
For grounded voltages	■		
For ungrounded voltages	■		
Ground connection by		Magnet	Universal clamp
For indoor installations	■		
For outdoor installations			
Power supply	Batterie 9V 6LR61		
Article number	89300	89331	89330
Page	52		

HS 11	HS 11MA	HS 11UK
50 - 11 000 V AC 50 - 16 000 V DC		
■		
■		
■		
■		
■		
■		
525 mm		
1150 mm		
0,96 kg	0,80 kg	1,40 kg
■		
■		
	Magnet	Universal clamp
■		
■		
Batterie 9V 6LR61		
89304	89305	89335
54		

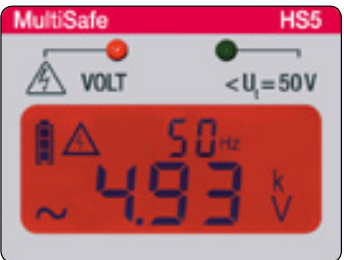
HS 36	HS 36C	HS 36B
50 - 36 000 V AC 50 - 36 000 V DC		
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
■	■	■
860 mm	745 mm	860 mm
920 mm dismountable	970 mm	1430 mm
4,10 kg	3,50 kg	3,70 kg
■	■	■
Universal clamp		
■	■	■
■	■	■
Batterie 6 x AA 1,5V		
89308	89353	89346
56	56	56

MultiSafe HS 5

Two-pole high voltage tester up to 5 kV AC / 7 kV DC



Indication of absence of voltage



Colour change of the display at voltage

The MultiSafe HS 5 is a two-pole high voltage tester with LED signals and precise indication of voltage level and frequency.

- Precise indication of voltage up to 5 kV AC / 7 kV DC
- Highest degree of safety provided by moulded protective resistors within the GRP-tube
- Surge voltage strength >100 kV
- Self-test for checking protective resistors and function



Application

The MultiSafe HS 5 is a compact two-pole voltage tester for alternating voltages up to 5 kV and direct voltages up to 7 kV. It is particularly suitable to detect voltage quickly and securely at capacitor banks and links of converters, etc. Voltage level, polarity and frequency are indicated by several systems.

Safety

- Surge voltage strength > 100 kV due to moulded protective resistors
- Integrated self-test to test the protective resistors, function and connection to earth (for HS 5M / HS 5UK)
- Redundate test system with continuous self-monitoring for indicating the absence of voltage

Easy operation

The one-button operation facilitates the application. The result is clearly indicated on the display and by LEDs.

Three display systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > $U_i = 50$ V

Robust design

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

- Impact resistant plastic casing with break-proof display cover
- Twin insulated PUR sheathed cable
- High voltage probes made of glass fibre-reinforced plastic with moulded resistor decade

Types

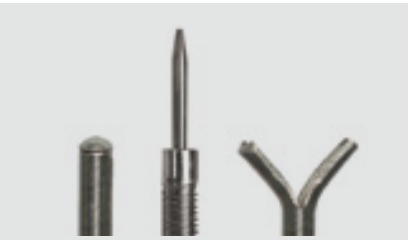


HS 5M with magnet and HS 5UK with universal clamp for fixed connection to ground potential.

Accessories

Accessories are not included in scope of delivery

- Various test electrodes page 88
- Standard electrode-i round for busbars and test holes



i N Y



Bag with shoulder strap



Solid case with aluminum frame

Technical data

Two-pole high voltage tester
MultiSafe HS 5

Nominal voltage range	50 ... 5000 V AC / 7000 V DC
Display range	6 ... 5000 V AC / 7000 V DC
Frequency range	DC / 15 ... 1000 Hz
Input resistance	2,7 MΩ
Current peak value	2,6 mA at 7000 V DC
Surge voltage strength	> 100 kV (test report available)
Indicator group	I and III
Response voltage U_i (change green / red)	50 V
Display	1. Red LEDs for voltage > U_i green LEDs for standby / absence of voltage 2. Two-line LCD with backlight white / red for indication of voltage, frequency, type of voltage and battery status 3. Acoustic signal > U_i
Measurement ranges / Accuracy	50 ... 1000 V DC $\pm 2,5\%$ + 5 Digits 50 ... 1000 V AC $\pm 5\%$ + 10 Digits 1,01 ... 7,00 kV DC $\pm 2,5\%$ + 5 Digits 1,01 ... 5,00 kV AC $\pm 5\%$ + 10 Digits
On-time	15 min, Auto-off-function at absence of voltage
Construction	Only for indoor installations
Operating temperature	- 15°C ... + 55°C
Self-test	Testing function and protective resistors obligatory before indication of measurement results
Power supply	9 V-Block IEC 6LR61 / 6LF22 / 6LP3146 alkalimanganese, multi-stage battery indicator
Design	• Two-pole voltage tester with two firmly attached high-tension probes made of GRP with moulded resistor decades, approx. 1,35 MΩ each probe • Impact resistant, dust-proof plastic casing with unbreakable display cover, protection category IP 65 • PUR sheathed cable, twin insulated
Standards	EN/IEC 61243-2 high voltage tester EN/IEC 60071 surge voltage strength further applied standards: EN/IEC 61010 and EN 50110-1 (VDE 0105-1) (further details see risk analysis)
Test label	Date of the next examination on the sticker, repeated inspection at least every 6 years
Dimensions / Weight	550 x 70 x 70 mm / 540 g

Type	Article no.	Integrated self-test	Earth contact	For grounded voltage	For ungrounded voltage	For indoor installations	For outdoor installations
HS 5 50 - 5 000 V AC 50 - 7 000 V DC	89300	■	-	■	■	■	
HS 5MA 50 - 5 000 V AC 50 - 7 000 V DC	89331	■	Magnet	■		■	
HS 5UK 50 - 5 000 V AC 50 - 7 000 V DC	89330	■	Universal clamp	■		■	

MultiSafe HS 11

Two-pole high voltage tester up to 11 kV AC / 16 kV DC



Indication of absence of voltage



Colour change of the display at voltage

The MultiSafe HS 11 is a two-pole high voltage tester with LED signals and precise indication of voltage level and frequency.

- Precise indication of voltage up to 11 kV AC / 16 kV DC
- Highest degree of safety provided by moulded protective resistors within the GRP-tube
- Surge voltage strength > 250 kV
- Self-test for checking protective resistors and function

Application

The MultiSafe HS 11 is a compact two-pole voltage tester for alternating voltages up to 11 kV and direct voltages up to 16 kV. It is particularly suitable for quickly and reliably detecting the voltage across capacitor banks and DC busbars of converters, as well as feeds from traffic systems, etc. Voltage level, polarity and frequency are indicated by several systems.



Test with HS 11 at 10 kV transformer

Safety

- Surge voltage strength > 250 kV due to moulded protective resistors
- Integrated self-test to test the protective resistors, function and connection to earth (for HS 11MA / HS 11UK)
- Redundant test system with continuous self-monitoring for indicating the absence of voltage

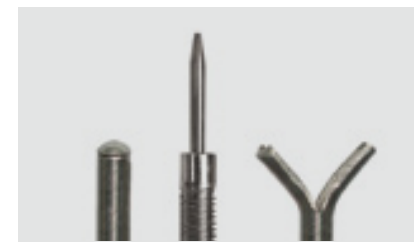
Three display-systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > $U_t = 50$ V

Accessories

Accessories are not included in scope of delivery

- Various test electrodes page 88
- Standard electrode-i round for busbars and test holes



i N Y

Easy operation

The one-button operation facilitates the application. The result is clearly indicated on the display and by LEDs.

Robust design

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

- Impact resistant plastic casing with break-proof display cover
- Dust- and waterproof (IP 65, approved for operation in outdoor areas)
- Twin insulated PUR sheathed cable with additional mechanical protection by corrugated hose
- High voltage probes made of glass fibre-reinforced plastic with moulded resistor decade

Types



HS 11MA with magnet and HS 11UK with universal clamp for fixed connection to ground potential.



Solid case with aluminum frame



Bag with shoulder strap and ring bolt

Technical data

Two-pole high voltage tester
MultiSafe HS 11

Nominal voltage range	50 ... 11000 V AC / 16000 V DC
Display range	50 ... 11000 V AC / 16000 V DC
Frequency range	DC / 15 ... 500 Hz
Input resistance	30 MΩ
Current peak value	0,29 mA at 16000 V DC
Surge voltage strength	> 250 kV (test report available)
Indicator group	I and III
Response voltage U_t (change green / red)	50 V
Display	1. red LEDs for voltage > U_t green LEDs for standby / absence of voltage 2. Two-line LCD with backlight white / red for indication of voltage, frequency, type of voltage and battery status 3. Acoustic signal > U_t
Measurement ranges / Accuracy	50 ... 1000 V DC $\pm 2,5\%$ + 5 Digits 50 ... 1000 V AC $\pm 5\%$ + 10 Digits 1,01 ... 16,00 (16,50) kV DC $\pm 2,5\%$ + 5 Digits 1,01 ... 11,00 (12,00) kV AC $\pm 5\%$ + 10 Digits
On-time	15 min, Auto-off-function at absence of voltage
Construction	For indoor and outdoor installations IP 65, device can be used in moist environments
Operating temperature	- 15°C ... + 55°C
Self-test	Testing function and protective resistors obligatory before indication of measurement results
Power supply	9 V-Block IEC 6LR61 / 6LF22 / 6LP3146 alkalimanganese, multi-stage battery indicator
Design	• Two-pole voltage tester with two firmly attached high-tension probes made of GRP with moulded resistor decades, approx. 15 MΩ each probe • Impact resistant, dust-proof plastic casing with unbreakable display cover, protection category IP 65 • PUR sheathed cable, twin insulated with additional mechanical protection by corrugated hose
Standards	EN/IEC 61243-2 high voltage tester EN/IEC 60071 surge voltage strength further applied standards: EN/IEC 61010 and EN 50110-1 (VDE 0105-1) (further details see risk analysis)
Test label	Date of the next examination on the sticker, repeated inspection at least every 6 years
Dimensions / Weight	1150 x 200 x 60 mm / 0,96 kg Length of test probes 675 mm

MultiSafe HS 36

Compact high voltage tester up to 36 kV AC/DC



HS 36 dismountable



Color change of the 360 ° LED light strip and the LCD illumination when voltage is applied

With the MultiSafe HS 36, DC and AC voltage up to 36 kV against ground can be tested safely and quickly.

- Precise indication of voltages up to 36 kV AC/DC and frequency up to 200 Hz
- Highest degree of safety provided by moulded protective resistors within the double-walled GRP-tube
- surge voltage strength > 500 kV
- robust housing, IP 65

Application

The MultiSafe HS 36 is a two-pole voltage tester for alternating and direct voltages up to 36 kV against ground.



Testing with HS 36 in a 36 kV distribution panel

Design

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

- High voltage probe with moulded resistor decade made of double-walled GRP-tube
- Dust- and waterproof display part made of ABS with unbreakable display cover
- Twin insulated line with large universal clamp for secure grounding
- Modular design with impact resistant, glass fibre-reinforced plastic tube, dismountable ground line and clamp

Safety

- Surge voltage strength > 500 kV due to moulded protective resistors
- Integrated self-test to test the protective resistors, function and connection to earth
- Redundant test system with continuous self-monitoring for indicating the absence of voltage

Easy operation

The one-button operation simplifies the application. The result is clearly indicated on the display and by LEDs.

Three display-systems

- LEDs red for voltage, green for standby and absence of voltage
- Display for voltage value, frequency as well as voltage type and polarity
- Acoustic signal for voltage > U_t

Device Size

The MultiSafe HS 36 is available in 3 versions:

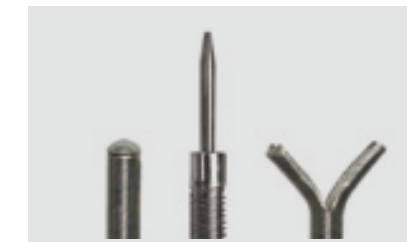
- HS 36 divisible short version transport length 0,92 m test distance 860 mm
- HS 36C not divisible short version transport length 0,97 m test distance 745 mm
- HS 36B not divisible normal version transport length 1,43 m test distance 860 mm



Accessories

Accessories are not included in scope of delivery

- Various test electrodes page 88
- Standard electrode-i round for busbars and test holes



Robust and waterproof hard case for size HS 36 and HS 36C

Technical data

Two-pole high voltage tester
MultiSafe HS 36

Nominal voltage range	50 ... 36000 V AC / DC
Display range	40 ... 36000 V AC / DC
Frequency range	DC / 15 ... 200 Hz
Display	1. red LEDs for voltage > U_t green LEDs for standby / absence of voltage 2. Two-line LCD with backlight white / red for indication of voltage, frequency, type of voltage and battery status 3. Acoustic signa > U_t
Indicator group	I and III
Response voltage U_t (change green / red)	1200 V
Measurement ranges / Accuracy	40 ... 1000 V AC/DC $\pm 5\% + 10$ Digits 1,0 ... 9,9 kV AC/DC $\pm 5\% + 10$ Digits 10 ... 36 kV AC/DC $\pm 5\% + 10$ Digits automatic range switching
Input resistance	119 M Ω
Current peak value	< 0,4 mA at 36000 V
On-time	15 min
Self-test	Testing function and protective resistors
Surge voltage strength	> 500 kV (test report available)
Construction	For indoor and outdoor installations IP 65, device can be used in moist environments
Operating temperature	- 15°C ... + 55°C
Power supply	6 x AA 1,5 V, multi-stage battery indicator
Design	• Two-pole voltage tester with fixed connection to ground • One-piece (HS 36B / C) or two-piece (HS 36) high-voltage test probe made of double-walled GRP pipe with molded resistance decade • Display part in impact-resistant, dust-proof plastic housing IP 65 • 6 m PUR high voltage cable 40 kV with universal clamp for busbars and fixed ball points up to $\varnothing$ 25 mm
Standards	EN/IEC 61243-2 high voltage tester EN/IEC 60071 surge voltage strength further applied standards: EN/IEC 61010 and EN 50110-1 (VDE 0105-1) (further details see risk analysis)
Test label	Date of the next examination on the sticker, repeated inspection at least every 6 years
Dimensions / Weight	HS 36: 1430 x 100 x 100 mm / 4,10 kg Transport length dismantled 920 mm HS 36B: 1430 x 100 x 100 mm / 3,70 kg Transport length 1430 mm HS 36C: 970 x 100 x 100 mm / 3,50 kg Transport length 970 mm

Type	Article no	Integrated self-test	Earth contact	For grounded voltage	For ungrounded voltage	For indoor installations	For outdoor installations
HS 36 50 - 36 000 V AC/DC	89308	0,92 m	Universal clamp	■		■	■
HS 36B 50 - 36 000 V AC/DC	89346	0,97 m		■		■	■
HS 36C 50 - 36 000 V AC/DC	89353	1,43 m		■		■	■

Ex-proof measuring and testing devices



Type overview Ex-proof measuring and testing devices

ΩMegaSafe EP 4



- Compact resistance measuring device
- Easy handling
- Versatile accessories

	EP 4
Voltage measurment range	only warning for external voltage
Resistance measurment range	0,00 Ω - 1999 kΩ
Current measurement range	-
Temperature measurment range	-
Application	Monitoring of protective measures Line and resistance measuring device according to EN / IEC 61557-4
Ex approval	
Ex application group	-
Ex intrinsically safe in accordance with	-
Gas group	-
Temperature class	-
Power supply	Battery 9 V 6LR61
Article number	83302
Page	62

ΩMegaSafe EP 4Ex



- Instinsically safe resistance meter
- Easy handling
- Battery saving measurement

	EP 4Ex
Voltage measurment range	only warning for external voltage
Resistance measurment range	0,00 Ω - 1999 kΩ
Current measurement range	-
Temperature measurment range	-
Application	Monitoring of protective measures Line and resistance measuring device according to EN / IEC 61557-4
Ex approval	■
Ex application group	II 2G (chemistry)
Ex intrinsically safe in accordance with	ib
Gas group	IIC
Temperature class	T4
Power supply	Battery 9 V 6LR61 Duracell
Article number	83301
Page	62

ΩMegaSafe ISO 1



- Insulation tester
- Compact design
- Easy handling

	ISO 1
Voltage measurment range	only warning for external voltage
Resistance measurment range	1 kΩ - 20 GΩ
Current measurement range	-
Temperature measurment range	-
Application	Monitoring of protective measures High-impedance megohmmeter and insulation tester according to EN / IEC 61557-2
Ex approval	
Ex application group	-
Ex intrinsically safe in accordance with	-
Gas group	-
Temperature class	-
Power supply	Battery 9 V 6LR61
Article number	83315
Page	64

ΩMegaSafe ISO 1Ex



- Instinsically safe insulation tester
- Direct measuring in Ex-areas without interrupting production processes

	ISO 1Ex
Voltage measurment range	only warning for external voltage
Resistance measurment range	1 kΩ - 1999 GΩ
Current measurement range	-
Temperature measurment range	-
Application	Monitoring of protective measures High-impedance megohmmeter and insulation tester according to EN / IEC 61557-2
Ex approval	■
Ex application group	II 2G (chemistry) I M2 (mining)
Ex intrinsically safe in accordance with	ib
Gas group	IIB
Temperature class	T4
Power supply	Battery 9 V 6LR61 Duracell
Article number	83310
Page	64

VarioSafe EXM 25

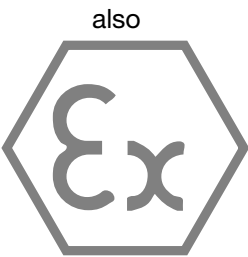


- Intrinsically safe multimeter up to 1000 V
- Automatic measuring range selection
- Versatile accessories

	EXM 25
Voltage measurment range	0 - 1000 V
Resistance measurment range	0,0 Ω - 19,99 MΩ
Current measurement range	0 mA - 2,00 A
Temperature measurment range	only with TMZ - accessories
Application	Intrinsically safe multimeter
Ex approval	■
Ex application group	II 2G (Chemie) I M2 (Bergbau)
Ex intrinsically safe in accordance with	ib
Gas group	IIB (up to 1000 V) IIC (up to 690V)
Temperature class	T6
Power supply	Intrinsically safe Lithium battery Tietzsch
Article number	82026
Page	68

ΩMegaSafe EP 4 / EP 4Ex

Compact earth resistance tester for safe areas & hazardous Ex-areas



Test lines in accordance with EN-61010-031 CAT III
Cap removable for CAT II environments

NEW Faster and more energy-efficient

The ΩMegaSafe EP 4 is a manageable resistance measuring device for fast testing according to EN/IEC 61557-4 of protective and grounding lines, equipotential bonding lines and lines at lightning arrester.

- Safe and universal between 10 mΩ and 2 MΩ
- High measurement current 0,2 A for Lo-Ω-range up to 10 Ω
- Fast compensation of measuring line per keypress
- Automatic pole change and storage of measurement results



Low resistive line tests
Easy testing of resistances in protective lines and grounding systems, equipotential bonding lines, shielding etc. in accordance with EN 61557-4 (VDE 0413-4).

- Universal and safe**
Measurements between 10 mΩ and 2 MΩ with extreme safety against external voltage
- Lo-Ω-measurement range up to 10 Ω with high measurement current 0,2 A
 - Further measurement ranges up to 2000 kΩ
 - Usable in mains up to 400 V
 - Acoustic and optic warning in case of external voltage, flashing indication of voltage value
 - Robust, manageable casing with attached test prod for heavy demands, IP 65

- EP 4 for reliable and fast low resistive tests**
Easy handling
- Zero balance (compensation) of measuring line per keypress
 - Supports several measuring lines with an impedance up to 3,5 Ω (approximately 200 m) for quick results
 - Automatic pole change and storage of measurement results (can be switched off)



Quick compensation of the measuring line



- Three display systems**
Unambiguous and rapid recognition of function, result and danger:
1. Bright LED for external voltage, polarity- and Lo-Ω-measurement with 0,2 A
 2. Clear display for measurement result and function with backlight
 3. Acoustic warning signal

Accessories
Test lines 73009 and battery are included in the delivery of the EP 4 (standard version) or EP 4Ex (Ex-proof version).



Accessories are not included in scope of delivery

- 50 m measuring line on decoiler with standard socket, not for Ex-areas
- 50 m measuring line on wire reel
- Contact clamp with standard socket
- Leather bags
- Sawtooth test prod for rusty and varnished test sites



Test prod for rusty and varnished test sites

Technical data	
Line and resistance measuring device EP 4 / EP 4Ex according to EN/IEC 61010-1 and EN/IEC 61557-4 (VDE 0413 part 4) Ex-proof version EP 4Ex additionally according to DIN EN 60079-0 and 60079-11	
EC type examination certificate (EP 4Ex)	
II 2 G	Ex ib IIC T4 ATEX 552826
Measurement ranges	
10 Ω (Lo-Ω)	resolution 0,01 Ω
100, 2000 Ω	resolution 0,1 ... 1 Ω
20, 200, 2000 kΩ	resolution 0,01 ... 1 kΩ
Accuracy	
1,5 % + / - 4 digit at 20°C	
Measurement current	
10 Ω (Lo-Ω)-range:	200 mA
100 Ω-range:	20 mA
further ranges:	1 µA ... 20 mA
Open-circuit voltage	
> 4 V	
Measuring line balance	
Automatic 0-balance (CAL) up to 3,5 Ω	
Digital indication	
2-line LCD-display, 3 ½ digit, overflow indication via OL backlight	
Voltage indication	
Red LED and acoustic warning signal as well as indication of the value in Volt	
Overvoltage protection	
Up to 400 V reversible via semiconductor and via special fuse	
Overvoltage category	
CAT III 300 V / CAT II 600 V according to EN/IEC 61010-1	
Operating temperature	
-10°C ... + 50°C	
Power supply	
Battery 9 V-Block AIMn	
EP 4: 9 V-Block IEC 6LR61 / 6LF22 / 6LP3146 (alkaline-manganese) any manufacturer	
EP 4Ex: only Duracell MN 1604, 6LF22 / 6LR61 Plus Power Duralock (black /yellow) multi-stage battery indicator automatic switch-off	
Casing	
Made of impact resistant ABS with unbreakable display cover	
Protection category	
IP 65, device can be used in moist environments	
Dimensions / Weight	
60 x 230 x 40 mm	
EP 4: 180 g	
EP 4Ex: 220 g	

Type	Article no.	Continuity measurement	Automatic pole change	Voltage warning	Ex-proofed
EP 4	83302	■	■	■	
EP 4Ex	83301	■	■	■	■

ΩMegaSafe ISO 1 / ISO 1Ex

Compact megohmmeter for safe areas & hazardous Ex-areas



also



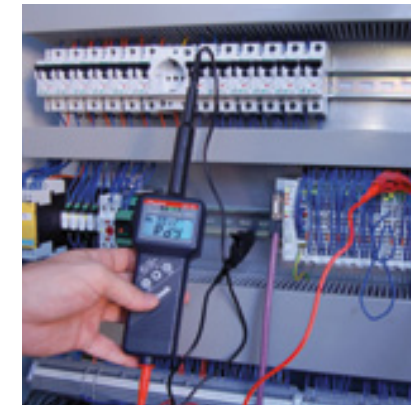
NEW



ISO 1 with adjustable probe tip

The ΩMegaSafe ISO 1Ex is a compact high-impedance testing device for insulating resistances and bleeder resistors in potentially explosive atmospheres.

- Safe and universal between 1 k Ω and 2 TΩ
- Test voltage 100, 250, 500, 1000 V for ISO 1
32, 100, 500 V for ISO 1Ex
- Indication of external voltage and integrated voltage indication up to 500 V
- Push button for rapid discharge of capacities



Easy insulation tests

In Ex-areas with EN 61557-2 (VDE 0413-2), connectible bleeder test in accordance with EN 61340.

Universal and safe

- Measurements between 10 kΩ and 2 GΩ / 2 TΩ with extreme safety against sparking
- Robust, manageable casing with fixed test prod, IP 65
- 7 measurement ranges with automatic range selection
- Acoustic and optic warning in case of external voltage, flashing indication at voltages 32 V
- Push button for rapid discharge of capacities

Reliable and fast

Easy handling:

- Test voltage selection per push button
- Simultaneous indication of test voltage and resistance value on the two-line display
- Warning against voltages > 32 V and rapid discharge of capacities per push button
- Fast measurements in GΩ ranges, measurement option TΩ switchable (3 additional measurement ranges)



Three readout systems

Unambiguous and rapid recognition of function, result and danger:

1. LED for external voltage, active testing and selected test voltage
2. Display for test voltage and measurement value with backlight
3. Acoustic warning signal

Accessories

- one test line 84311 600 V CAT III 80 cm with crocodile clip and battery included in scope of delivery (ISO 1)
- two test lines 84311 / 84314 600 V CAT III red and black 80 cm with crocodile clips and battery included in scope of delivery (ISO 1Ex)
- further accessories are not included
- Leather bags
- Attachable test probe

Special accessories for measurements up to 2 TΩ:

Special measuring lines and electrodes are required for measurements at bleeder and surface resistances

- ISO-TΩ measuring line
- Annular electrode in accordance with EN 61340-5-1 and EN 61340-2-3 for measurements of surface resistance and volume resistivity, weight: 0,515 kg
- Electrode in accordance with EN 61340-4-1 and EN 61340-2-3 for measurements of surface and bleeder resistance, weight: 2,27 kg



Check the conductivity of ESD floors



Attachable test probe CAT III (not suitable for Ex-application)

Technical data

High-impedance megohmmeter
ΩMegaSafe ISO 1 / ISO 1Ex
according to EN/IEC 61010-1 and EN/IEC 61557-2 (VDE 0413 part 2)
Ex-proof version in accordance with EN 60079-0 and EN 60079-11

EC type examination certificate (ISO 1Ex)

II 2 G Ex ib IIBT4 BVS 06 ATEX E130
I M2 (M1) EX ib [ia] I BVS 06 ATEX E130

Measurement ranges

1,999 MΩ	resolution	1 kΩ	5% +/- 5D
19,99 MΩ	resolution	10 kΩ	5% +/- 5D
199,9 MΩ	resolution	100 kΩ	5% +/- 5D
1,999 GΩ	resolution	1 MΩ	5% +/- 5D
19,99 GΩ	resolution	10 MΩ	10% +/- 5D

with selected measurement option TΩ (only ISO 1Ex):

199,9 GΩ	resolution	100 MΩ	10% +/- 5D
1999 GΩ	resolution	1 GΩ	25% +/- 5D

Accuracy

5% +/- 5 Digit at 20°C

Test voltage/measurement current (ISO 1)

100 V	1 mA	+/-20 %
250 V	1 mA	+/-20 %
500 V	1 mA	+/-20 %
1000 V	1 mA	+/-20 %

Test voltage/measurement current (ISO 1Ex)

32 V	64 μA	+/-20 %
100 V	200 μA	+/-20 %
500 V	1 mA	+/-20 %

Discharge push-button

For rapid discharge of capacities

Digital indication

2-line LCD-display, 3 1/2 digit, overflow indication via OL backlight

Voltage indication

Red LED and acoustic warning signal as well as indication of the value in Volt
24 - 400 V AC
15 - 500 V DC

Overvoltage category

CAT IV 600 V according to EN/IEC 61010-1

Operating temperature

-10°C ... + 50°C

Power supply

Battery 9 V-block
ISO 1: 9 V-block IEC 6LR61 / 6LF22 / 6LP3146 (alkaline-manganese) any manufacturer
ISO 1Ex: only Duracell MN 1604, 6LF22 / 6LR61 Plus Power Duralock (black /yellow) multi-stage battery indicator automatic switch-off

Casing

Made of impact resistant ABS with unbreakable display cover, antistatic coated

Protection category

IP 65, device can be used in moist environments

Dimensions / Weight

60 x 230 x 40 mm / 220 g

Type	Article no.	Insulation test	Testing of leakage resistors	Voltage warning	Ex-proofed
ISO 1	83315	■	■	■	
ISO 1Ex	83310	■	■	■	■

Accessories Ω MegaSafe EP 4 / ISO 1Ex

The Ω MegaSafe EP 4 and ISO 1Ex can be customized with accessories for different measurement tasks. Long cables extend the test area, special test probes and electrodes facilitate the work.

Test lines



For a wide range of applications, measuring cables with a length up to 200 m can be used.



73009
Test line with removable protection cap for CAT IV environments



73004
Decoiler with 50 m measuring line

Test probes and clamps



Probes for painted surfaces and clamps for connection to ground potential facilitate the work.



The electrode protection of the EP must be removed before using test probes.



73007
Sawtooth test prod



73001
Earth clamp



73008
Attachable test probe for ISO 1Ex

Electrodes



For testing antistatic floors and surfaces, we offer you a selection of standard test probes for the ISO 1Ex.



73011
Annular electrode

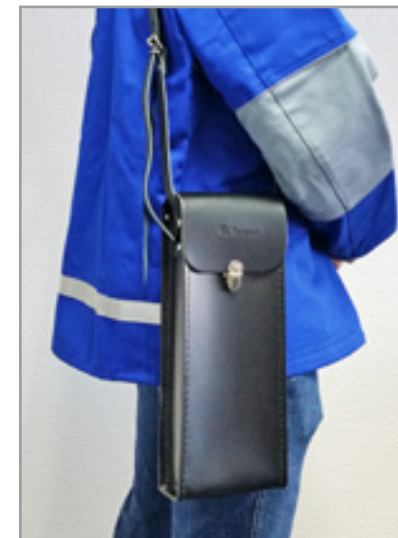


73012
Electrode for surface resistance



73013 Tripod electrode for floors

Bags and storage



Various bags and containers facilitate the transport and protect the EP 4 / EP 4Ex, ISO 1 / ISO 1Ex and accessories.

Overview of the bags on page 93



VarioSafe EXM 25

Multimeter for mining and chemical industries



The VarioSafe EXM 25 is an intrinsically safe multimeter for potentially explosive atmospheres.

- Universal for resistance, current, frequency, temperature and voltage up to 1000 V
- For intrinsically safe and not intrinsically safe circuits up to 1000 V according to ATEX directive 94/9 EG
- Highest degree of safety provided by moulded protective resistors in DATA-HOLD test prods CAT IV, 1000 V
- Intrinsically safe source of energy NiMH-accu or Li-battery
- Robust casing made of antistatic plastic



Universal and variable

- 5 integrated measurement functions
- Illuminated two-line display for voltage, resistance, current, frequency and temperature with test attachment
- Power supply either from battery or accu
- Multifunctional accessories

Safe

Voltage tester functions

- Moulded resistors directly behind the test prods guarantee an absolutely safe voltage testing - **CAT IV 1000 V**
- Approved for **intrinsically safe** and **not intrinsically safe** circuits up to **1000 V**
- Distinctive by separate test prods for voltage or resistance
- Voltage test prods lockable by bayonet fastenings additional LED signal for voltage
- Moulded safety barrier protects against voltage up to 1000 V during resistance measurements
- Integrated control of current range up to 1000 V

Easy operation

- Automatic function and integrated safety against operating errors
- Automatic selection of measurement range
- Indication of type of voltage + - ~
- Red LED signalises voltage, green LED indicates continuity
- DATA-HOLD push button within the measuring tip saves the displayed value
- Self-test and automatic battery check
- Automatic switch-off after 60 sec when no measurements are taken

Robust casing

For decades approved in mining

- Special casing made of impact resistant antistatic plastic and unbreakable display cover
- Universal jack with bayonet fastening for DATA-HOLD test prods and further accessories
- Standard sockets for resistance and current
- LEDs for voltage and resistance



Standard accessories

DATA-HOLD test prods for voltage and frequency up to 1 kV and standard prods for resistance/current, as well as an intrinsically safe energy source, accu or battery are included in the scope of delivery.

Accessories / spare parts

The following accessories are not included in scope of delivery

- Ever-ready bag
- Plug-in power supply
- NiMH accu intrinsically safe T4
- Lithium-battery intrinsically safe T6
- Temperature measurement accessory, intrinsically safe, -80°C up to +600°C
- Universal sensor Fe-CuNi
- Surface sensor Fe-CuNi

Technical data

Intrinsically safe multimeter VarioSafe EXM 25 tested and certified in accordance with EN 60079-0 and EN 60079-11

EC type examination certificate

DMT 03 ATEX E 013

II 2G Ex ib T4/T6 Gb und I M2 Ex ib I Mb

Nominal measurement ranges

usable in electricity networks group Ex I bis 1(2) kV, Ex IIB and Ex IIC up to 690 V

Direct voltage 1 kV

Red LED from 12 V, LCD 3 1/2-digit: 1, 10, 100, 1000 V (1610 V), $\pm 1,5\%$ + 3 digit resolution 0.001 ... 1 V

Alternating voltage 1 kV

Red LED from 12 V, LCD 3 1/2-digit, TRMS; 10, 100, 1000 V (1160 V) resolution 0,01 ... 1 V $\pm 1,5\%$ + 3 digit at 0 ... 100 Hz $\pm 5\%$ + 5 digit at 101 ... 500 Hz

Input resistance

2 M Ω distributed to 4 resistances, moulded into DATA-HOLD test prods

Continuity/resistance

Green LED LCD 3 1/2-digit 200, 2000 Ω 20, 200, 2000 k Ω , 2 M Ω , 20 M Ω $\pm 1\%$ + 5 digit, resolution 0,1 Ω ... 10 k Ω

Current

AC/DC 1000 mA, 2 A $\pm 1\%$ + 2 digit resolution 1 ... 10 mA

Frequency

200, 2000 Hz $\pm 1\%$ + 2 digit, resolution 0,1 ... 1 Hz 10 kHz $\pm 3\%$ + 2 digit, resolution 0,01 kHz

Temperature with measurement accessory

-80°C... +150°C $\pm 1,5\%$ + 3 digit, resolution 0,1°C -80°C... +600°C $\pm 1,5\%$ + 2 digit, resolution 1°C

Further functions

Automatic selection of measurement range, indication of function, self-test, automatic switch-off

Power supply

Intrinsically safe energy source, exchangeable Li-battery (T6) or NiMH accu (T4) exchange in Ex-areas admitted

Operating temperature

- 10°C ... + 40°C

Casing

PA impact resistant, antistatic, LCD cover PC unbreakable

Protection category

IP 54, device can be used in moist environments

Dimensions / Weight

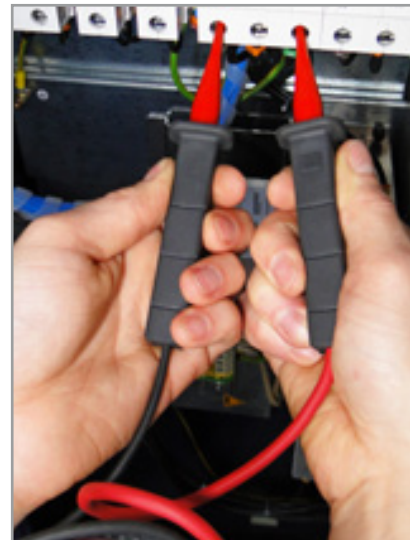
85 x 180 x 38 mm / 335 g

Type	Article no.	Voltage tester - function	Multimeter	Power supply	Ex-proofed
EXM 25A	82025	■	■	NiMH-accu T4	■
EXM 25LB	82026	■	■	Li-battery T6	■

Accessories VarioSafe EXM

Application area of the VarioSafe EXM can be extended by accessories.
These accessories are designed for use in Ex-areas.

Measuring lines



Different measuring lines for different voltages extend the application of the EXM.



72010
Voltage test prods
up to 1000 V AC / DC



82010
Test lead for resistance
and current

Accessories



With these accessories the application of the VarioSafe EXM 25 is extended.



72328
Plug-in power supply for
charging EXM accu



82318
Temperature measurement
accessory

Batteries and accumulators



The special accus and Lithium batteries guarantee maximum safety in Ex-areas.



72025
EXM accu NiMH



72026
EXM Lithium-battery

Bag



The practical leather carrying case facilitates the use of the EXM 25.



82011
Leather ever-ready bag

Article list

Voltage tester up to 1000 V

Prüfball SPB	Art. No.	Type	Description		phase tester single-pole	phase sequence indication	adjustable electrode length	acoustic voltage indication	additional load	works without battery
	81411	SPB 500B	Prüfball analog 20...500 V phase / phase sequence indication, continuity and self-test, CAT IV 500 V		■	■	■			■
	81401	SPB 500PR	Prüfball Analog 20...500 V phase / phase sequence indication, continuity and self-test, CAT IV 500 V with additional load and vibration indication		■	■	■		■	■
	81402	SPB 500PRA	Prüfball Analog 20...500 V phase / phase sequence indication, continuity and self-test, CAT IV 500 V with additional load and acoustic signal		■	■	■	■	■	■
	81414	SPB 1000B	Prüfball analog 50...1000 V phase / phase sequence indication, continuity and self-test, CAT IV 1000 V		■	■	■			■
	81404	SPB 1000PR	Prüfball analog 50...1000 V phase / phase sequence indication, continuity and self-test, CAT IV 1000 V with additional load and vibration indication		■	■	■		■	■
	81422	SPB 500L	Prüfball digital 24...500 V phase / phase sequence indication, continuity and self-test, CAT IV 500 V with additional load		■	■	■		■	□
	81423	SPB 1000L	Prüfball digital 24...1000 V phase / phase sequence indication, continuity and self-test, CAT IV 1000 V with additional load		■	■	■		■	□
315 x 105 x 60 mm; 0,470 kg										
Electricity meter tester ZAP	81314	ZAP 350	Electricity meter tester analog 20...500 V phase / phase sequence indication, continuity and self-test 350 W additional load, CAT IV 300 V 300 x 200 x 50 mm; 0,640 kg		■	■	■		350 W	■
	81315	ZAP 350L	Electricity meter tester digital 24...500 V phase / phase sequence indication, continuity and self-test 350 W additional load, CAT IV 500 V 300 x 200 x 50 mm; 0,635 kg		■	■	■		350 W	□
	81316	ZAP 1050L	Electricity meter tester digital 24...500 V phase / phase sequence indication, continuity and self-test 1050 W additional load, CAT IV 500 V 400 x 175 x 75 mm; 0,950 kg		■	■	■		1050 W	□

□ Maintenance-free thanks to integrated Longlife battery for additional functions

Voltage tester up to 1000 V

MultiSafe DSP	Art. No.	Type	Description		phase tester single-pole	phase sequence indication	adjustable electrode length	acoustic voltage indication	additional load	works without battery
	84402	DSP 4	MultiSafe DSP 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test CAT IV 600 V / CAT III 1000 V		■	■				
	84403	DSP 4F	MultiSafe DSP 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test phase sequence without ground potential (IT power grids), CAT IV 600 V / CAT III 1000 V		■	■				
	84405	DSP 4ST	MultiSafe DSP 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test adjustable electrode length 4/15 mm CAT IV 600 V / CAT III 1000 V		■	■	■			
	84406	DSP 4FST	MultiSafe DSP 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test IT phase sequence test adjustable electrode 4/15 mm CAT IV 600 V / CAT III 1000 V		■	■	■			
	84404	DSP 4UL	MultiSafe DSP 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test CSA / UL-certification adjustable electrode 4/15 mm CAT IV 600 V / CAT III 1000 V		■	■	■			
	300 x 100 x 50 mm; 0,360 kg									
	84502	DSP 5B	MultiSafe DSP 5B U _N VDE 0...1000 V AC / 1500 V DC phase / phase sequence / continuity / self-test phase sequence without PE (IT power grids), CAT IV 1000 V		■	■				
	84501	DSP 5	MultiSafe DSP 5 U _N VDE 0...1000 V AC / 1500 V DC U _{Load} 0...1000 V AC / 1200 V DC phase / phase sequence / continuity / self-test IT-phase sequence test additional load CAT IV 1000 V		■	■			■	
	84503	DSP 5ST	MultiSafe DSP 5ST U _N VDE 0...1000 V AC / 1500 V DC U _{Load} 0...1000 V AC / 1200 V DC phase / phase sequence / continuity / self-test IT-phase sequence test additional load adjustable electrode 4/15 mm CAT IV 1000 V		■	■	■		■	
	315 x 105 x 60 mm; 0,425 kg									
ProfiSafe LSP	85422	LSP 4L	ProfiSafe LSP 12...690 V LCD-value indication phase / phase sequence / continuity / self-test CAT IV 600 V / CAT III 690 V		■	■				■
260 x 75 x 75 mm; 0,230 kg										

The dimensions and weights include the product packaging

Accessories voltage tester up to 1000 V

Extensions	Art. No.	Type	Description		SPB all types	ZAP all types	DSP 4 / DSP 4F	DSP 4ST / DSP 4UL / DSP 5	DSP thread set required	LSP 4B / LSP 4L
	81020	SPB-S500-Y*	Extension 515 mm insulated stainless steel tube, 1000 V 515 x 20 x 20 mm; 0,070 kg		■	■				
	81022	SPB-S600-Y*	Extension 615 mm insulated stainless steel tube, 1000 V 615 x 20 x 20 mm; 0,080 kg		■	■				
	81028	SPB-S820-Y*	Extension 820 mm light GRP-tube, 1000 V 820 x 20 x 20 mm; 0,115 kg		■	■				
	84313	LSP-S500-Y*	Extension 505 mm attachable insulated stainless steel tube, 1000 V 505 x 20 x 20 mm; 0,075 kg				■			■
	84010	DSP-S550-Y*	Extension 550 mm screwable insulated stainless steel tube, 1000 V 550 x 30 x 30 mm; 0,090 kg				■	■	■	
	84014	DSP-S850-Y*	Extension 850 mm screwable light GRP-tube, 1000 V 860 x 30 x 30 mm; 0,090 kg				■	■	■	
	81031	S-HUELSE	Plastic sleeve for storage of extensions up to 600 mm Suitable for a pair of extensions 350 x 45 x 45 mm; 0,070 kg							



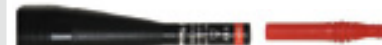
* Please select the electrode shape when ordering
 - Electrode Y for overhead lines (standard)
 - Electrode i for busbars and measuring points

Insertion prod	81021	SPB-S20-A	Insertion prod 20 mm screwable for tests on underground cables, 1000 V 90 x 20 x 20 mm; 0,015 kg		■	■				
	84321	DSP-S20-A	Insertion prod 20 mm screwable for tests on underground cables, 1000 V 140 x 30 x 30 mm; 0,040 kg				■	■	■	

Pin prod	81023	SPB-S65	Flexible pin prod 3 x 65 mm screwable for narrow test points CAT IV 600 V / CAT III 1000 V 145 x 20 x 20 mm; 0,015 kg		■	■				
	84013	DSP-S57	Flexible pin prod 3 x 57 mm attachable for narrow test points CAT IV 600 V / CAT III 1000 V 145 x 20 x 20 mm; 0,015 kg				■			■
	84315	DSP-S56	Flexible pin prod 3 x 56 mm screwable for narrow test points CAT IV 600 V / CAT III 1000 V 180 x 30 x 30 mm; 0,040 kg				■	■	■	
	84318	DSP-S110	Flexible pin prod 3 x 110 mm screwable for narrow test points CAT IV 600 V / CAT III 1000 V 235 x 30 x 30 mm; 0,040 kg				■	■	■	

The dimensions and weights include the product packaging

Accessories voltage tester up to 1000 V

Adapter	Art. No.	Type	Description		SPB all types	ZAP all types	DSP 4 / DSP 4F	DSP 4ST / DSP 4UL / DSP 5	DSP thread set required	LSP 4B / LSP 4L
	81029	SPB-S-ADA	Screwable adapter with 4 mm socket suitable for the connection of test leads CAT IV 600 V / CAT III 1000 V 70 x 20 x 20 mm; 0,015 kg		■	■				
	84011	DSP-S-ADA	Attachable adapter with 4 mm socket suitable for the connection of test leads CAT IV 600 V / CAT III 1000 V 70 x 20 x 20 mm; 0,015 kg				■			■
	84312	DSP-S-ADAS	Screwable adapter with 4 mm socket suitable for the connection of test leads CAT IV 600 V / CAT III 1000 V 120 x 30 x 30 mm; 0,035 kg				■	■	■	
DSP thread set	84019	DSP -G4	Thread set including glue for DSP 4 / DSP 4F Required for the use of screw-on extensions and adapters 170 x 100 x 30 mm; 0,020 kg							
	84023	DSP ST-G4	Thread set including glue for DSP 4ST / DSP 4FST / DSP 4UL Required for the use of screw-on extensions and adapters 170 x 100 x 30 mm; 0,020 kg							
	84024	DSP -G5	Thread set including glue for DSP 5 / DSP 5B / DSP 5ST Required for the use of screw-on extensions and adapters 170 x 100 x 30 mm; 0,020 kg							
Test lines	84311	L-SETR	Test line 1 m with two 4 mm plugs, red including crocodile clip, opening width 20 mm CAT IV 600 V / CAT III 1000 V 170 x 100 x 30 mm; 0,060 kg		■	■	■	■		■
	84314	L-SETS	Test line 1 m with two 4 mm plugs, black including crocodile clip, opening width 20 mm CAT IV 600 V / CAT III 1000 V 170 x 100 x 30 mm; 0,060 kg		■	■	■	■		■
Testbox	81041	SP 200	Manageable voltage source testbox for enhanced self-test generates 50 - 690 V test voltage incl. 6 AA batteries, Not suitable for testing with screwed-on extension probes. 170 x 75 x 75 mm; 0,380 kg		■	■	■	■		■
Protective cap	24315	SPB-CAP	Protective cap for Prüfball SPB / ZAP for adjusting the electrode length 4/15 mm and as transport protection Price for packaging = 2 pieces 170 x 100 x 30 mm; 0,060 kg		■	■				

Accessories voltage tester up to 1000 V

Taschen	Art. No.	Type	Description						
	81030	SP-LED	Leather bag for SPB / DSP with hand strap and shoulder strap 300 x 130 x 60 mm; 0,475 kg						
	84020	DSP-ETU	Artificial leather case for DSP 4 / LSP 310 x 120 x 30 mm; 0,125 kg						
	84021	DSP43546	Cloth bag Cordura for DSP 4 with belt loop 310 x 160 x 15 mm; 0,075 kg						
	84025	DSP-COR5	Cloth bag Cordura for DSP 5 / SPB / EP 4 / EP 4Ex / ISO 1 / ISO 1Ex with belt loop 320 x 170 x 15 mm; 0,075 kg						
	85320	LSP-COR	Cloth bag Cordura for LSP with belt loop 295 x 135 x 15 mm; 0,070 kg						
	81035	SP-KLT-S600	Artificial leather bag for SPB / DSP / LSP and extensions up to 600 mm with shoulder strap 650 x 175 x 50 mm; 0,225 kg						
	81033	Z350-LED	Leather bag for ZAP 350 with shoulder strap 300 x 210 x 55 mm; 0,560 kg						
	81037	Z1050-LED	Leather bag for ZAP 1050L with shoulder strap 350 x 210 x 60 mm; 0,640 kg						
	84333	HS5-KLT	Artificial leather bag for HS 5 / SPB / ZAP and extensions up to 600 mm with zipper and shoulder strap 660 x 210 x 20 mm; 0,230 kg						
	81039	SPB-HW-BAG	Cloth bag for DSP-HW or SPB-HW and accessories 670 x 300 x 30 mm; 1,000 kg						
				SPB-types	ZAP-types	DSP 4 / DSP 4F / DSP 4ST	DSP 5 / DSP 5B / DSP 5ST	Extensions up to 600 mm	LSP 4B / LSP 4L

Voltage tester for floodwater

Floodwater voltage tester	Art. No.	Type	Description						
	81317	SPB-HW	Prüfball digital for flooded cellar rooms with 30 m line and clamp on reel 50...500 V, integrated self-test incl. extension SPB-HW-600-i and plastic casing 400 x 400 x 180 mm; 2,460 kg						
	81417	SET SPB-HW	Floodwater-SET consisting of: Prüfball SPB-HW Screw clamp SPB-HW-KLE Cloth bag SPB-HW-BAG 640 x 290 x 250 mm; 4,320 kg						
	81337	DSP HW	MultiSafe DSP-HW for flooded cellar rooms and maintenance shafts 30 m line and clamp on reel 25...690 V, integrated self-test, with acoustic signal and memory function incl. extension DSP-HW-600-i and plastic casing 400 x 400 x 180 mm; 2,460 kg						
	81418	SET DSP HW	Floodwater-SET consisting of: MultiSafe DSP-HW Screw clamp SPB-HW-KLE Cloth bag SPB-HW-BAG 640 x 290 x 250 mm; 4,320 kg						
Accessories SPB-HW	81045	SPB-HW-S600-i	Extension 615 mm for SPB-HW insulated stainless steel tube, electrode i 615 x 20 x 20 mm; 0,080 kg						
	81047	DSP-HW-S650-i	Extension 650 mm for DSP-HW insulated stainless steel tube, electrode i 650 x 20 x 20 mm; 0,080 kg						
	64224	SPB-HW-SPI	Earthing spike, 600 mm for SPB-HW or DSP-HW 610 x 100 x 40 mm; 1,600 kg						
	64215	SPB-HW-KLE	Screw clamp for earthing on masts for SPB-HW or DSP-HW 250 x 130 x 30 mm; 0,740 kg						
SPB-HW Floodwater demo box	64225	SPB-HW-DEMO	Demo set for SPB-HW or DSP-HW consisting of: Box for water, two test electrodes with RCD-secured connection line SPB-HW and DSP-HW is not included in the demo set ca. 300 x 500 x 300 mm; 2,000 kg						
				digital voltage indication	LED - indication	integrated selftest	30 m connection line	acoustic voltage indication	works without battery

The dimensions and weights include the product packaging

Voltage tester for subways and trains with 3rd-rail

	Art. No.	Type	Description		phase tester single-pole	phase sequence indication	adjustable electrode length	acoustic voltage indication	additional load	works without battery
3rd rail SPB	81391	SPB 1000L-UB-S	Prüfball digital 50...1000 V optimized for tests on subways / trams , with selftest with green LED for dark environment, with phase indication, with additional load, usable without or with extension / magnet (both not included) CAT IV 1000 V 315 x 105 x 60 mm; 0,470 kg		■				■	□
3rd rail accessories	81090	SPB-S-MAG	Magnet for SPB test electrode for simple contacting of rails suitable for all SPB types 180 x 110 x 40 mm; 0,125 kg							
	81094	SPB-S-400-O	Extension 400 mm O-shape insulated stainless steel tube, 1000 V suitable for all SPB types 450 x 60 x 20 mm; 0,085 kg							
	81093	SPB-S-500-O	Extension 500 mm O-shape insulated stainless steel tube, 1000 V suitable for all SPB types 550 x 60 x 20 mm; 0,090 kg							
3rd rail bag	84333	HS5-KLT	Artificial leather bag for HS 5 / SPB / ZAP and extensions up to 600 mm with shoulder strap 660 x 210 x 20 mm; 0,230 kg							

□ Maintenance-free thanks to integrated Longlife battery for additional functions

Telescope voltage testers 1 kV

MultiSafe TT 1	Art. No.	Type	Description					
	89370-M	TT 1S-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m short version (size S) - 6-part telescope without additional load 1360 x 200 x 190 mm; 6,100 kg				max. test height	transport length
	89370-K	TT 1S-K	with rail foot clamp 1360 x 200 x 190 mm; 6,400 kg					
	89370-UK	TT 1S-UK	with universal clamp 1360 x 200 x 190 mm; 6,900 kg					
	89371-M	TT 1-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m medium version (size M) - 4-part telescope without additional load 1670 x 200 x 190 mm; 5,500 kg				6,2 m	1,30 m
	89371-K	TT 1M-K	with rail foot clamp 1670 x 200 x 190 mm; 5,800 kg					
	89371-UK	TT 1M-UK	with universal clamp 1670 x 200 x 190 mm; 6,300 kg					
	89372-M	TT 1L-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 8,2 m large version (size L) - 6-part telescope without additional load 1670 x 200 x 190 mm; 6,500 kg				8,2 m	1,61 m
	89372-K	TT 1L-K	with rail foot clamp 1670 x 200 x 190 mm; 6,800 kg					
	89372-UK	TT 1L-UK	with universal clamp 1670 x 200 x 190 mm; 7,300 kg					
	89373-M	TT 1XL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 10 m Xlarge version (size XL) - 6-part telescope without additional load 2160 x 200 x 190 mm; 7,500 kg				10 m	2,10 m
			with rail foot clamp 2160 x 200 x 190 mm; 7,800 kg					
			with universal clamp 2160 x 200 x 190 mm; 8,300 kg					

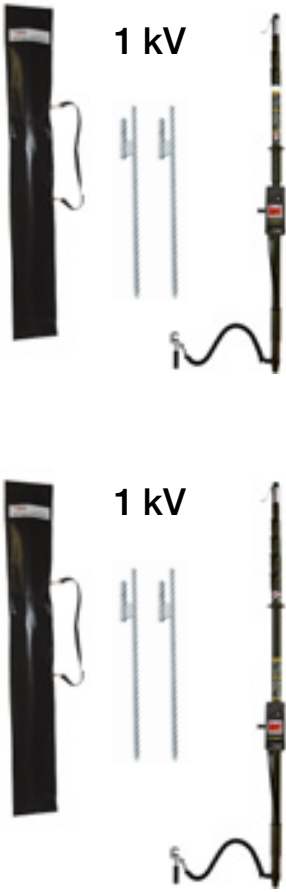
* other response voltage from 50 V on on request

Telescope voltage testers 1 kV with additional load

MultiSafe TT 1	Art. No.	Type	Description					
	89374-M	TT 1SL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m short version (size S) - 6-part telescope with additional load 1360 x 200 x 190 mm; 6,200 kg				max. test height	transport length
	89374-K	TT 1SL-K	with rail foot clamp 1360 x 200 x 190 mm; 6,500 kg					
	89374-UK	TT 1SL-UK	with universal clamp 1360 x 200 x 190 mm; 7,000 kg					
	89375-M	TT 1ML-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m medium version (size M) - 4-part telescope with additional load 1670 x 200 x 190 mm; 5,600 kg				6,2 m	1,30 m
	89375-K	TT 1ML-K	with rail foot clamp 1670 x 200 x 190 mm; 5,900 kg					
	89375-UK	TT 1ML-UK	with universal clamp 1670 x 200 x 190 mm; 6,400 kg					
	89376-M	TT 1LL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 8,2 m large version (size L) - 6-part telescope with additional load 1670 x 200 x 190 mm; 6,600 kg				8,2 m	1,61 m
	89376-K	TT 1LL-K	with rail foot clamp 1670 x 200 x 190 mm; 6,900 kg					
	89376-UK	TT 1LL-UK	with universal clamp 1670 x 200 x 190 mm; 7,400 kg					
	89377-M	TT 1XLL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 10 m Xlarge version (size XL) - 6-part telescope without additional load 2160 x 200 x 190 mm; 7,600 kg				10 m	2,10 m
			with rail foot clamp 2160 x 200 x 190 mm; 7,900 kg					
			with universal clamp 2160 x 200 x 190 mm; 8,400 kg					

* other response voltage from 50 V on on request

Telescope voltage testers 1 kV or 36 kV for overhead power lines

MultiSafe TT 1FL	Art. No.	Type	Description						
	89344	SET TT1FL-L	Set telescope voltage tester for tests on overhead power lines with 1,8 m spiral cable and universal clamp for earth connection 50...1000 V AC / 1500 V DC $U_t = 50\text{ V}^*$ test height variable up to 8,2 m large version size L - 6-part telescope Set consists of: - telescope voltage tester TT 1L-UK - 2 earthing spikes TT-SPI - artificial leather bag TT-KLT-O-M with shoulder strap and inner compartments for earthing spikes 1670 x 200 x 190 mm; 9,200 kg	8,2 m	1,61 m	■	■	■	■
	89343	SET TT1FL-XL	Set telescope voltage tester for tests on overhead power lines with 1,8 m spiral cable and universal clamp for earth connection 50...1000 V AC / 1500 V DC $U_t = 50\text{ V}^*$ test height variable up to 10 m XLarge version size XL - 6-part telescope Set consists of: - telescope voltage tester TT 1XL-UK - 2 earthing spikes TT-SPI - artificial leather bag TT-KLT-O-XL with shoulder strap and inner compartments for earthing spikes 2160 x 200 x 190 mm; 10,200 kg	10 m	2,10 m	■	■	■	■
	89397	SET TT36FL-XL	Set telescope voltage tester for tests on overhead power lines with 1,8 m spiral cable and universal clamp for earth connection 50...36 000 V AC / DC $U_t = 50\text{ V}^*$ test height variable up to 10 m XLarge version size XL - 6-part telescope Set consists of: - telescope voltage tester TT 36XL-UK - 2 earthing spikes TT-SPI - artificial leather bag TT-KLT-O-XL with shoulder strap and inner compartments for earthing spikes 2250 x 200 x 190 mm; 10,200 kg	10 m	2,23 m	■	■	■	■
				max. test	transport	bi-color L	for indoor	for outdoor	telescope

* other response voltage from 50 V on on request

Telescope voltage testers 1 kV for trolley busses

MultiSafe TT-O-Bus	Art. No.	Type	Description						
	89357-OB7	TT 1S-OB7	Telescope-voltage tester for trolley-busses with overheadline distance 700 mm 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m T-piece removable for transport short version size S - 6-part telescope 1410 x 200 x 190 mm; 6,000 kg	6,2 m	1,35 m	■	■	■	■
	89356-OB7	TT 1M-OB7	Telescope-voltage tester for trolley-busses with overheadline distance 700 mm 50...1000 V AC / 1500 V DC $U_t = 250\text{ V}^*$ test height variable up to 6,2 m T-piece removable for transport medium version size M - 4-part telescope 1710 x 200 x 190 mm; 5,500 kg * other response voltage from 50 V on on request ** other overheadline distances on request	6,2 m	1,65 m	■	■	■	■
Tasche TT-O-Bus	84338-M	TT-KLO-M	Artificial leather bag for TT-O-Bus size S with shoulder strap and inner compartments for cross tube 330 x 130 x 230 mm; 0,900 kg						
	84338-S	TT-KLT-O-S	Artificial leather bag for TT-O-Bus size M with shoulder strap and inner compartments for cross tube 330 x 130 x 230 mm; 1,000 kg						
				max. test	transport	bi-color L	for indoor	for outdoor	telescope

The dimensions and weights include the product packaging

Telescope high voltage testers 3 kV

MultiSafe TT 3	Art. No.	Type	Description			max. test	transport	bi-color L	for indoor	for outdoor	telescope
	89380-M	TT 3S-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...3000 V AC / DC $U_t = 400\text{ V}^*$ test height variable up to 6,2 m short version (size S) - 6-part telescope 1410 x 200 x 190 mm; 6,100 kg			6,2 m	1,35 m	■	■	■	■
	89380-K	TT 3S-K	with rail foot clamp 1410 x 200 x 190 mm; 6,400 kg			6,2 m	1,35 m	■	■	■	■
	89380-UK	TT 3S-UK	with universal clamp 1410 x 200 x 190 mm; 6,900 kg								
	89381-M	TT 3-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...3000 V AC / DC $U_t = 400\text{ V}^*$ test height variable up to 6,2 m medium version (size M) - 4-part telescope 1710 x 200 x 190 mm; 5,500 kg			6,2 m	1,65 m	■	■	■	■
	89381-K	TT 3M-K	with rail foot clamp 1710 x 200 x 190 mm; 5,800 kg								
	89381-UK	TT 3M-UK	with universal clamp 1710 x 200 x 190 mm; 6,300 kg								
	89382-M	TT 3L-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...3000 V AC / DC $U_t = 400\text{ V}^*$ test height variable up to 8,2 m large version (size L) - 6-part telescope 1710 x 200 x 190 mm; 6,500 kg			8,2 m	1,65 m	■	■	■	■
	89382-K	TT 3L-K	with rail foot clamp 1710 x 200 x 190 mm; 6,800 kg								
	89382-UK	TT 3L-UK	with universal clamp 1710 x 200 x 190 mm; 7,300 kg								
	89383-M	TT 3XL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...3000 V AC / DC $U_t = 400\text{ V}^*$ test height variable up to 10 m Xlarge version (size XL) - 6-part telescope 2200 x 200 x 190 mm; 7,500 kg			10 m	2,14 m	■	■	■	■
	89383-K	TT 3XL-K	with rail foot clamp 2200 x 200 x 190 mm; 7,800 kg								
	89383-UK	TT 3XL-UK	with universal clamp 2200 x 200 x 190 mm; 8,300 kg								
* other response voltage from 50 V on on request											

The dimensions and weights include the product packaging

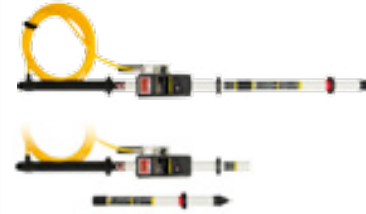
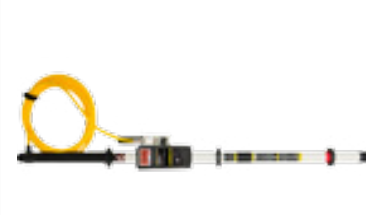
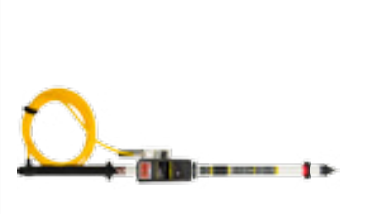
Telescope high voltage testers 36 kV

MultiSafe TT 36	Art. No.	Type	Description			max. test	transport	bi-color L	for indoor	for outdoor	telescope
	89384-M	TT 36S-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ test height variable up to 6,2 m short version (size S) - 6-part telescope 1490 x 200 x 190 mm; 6,400 kg			6,2 m	1,39 m				
	89384-K	TT 36S-K	mit rail foot clamp 1490 x 200 x 190 mm; 6,700 kg								
	89384-UK	TT 36S-UK	with universal clamp 1490 x 200 x 190 mm; 7,100 kg								
	89384-UK40	TT 36S-UK40	with universal clamp and 6 meter 40 kV connection line for use in switchgears 1490 x 200 x 190 mm; 7,100 kg								
	89385-M	TT 1ML-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ test height variable up to 6,2 m medium version (size M) - 4-part telescope 1800 x 200 x 190 mm; 5,700 kg			6,2 m	1,70 m				
	89385-K	TT 1ML-K	with rail foot clamp 1800 x 200 x 190 mm; 6,000 kg								
	89385-UK	TT 1ML-UK	with universal clamp 1800 x 200 x 190 mm; 6,500 kg								
	89384-UK40	TT 36S-UK40	with universal clamp and 6 meter 40 kV connection line for use in switchgears 1800 x 200 x 190 mm; 6,500 kg								
	89386-M	TT 1LL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ test height variable up to 8,2 m large version (size L) - 6-part telescope 1800 x 200 x 190 mm; 6,700 kg			8,2 m	1,70 m				
	89386-K	TT 1LL-K	with rail foot clamp 1800 x 200 x 190 mm; 7,000 kg								
	89386-UK	TT 1LL-UK	with universal clamp 1800 x 200 x 190 mm; 7,500 kg								
	89384-UK40	TT 36S-UK40	with universal clamp and 6 meter 40 kV connection line for use in switchgears 1800 x 200 x 190 mm; 7,500 kg								
	89387-M	TT 1XLL-M	Telescope voltage tester with magnet and 1,8 m spiral cable for earth connection 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ test height variable up to 10m Xlarge version (size XL) - 6-part telescope 2290 x 200 x 190 mm; 7,700 kg			10 m	2,19 m				
	89387-K	TT 1XLL-K	with rail foot clamp 2290 x 200 x 190 mm; 8,000 kg								
	89387-UK	TT 1XLL-UK	with universal clamp 2290 x 200 x 190 mm; 8,500 kg								
	89384-UK40	TT 36S-UK40	with universal clamp and 6 meter 40 kV connection line for use in switchgears 2290 x 200 x 190 mm; 8,500 kg								
	* other response voltage from 50 V on on request										

High voltage tester up to 16 kV

MultiSafe HS 5	Art. No.	Type	Description						
	89300	HS 5	High voltage tester with two test probes 6...5000 V AC / 7000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 600 x 215 x 85 mm; 1,020 kg						
	89331	HS 5M	High voltage tester with magnet and 3 m connection line for one-sided earth connection 6...5000 V AC / 7000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 600 x 215 x 85 mm; 0,740 kg						
	89330	HS 5UK	High voltage tester with universal clamp and 3 m connection line for one-sided earth conne. 6...5000 V AC / 7000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 600 x 215 x 85 mm; 1,400 kg						
MultiSafe HS 11	89304	HS 11	High voltage tester with two test probes 50...11 000 V AC / 16 000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1180 x 220 x 90 mm; 1,860 kg						
	89305	HS 11M	High voltage tester with magnet and 3 m connection line for one-sided earth connection 50...11 000 V AC / 16 000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1180 x 220 x 90 mm; 1,660 kg						
	89335	HS 11UK	High voltage tester with universal clamp and 3 m connection line for one-sided earth conne. 50...11 000 V AC / 16 000 V DC $U_t = 50\text{ V}$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1180 x 220 x 90 mm; 2,340 kg						
	89400	OSHS5-i	Two-pole high voltage measuring adapter for oscilloscopes , ratio 1:500 / 1:1000 up to 5000 V AC / 7000 V DC with fixed earth connection Suitable for standard oscilloscope with 1Mohm input resistance. 600 x 215 x 85 mm; 1,160 kg						
				integrated self-test	connection to earth	bi-color LCD / LED red / green	for indoor use	for outdoor use	telescope-system

High voltage tester 36 kV

MultiSafe HS 36	Art. No.	Type	Description						
	89308	HS 36	High voltage tester with universal clamp and 6 m connection line for one-sided earth connection, demountable for transport transport length = 915 mm 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1200 x 320 x 170 mm; 5,200 kg						
	89346	HS 36B	High voltage tester with universal clamp and 6 m connection line for one-sided earth connection, not demountable transport length = 1450 mm 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1500 x 320 x 170 mm; 4,800 kg						
	89353	HS 36C	High voltage tester with universal clamp and 6 m connection line for one-sided earth connection, not demountable - compact transport length = 970 mm 50...36 000 V AC / DC $U_t = 1200\text{ V}^*$ with LCD, self-test, frequency indication electrode i, test electrodes interchangeable optional additional electrodes 1200 x 320 x 170 mm; 4,600 kg						
				integrated self-test	connection to earth	bi-color LCD / LED red / green	for indoor use	for outdoor use	telescope-system

* other response voltage from 50 V on on request

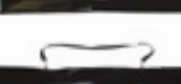
The dimensions and weights include the product packaging

Accessories high voltage and telescope voltage tester

Electrodes	Art. No.	Type	Description						
				HS 5 / HS 5M / HS 5UK	HS 11 / HS 11M / HS 11UK	HS 36	TT 1	TT 3	TT 36
	89312	ELEK-iHS15	Electrode i for HS 5 / HS 11 / HS 36 for testing busbars, uncoated length = 15 mm 160 x 100 x 5 mm; 0,005 kg		☒	☒	☒	☒	☒
	89316	ELEK-YHS15	Electrode Y for HS 5 / HS 11 / HS 36 for testing overhead lines, uncoated length = 15 mm 160 x 100 x 5 mm; 0,005 kg		☒	☒	☒	☒	☒
	89321	ELEK-NHS15	Electrode N for HS 5 / HS 11 / HS 36 for testing terminal blocks and test holes, uncoated length 25 x 5 / 15 x 2 mm 160 x 100 x 5 mm; 0,005 kg		☒	☒	☒	☒	☒
	89327	ELEK-S90-HS	Electrode for HS 5 / HS 11 / SPB-S820 / DSP-S850 with i-electrode for tests in test holes or with Y-electrode for test on overhead lines insertion depth = 90 - 200 mm at d = 8 mm Please specify electrode shape and length at order 200 x 25 x 25 mm; 0,070 kg		☒	☒	☒	☒	☒
	89317	ELEK-XHB-2	Special-electrode for HS 5 / HS 11 for tests on 4 mm sockets flexible plug 160 x 25 x 25 mm; 0,040 kg		☒	☒	☒	☒	☒
	63051	ELEK-TTS	Leaf spring electrode short for TT 1 / TT 3 for tests on overhead lines or turned for tests on busbars 160 x 100 x 20 mm; 0,015 kg				☒	☒	
	63052	ELEK-TTL	Leaf spring electrode long for TT 1 / TT 3 / TT 36 for tests on overhead lines or turned for tests on busbars 250 x 150 x 20 mm; 0,035 kg				☒	☒	☒
	89325	ELEK-Y-L	v-shaped electrode for TT 1 / TT 3 / TT 36 for tests on overhead lines and busbars 160 x 100 x 25 mm; 0,065 kg				☒	☒	☒
	89326	ELEK-i-TT	Tip electrode for TT 1 / TT 3 / TT 36 for tests on busbars 160 x 100 x 25 mm; 0,055 kg				☒	☒	☒
	64223	TT-SPI	Earthing spike, 600 mm, d=12 mm, lightweight version for TT telescope tester to connect with universal clamp 600 x 80 x 30 mm; 1,00 kg				☒	☒	☒

The dimensions and weights include the product packaging

Accessories high voltage and telescope voltage tester

Bags and cases	Art. No.	Type	Description						
				HS 5 / HS 5M / HS 5UK	HS 11 / HS 11M / HS 11UK	HS 36	TT 1	TT 3	TT 36
	84333	HS5-KLT	Artificial leather bag for HS 5 / SPB / ZAP and extensions up to 600 mm with shoulder strap 660 x 210 x 20 mm; 0,230 kg		☒				
	84022	HS5-KOF	Solid box for HS 5 635 x 330 x 140 mm; 3,000 kg		☒				
			Wall holder for HS 5/ HS 11 for fixed mounting inc. screws for fixed mounting 170 x 100 x 20 mm; 0,100 kg		☒	☒			
	84331	HS-KLT	Artificial leather bag for HS 11 with shoulder strap 1200 x 290 x 20 mm; 0,560 kg			☒			
	84330	HS11-KOF	Solid box for HS 11 1250 x 325 x 140 mm; 6,200 kg			☒			
	84334	HS36-KOF	Hard-top case for HS 36 / HS 36C with trolley wheels, waterproof 1200 x 440 x 160 mm; 10,860 kg			☒			
	63041	HS36-WAND	Wall holder for HS 36 / TT 1 / TT 3 / TT 36 inc. screws for fixed mounting 170 x 100 x 20 mm; 0,100 kg			☒	☒	☒	☒
	84332	TT-KLT	Artificial leather bag for TT 1 / TT 3 / TT 36 with shoulder strap, suitable for TT size S 330 x 130 x 230 mm; 0,800 kg				☒	☒	☒
			suitable for TT sizes M and L 330 x 130 x 230 mm; 0,900 kg				☒	☒	☒
			suitable for TT size XL 330 x 130 x 230 mm; 1,050 kg				☒	☒	☒
	84336	TT-KOF	Solid box for TT 1 / TT 3 / TT 36 suitable for TT sizes S / M / L not XL 1800 x 270 x 150 mm; 7,200 kg				☒	☒	☒
Connection cable	89392	TT-LEI-MAG	Spiral cable with magent 1,8 m / 6 kV insulated for TT1 / TT3 / TT36 / HS36 to use on overhead lines up to 36 kV or for switchgears up to 6 kV 250 x 150 x 40 mm; 0,240 kg			☒	☒	☒	☒
	89393	TT-LEI-K	Spiral cable with clamp for rail foot 1,8 m / 6 kV insulated for TT1 / TT3 / TT36 / HS36 to use on overhead lines up to 36 kV or for switchgears up to 6 kV 330 x 150 x 40 mm; 0,510 kg			☒	☒	☒	☒
	89394	TT-LEI-UK	Spiral cable with universal clamp 1,8 m / 6 kV insulated for TT1 / TT3 / TT36 / HS36 to use on overhead lines up to 36 kV or for switchgears up to 6 kV 220 x 150 x 40 mm; 0,920 kg			☒	☒	☒	☒
	89395	TT-LEI-UK-40L	Connection cable with universal clamp 6 m / 40 kV insulated for TT1 / TT3 / TT36 / HS36 to use on overhead lines up to 36 kV or for switchgears up to 36 kV 300 x 300 x 50 mm; 1,550 kg			☒	☒	☒	☒

Ex-measuring and testing devices

Earth resistance tester EP 4	Art. No.	Type	Description			Low resistance measurement	High resistance measurement	Normal resistance measurement	Frequency measurement	Suitable for Ex-areas	Voltage measurement
	83302	EP 4	Earth resistance tester / Low-impedance tester in accordance with EN 61557-4 measuring range 0,01 Ω ... 1999 kΩ including test line 300 x 100 x 50 mm; 0,350 kg								
	83301	EP 4Ex	Earth resistance tester / Low-impedance tester in accordance with EN 61557-4 measuring range 0,01 Ω ... 1999 kΩ including test line Ex-proofed typed 300 x 100 x 50 mm; 0,370 kg								
Insulation tester ISO 1	83315	ISO 1	Insulation tester / High-impedance tester in accordance with EN 61557-2 measuring range 1 kΩ ... 20 GΩ including one test lines and one crocodile clips 300 x 100 x 50 mm; 0,400 kg								
	83310	ISO 1Ex	Insulation tester / High-impedance tester in accordance with EN 61557-2 measuring range 1 kΩ ... 2 TΩ including two test lines and two crocodile clips Ex-proofed typed 300 x 100 x 50 mm; 0,450 kg								
Ex-Multimeter	82025	EXM 25A	Ex-Multimeter with NiMH accu / T4 including test line, without plug-in power supply NG4 Ex-proofed typed 220 x 210 x 75 mm; 0,645 kg								
	82026	EXM 25LB	Ex-Multimeter with Lithium battery / T6 including test line, Ex-proofed typed 220 x 210 x 75 mm; 0,630 kg								

Accessories for ISO / EP / EXM measuring and testing devices

Test lines	Art. No.	Type	Description		EP 4	EP 4Ex	ISO 1	ISO 1Ex	Suitable for Ex-areas	EXM 25
	73009	EP-LEI	Test line 0,8 m with 4 mm plug CAT II, with protective cap CAT III 1000 V, black 170 x 100 x 30 mm; 0,045 kg		■	■	■	■	■	■
	82010	WID	Test line 0,8 m with 4 mm plug CAT II 1000 V in pairs red / black 170 x 100 x 30 mm; 0,090 kg		■	■	■	■	■	■
	84311	L-SETR	Test line 1 m with two 4 mm plugs, red including crocodile clip, opening width 20 mm CAT IV 600 V / CAT III 1000 V 170 x 100 x 30 mm; 0,060 kg		■	■	■	■	■	■
	84314	L-SETS	Test line 1 m with two 4 mm plugs, black including crocodile clip, opening width 20 mm CAT IV 600 V / CAT III 1000 V 170 x 100 x 30 mm; 0,060 kg		■	■	■	■	■	■
	73010	ISO-TOL	Test line with two 4 mm plugs, black for teraohm-measuring for high bleeder resistors CAT IV 600 V / CAT III 1000 V 170 x 100 x 15 mm; 0,030 kg				■	■	■	
	73006	EP-DH50	Wire reel with 50 m measuring line with two 4 mm plugs 300 x 150 x 50 mm; 0,670 kg		■	■	■	■	■	
	73004	EP-RH50	Decoiler with 50 m measuring line and 4 mm plug and 4 mm socket not suitable for Ex-areas! (only decoiled measuring line in Ex-areas) 200 x 180 x 80 mm; 0,750 kg		■	■	■	■		
	72010	SPA	Voltage test prods for EXM 24 / 25 for tests in Ex-areas up to 1000 V CAT IV 1000 V 170 x 90 x 50 mm; 0,105 kg						■	■
	84011	DSP-S-ADA	Attachable adapter with 4 mm socket suitable for the connection of test leads CAT IV 600 V / CAT III 1000 V 70 x 20 x 20 mm; 0,015 kg		■	■			■	
	84312	DSP-S-ADAS	Screwable adapter with 4 mm socket suitable for the connection of test leads CAT IV 600 V / CAT III 1000 V ATTENTION! Thread set required! 120 x 30 x 30 mm; 0,035 kg				■	■		

The dimensions and weights include the product packaging

Accessories for ISO / EP / EXM measuring and testing devices

Accessories	Art. No.	Type	Description						
	73001	EP-EK	Earth clamp with 4 mm socket 160 x 150 x 30 mm; 0,065 kg						
	73007	EP-SAW	Sawtooth test prod for EP 4, attachable with 40 mm saw blade 100 x 170 x 20 mm; 0,040 kg						
	62015	BAT-AIMn	Battery MN 1604 Plus Power Duralock, Al-Mn-block 9 V black/gold approved for EP 4Ex / ISO 1Ex / MZ 1005 120 x 85 x 20 mm; 0,050 kg						
	72025	EXM-AK9	EXM accu NiMH, T4 9 V, 170 mAh / 40 h operation 75 x 25 x 35 mm; 0,070 kg						
	72026	EXM-LB3	EXM Lithium battery T6 3,6 V, 2400 mAh / 300 h operation 75 x 25 x 35 mm; 0,055 kg						
	72328	NG4	Plug-in power supply NG4 for charging the EXM accu NiMH 100 x 80 x 60 mm; 0,280 kg						
	82318	TMZ 25	Temperature measurement accessory for EXM 25 -80 ° ... + 600 °C without sensor 280 x 180 x 50 mm; 0,100 kg						
	82107	EXM-TFU	Universal sensor, 250 mm for TMZ 25 600 x 30 x 30 mm; 0,020 kg						
	82108	EXM-TFO	Surface sensor, 110 mm for TMZ 25 600 x 30 x 30 mm; 0,020 kg						
				EP 4	EP 4Ex	ISO	ISO 1Ex	Suitable for Ex-areas	EXM 25
				■	■			■	
				■	■				
				■	■	■	■	■	
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The dimensions and weights include the product packaging

Accessories for ISO / EP / EXM measuring and testing devices

Bags and cases	Art. No.	Type	Description						
	84025	DSP-COR5	Cloth bag Cordura for DSP 5 / SPB / EP 4 / EP 4Ex / ISO 1 / ISO 1Ex with belt loop not suitable for Ex-areas! 320 x 170 x 15 mm; 0,075 kg						
	81030	SP-LED	Leather bag for DSP 5 / SPB / EP 4 / EP 4Ex / ISO 1 / ISO 1Ex with hand strap and shoulder strap 300 x 130 x 60 mm; 0,475 kg						
	73021	EP-LED	Leather case for EP 4 / EP 4Ex / ISO 1/ ISO 1Ex and accessories 370 x 240 x 120 mm; 1,480 kg						
	82011	EXM-LED	Leather ever-ready bag for EXM with shoulder strap. The tester can remain in the bag during measurement 200 x 180 x 50 mm; 0,370 kg						
				EP 4	EP 4Ex	ISO 1	ISO 1Ex	Suitable for Ex-areas	EXM 25
				■	■	■	■		
				■	■	■	■	■	
				■	■	■	■	■	
							■	■	■
ISO-electrodes	73008	ISO-PROBE	Attachable test probe for ISO 1Ex, CAT III not suitable for Ex-areas! 150 x 100 x 20 mm; 0,015 kg						
	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 / 61340-2-3 350 x 315 x 65 mm; 2,300 kg						
	73012	ISO-ELVO	Electrode for surface resistance and volume resistivity, in accordance with EN 61340-4-1 / 61340-2-3 For connection, test lead art. 73009 is additionally required. 180 x 80 x 80 mm; 2,32 kg						
	73013	ISO-3FUSS	Tripod electrode for floors and surfaces in accordance with EN 1081 240 x 230 x 45 mm; 0,605 kg						
						■	■	■	

Service price list - Repeat examination

- Test certificate with overview of the performed tests, without documentation of the measured values
- detailed review of all functions
- Insulation test with 3 kV / 6 kV / 11 kV or 42 kV
- Inspection mark with the date of the next inspection on the device

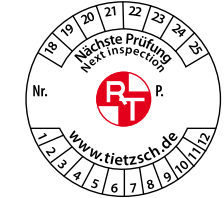
Repeat examination

Art. No.	Type	Description	Visual inspection and test of all functions	High voltage test	battery replacement	calibration of the measured values	Test mark and test report without measured values	Test mark and test report with measured values
OWH1		Repeat examination for low-voltage tester in accordance to EN 61243-3 and replacing the battery MultiSafe DSP 3 / DSP 4 / DSP 5	■	6 kV	■		■	
OWH1L		Repeat examination for low-voltage tester in accordance to EN 61243-3 and replacing of the internal power cell Prüfball SPB / ZAP Analog und Digital	■	6 kV	■		■	
OWH1HW		Repeat examination for low-voltage tester in accordance to EN 61243-3 with test of the extension and of the reel with connection cable and replacing of the internal power cell / battery Prüfball SPB 500L-HW MultiSafe DSP-HW	■	6 kV	■	only check - in case of deviations, the surcharge for calibration is offered	■	
OWH2		Repeat examination for earth resistance tester in accordance to EN 61557-4 and replacing the battery OMegaSafe EP 4 / EP 4Ex	■	3 kV	■		■	
OWH3		Repeat examination for insulation tester in accordance to EN 61557-2 and replacing the battery OMegaSafe ISO 1 / ISO 1Ex	■	3 kV	■		■	
OWH4		Repeat examination for Ex-Multimeter in accordance to EN 61010 VarioSafe EXM 24 / EXM 25	■	3 kV	■		■	
OWH5		Repeat examination for high-voltage tester in accordance to EN 61243-2 and replacing the battery MultiSafe HS 5 / HS 11 / HS 36	■	7 - 42 kV	■		■	
OWH9		Repeat examination for telescope tester in accordance to EN 61243-2 and replacing the battery, sealing of the GRP MultiSafe TT 1 / TT 3 / TT 36	■	6 - 42 kV	■		■	



Test certificate with list of tests carried out, details of the customer and the Serial number of the test object.

Test mark with date of the next inspection is placed on the test object.



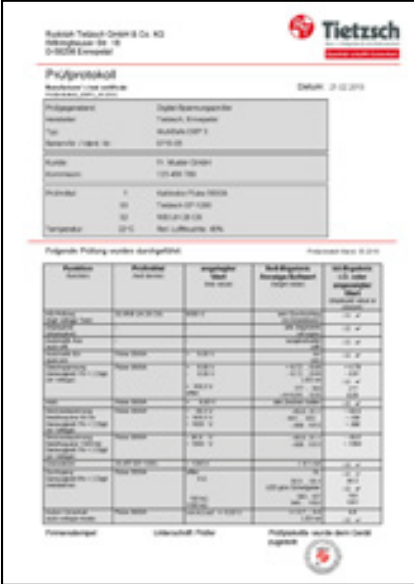
Note:
If the measured values differ, a factory calibration is required.
If deficiencies are found during the check, you will receive one separate estimate.

Service price list - Calibration

- Test certificate with overview of the performed tests, with documentation of the measured values
- Calibration of deviating measured values
- detailed review of all functions
- Insulation test with 3 kV / 6 kV / 11 kV or 42 kV
- Inspection mark with the date of the next inspection on the device

Calibration

Art. No.	Type	Description	Visual inspection and test of all functions	High voltage test	battery replacement	calibration of the measured values	Test mark and test report without measured values	Test mark and test report with measured values
OKAL11		Calibration (incl. repeat examination) for low-voltage tester in accordance to EN 61243-3 and replacing the battery MultiSafe DSP 3 / DSP 4 / DSP 5	■	6 kV	■		■	
OKAL11L		Calibration (incl. repeat examination) for low-voltage tester in accordance to EN 61243-3 and replacing of the internal power cell Prüfball SPB / ZAP Analog und Digital	■	6 kV	■		■	
OKAL11HW		Calibration (incl. repeat examination) for low-voltage tester in accordance to EN 61243-3 with test of the extension and of the reel with connection cable and replacing of the internal power cell / battery Prüfball SPB 500L-HW MultiSafe DSP-HW	■	6 kV	■		■	
OKAL2		Calibration (incl. repeat examination) for earth resistance tester in accordance to EN 61557-4 and replacing the battery OMegaSafe EP 4 / EP 4Ex	■	3 kV	■		■	
OKAL3		Calibration (incl. repeat examination) for insulation tester in accordance to EN 61557-2 and replacing the battery OMegaSafe ISO 1 / ISO 1Ex	■	3 kV	■		■	
OKAL4		Calibration (incl. repeat examination) for Ex-Multimeter in accordance to EN 61010 VarioSafe EXM 24 / EXM 25	■	3 kV	■		■	
OKAL5		Calibration (incl. repeat examination) for high-voltage tester in accordance to EN 61243-2 and replacing the battery MultiSafe HS 5 / HS 11 / HS 36	■	7 - 42 kV	■		■	
OKAL9		Calibration (incl. repeat examination) for telescope tester in accordance to EN 61243-2 and replacing the battery, sealing of the GRP MultiSafe TT 1 / TT 3 / TT 36	■	6 - 42 kV	■		■	



Test certificate with list of tests carried out, listing of the measured test values, test conditions, indication of the customer and the serial number of the test object.

Test mark with date of the next inspection is placed on the test object.



Note:
If defects are found during the inspection of used equipment, you will receive a separate cost estimate.

Inquiry and order

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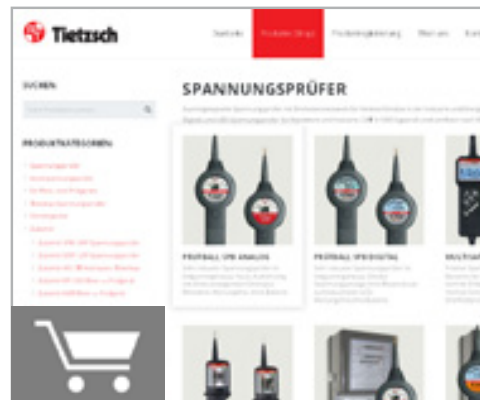


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