



Instruction Manual

PASAR[®] multitest Σ

PASAR[®] digital Ω

CAT IV 1000V

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1.0 Introduction

The PASAR multitest Σ and PASAR digital Ω are voltage and continuity testers with rotary field indication for universal applications. The voltage testers are constructed in accordance with the newest safety prescriptions and guarantee safe and reliable measurement and testing. The risk of injury when transporting the instrument in clothing or in the tool box is eliminated due to the fixed test probe connection, as required by VBG 1 (BG) § 35 (Transporting Tools). The voltage tester represents a valuable support for all testing and measurement in handicraft and industrial applications as well as for household users.

1.1 Features

PASAR multitest Σ and PASAR digital Ω are characterised by the following features:

- Constructed in compliance with DIN VDE 0680-401 for two-pole voltage testers and IEC/EN 61243-3
- Fixed test probe connections eliminates risk of injury (VBG 1, § 35 Transporting Tools)
- Digital LCD (PASAR digital Ω), LED (PASAR multitest Σ)
- DC and AC voltage measurement up to 690V
- Single-pole phase test
- Continuity test / diode test
- Double-pole rotary direction determination
- IP 65 (VDE-test in compliance with DIN VDE 0470 part 1, EN60529)
- Resistance measurement up to 2 k Ω (only PASAR digital Ω)
- Automatically activated display back-light and Data Hold function (only PASAR digital Ω)

1.2 The scope of supply comprises

- 1 Pasar Multitest or 1 PASAR digital Ω
- 2 batteries 1,5V IEC LR03
- 1 Instruction manual

1.3 Transport and storage

In order to avoid instrument damage, it is advised to remove batteries when not using the instrument over a certain time period. Instruments must be stored in dry and closed areas. In the case of an instrument being transported in extreme temperatures, a recovery time of minimum 2 hours is required prior to instrument operation.

2.0 Safety Measures

2.1 General

The instrument Pasar Multitest and Pasar Digital have been constructed and verified in compliance with the safety measures above and have left the factory in safe and perfect condition. Read these operating instructions before operating the device.



In order to avoid electric shock, the safety regulations regarding excessive contact voltages must receive utmost attention, when working with voltages exceeding 120V (60V) DC or 50V (25V) rms AC. The values in brackets are valid for limited ranges (as for example medicine and agriculture).



Prior to measurement ensure that the test leads and the instruments are in perfect condition.



When using the instrument only the handles of the probes may be touched – do not touch the probe tips.




The test instrument may only be used within the ranges specified and within low voltage systems up to 690V.





Check the voltage tester for correct functioning immediately before each use by connecting it to a known voltage source. Also check the test cables.



If one or more functions are not working correctly, do not use the instrument any further.

 The maximum admissible operating time of the instrument is 30 s.

 Note that all testing for no voltage should be carried out at two poles.

 Do not use the instrument under damp conditions. Perfect display only guaranteed within a temperature range of – 10°C up to +55°C, at a relative humidity < 85%.


The safety can no longer be assured if the instrument:


- shows obvious damage
- does not carry out the desired measurements
- has been stored for too long under unfavourable conditions
- has been subjected to mechanical stress during transport.

All relevant statutory safety regulations must be adhered to when using this instrument.

2.2 Appropriate usage

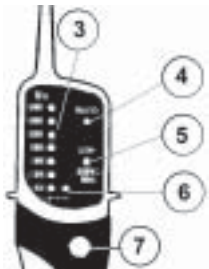
The instrument may only be used under those conditions and for those purposes for which it was conceived. For this reason, in particular the safety references, the technical data including environmental conditions and the usage in dry environments must be followed.

 When modifying or changing the instrument, the operational safety is no longer ensured.

 The instrument may only be opened by an authorised service technician, e. g. for fuse replacement.

3.0 Control Elements and Connections

1. Handle test probe – (L2)
2. Instrument test probe + (L1)
3. LEDs for voltage display
4. LED for continuity
5. LED indication single-pole phase-test/rotary field direction
6. Polarity indication
7. Contact electrode for double-pole determination of phase rotation and single-pole phase-test.
8. Battery case
9. Test probe protection
10. Indication ACV
11. Indication DCV
12. Indication Ω
13. LCD indication single-pole phase-test / rotary field direction
14. LCD-display voltage / resistance
15. Light sensor
16. LED -indication data hold
17. ON/OFF switch
18. ON/OFF Data hold



PASAR multitest Σ



PASAR digital Ω

Fig. 1

4.0 Carrying out Measurements

4.1 Preparation and Safety Measures



For any test (measurement) the safety references have to be respected as mentioned

Function test/Self test

- 1) Attach the voltage tester to a known source.
- 2) Connect the test probes. An acoustic sound must be audible and the LED Rx/ Ω (PASAR multitest Σ)/LCD value must be illuminated.



The voltage display of the instruments also functions when using discharged or no batteries (only PASAR multitest Σ).



The voltage testers may no longer be used if one or several functions fails or if no functional reliability can be detected.

The instruments PASAR multitest Σ and PASAR digital Ω are equipped with an internal load enabling the tripping of an RCD protection device of 10mA or 30mA.

4.2 Voltage Test

DC measurements:

- 1) Connect both test probes to the object. A voltage below 12V and higher activates the voltage tester (PASAR multitest Σ). The PASAR digital Ω is turned on with the ON/OFF-switch and chooses voltage measurement automatically when input voltage > slightly below 12V or higher. The DCV LED is illuminated (PASAR digital Ω).
- 2) The voltage value is indicated via LEDs (12V, 24V, 48V, 120V, 230V, 400V, and 690V using PASAR multitest Σ). Using Digital the voltage value is displayed on the LCD-display. If negative voltage is detected at the probe tip marked "+ / L1", the polarity " - " LED (6, fig. 1) is illuminated (PASAR multitest Σ) / a minus sign is displayed before the value (PASAR digital Ω).

AC measurements:

The + and - LEDs and the amount of LEDs according to the measured value are illuminated (PASAR multitest Σ). The ACV indication LED is illuminated and the value is shown in the LCD-display (PASAR digital Ω).

4.3 Single-pole Phase Test

- 1) To carry out the single-pole test always touch the contact electrode (7, fig. 1). The single-pole phase test starts at an AC voltage of approx. 100V (digital Ω)/230V (multitest Σ).
- 2) Bring one of the probe tips into contact with a conductor. The LED "L1" (5, fig. 1) indicates contact with the phase (multitest Σ) /"L1" in the LCD display indicates contact with phase (digital Ω).

When using single-pole tests to determine external conductors the display function may be impaired under certain conditions (e.g. for insulating body protective equipment on insulation locations).

- ☞ The single-pole phase testing is not appropriate to determine whether a line is alive or not. For this purpose, the double-pole voltage test is always required.

4.4 Voltage Test with RCD Trip Test

During voltage tests in systems equipped with RCD circuit breakers, an RCD switch can be tripped at a nominal residual current of 10mA or 30mA by measuring the voltage between L and PE. To avoid RCD tripping a test has to be carried out between L and N during approx. 5 s. Immediately afterwards, voltage testing between L and PE can be carried out without RCD tripping. (Fig. 2 and fig. 3, page 8.)

4.5 Continuity Test / Diode Test / Resistance

Make sure that the UUT is not live. Test voltage at instrument probe tip (2, fig. 1) is positive (+).

- 1) Check that UUT is not alive by carrying out a double-pole voltage test.
- 2) Connect both test probes with UUT. A signal sound is audible for continuity at resistance of 500 k Ω less and the LED for continuity Rx/ Ω is illuminated (multitest Σ). At resistances of 0 – 50 Ω the reading appears on the display and an acoustic signal sounds (digital Ω). If the reading is between 51 Ω and 2 k Ω , the display indicates the value, no signal sounds. For readings above 2 k Ω the display indicates "1" (digital Ω). The PASAR digital Ω indicates continuity/resistance measurement with the Ω -indicator (12, fig 1).

4.6 Rotary Field Indication

The voltage testers are equipped with a double-pole rotary field indicator.



The safety measures as mentioned in paragraph 2.0 have to be met.

The rotary phase indication is always active. However, the rotary direction can only be determined within a three-phase system.

Here, the instrument indicates the voltage between two external conductors.

- 1) Connect the instrument test probe (2, fig. 1) with the supposed phase L1 and the handle test probe with the supposed phase L2.
- 2) Touch the contact electrode (7, fig. 1).
- 3) The voltage and the rotary field direction are displayed. If LED L1 (5, fig. 1) is illuminated (Multitest) / the LCD-display (13, fig. 1) shows "L1" (Digital) the instrument test probe is connected to the actual phase L1. This means that the supposed phase L1 is the actual phase L1.

If no diode is illuminated / "L1" is not shown in the LCD display, the case is the opposite of the supposed. If the measurement points are changed between the instrument probe and the handle test probe, the instrument now illuminates the L1 LED / indicates "L1" in the display.

4.7 Display Illumination

For operations in low-light conditions the BL (Back Light) sensor activates automatically to ensure that the screen can be read even in total darkness (only Pasar Digital).

4.8 Data Hold

Press the "Data Hold" button (18, fig. 1) to save the LCD screen reading to memory. The "Data Hold" function, which is indicated by a red LED (16, fig. 1) in the display field, can be toggled by repeated pressing the same button.

5.0 Maintenance

When using PASAR voltage testers in compliance with instruction manual, no particular maintenance is required.

5.1 Cleaning

Prior to cleaning, remove the voltage tester from all measurement circuits. If the instrument is dirty after daily usage, it is advisable to clean it by using a damp cloth and a mild household detergent. Never use acid detergents or dissolvents for cleaning. After cleaning, do not use the voltage tester for a period of approx. 5 hours.

5.2 Battery Replacement

If no signal sounds when short-circuiting the test probes, proceed with the battery replacement.

- 1) Completely disconnect the instrument from the measurement circuit.
- 2) Remove the screw from the battery case (8, fig 1) with a screwdriver and pull the plastic cover (A) from the instrument.
- 3) Open the rubber cover (B) of the battery case opening and remove the batteries. Please consider your environment when you dispose of your one-way batteries or accumulators. They belong in a rubbish dump for Hazardous waste.
- 4) Insert new batteries, type 1,5V IEC LR03 by respecting correct polarity.
- 5) Replace the rubber cover, the plastic instrument cover and the screw properly.



Fig. 4

Please, comply with the respective valid regulation regarding the return, recycling and disposal of used batteries and accumulators.

6.0 Technical Data

6.1 Properties

Voltage range multitest Σ	12 – 690V AC/DC
Resolution multitest Σ	$\pm 12, 24, 48, 120, 230, 400, 690V$
Tolerance multitest Σ	Due to DIN VDE 0682-401
Voltage range digital Ω	12 – 690V AC/DC
Resolution digital Ω	1V
Tolerance digital Ω	$\pm(3\% + 3 \text{ digits})$
Frequency digital Ω	0 – 400Hz
Voltage detection	Automatic
Acoustic signal sound	Yes (continuity)
Polarity detection	Full range
Range detection	Automatic
Response time	LED: < 0,1 s LCD < 2 s (digital Ω)
Automatic load	Yes
Peak current	30mA
Operation time	Max. 30 s
Automatic Power Off	After approx. 7 min. (digital Ω)
Automatic Power On	< 12V AC/DC (multitest Σ)

6.2 Single pole Phase Test

Voltage range	100 – 690V AC
Frequency Range	50 – 400 Hz

6.3 Continuity Test

PASAR digital Ω

Resistance Range	0 – 500 k Ω audible signal
Test Current	approx. 1,5 μ A
Overvoltage Protection	690V

PASAR multitest Σ

Resistance Range	0 – 50 Ω signal/display value 51 Ω – 2 k Ω display value
Test Current	approx. 0,4mA
Overvoltage Protection	690V

6.4 Rotary Field Indication

Voltage Range	100 – 690V
Frequency Range	50 – 60 Hz
Measurement Principle	Double pole and contact electrode

6.5 General

Power supply	2 × 1,5V battery, Micro IEC LR03
Power consumption	Approx. 30 mA
Temperature Range	-10°C ~ +50°C
Humidity	Max. 85% relative humidity
Height above sea level	Up to 2000m
Overvoltage class	CAT IV 1000V
Type of protection	IP65 IEC/EN 61243-3, DIN VDE 0682-401
Weight	200 g (incl. batteries)
Dimensions	235 × 56 × 24 mm

12 month warranty

PASAR instruments are subjected to strict quality control. However, should the instrument function improperly during normal use, you are protected by our 12 month warranty (valid only with invoice).

We will repair free of charge any defects in workmanship or material, provided the instrument is returned unopened and untampered with.

Damage due to dropping or incorrect handling is not covered by the warranty.