

# TA466 Two-pole voltage detector

User's guide



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### 1. Description

The TA466 Two-pole voltage detector can be used for carrying out no-voltage checks, and for measuring up to 690 V AC and up to 950 V DC.

It is designed to be easily handled. The test probes are clipped to the underside of the casing for storage and for easy use on standard European outlets (centre-to-centre distance: 19 mm).

The voltage detector has the following features:

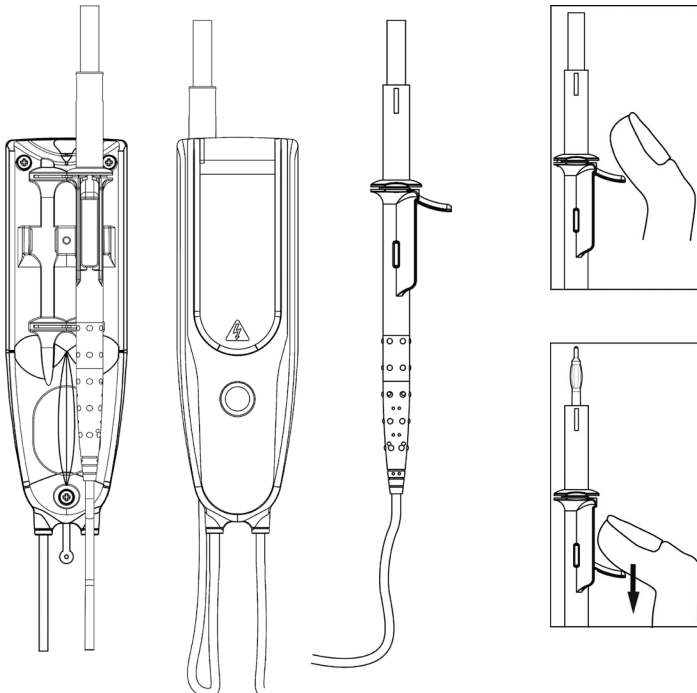
- ± polarity indicator
- Audible continuity indicator (< 100 Ω)
- Phase order indicator in a three-phase system (by the two-wire method)

It is fitted with IP65 safety test probes (by design) and a built-in correct operation testing system (self-test).

The voltage detector can be used for the following:

- Checks of AC and DC voltage levels **or** measurements of alternating voltages up to 690 V (50 and 60 Hz) and direct voltages up to 950 V
- Phase detection (by the unipolar method)

### 2. Appearance



### 3. Operating instructions

#### 3.1. Safety instructions

Please refer to the complete safety information for this product, in the *PicoScope® 4225A and 4425A Automotive oscilloscope and accessories Safety Guide*, before you use it.

#### 3.2. Correct operation check (self-test)

Always perform a correct operation check before and after the no-voltage check.


1. Inspect the device test leads and probes for damage.
2. Short circuit the test-lead points and press the test button. The correct operation of the device is indicated by:
  - All the numbers and symbols on the display are illuminated in red.
  - A rapidly pulsating audible signal.

Never use the device if this check is not successful. In particular, make sure that the buzzer signal is audible in noisy areas.

Note 1: A correct operation check (self-test) indicates, among other things, whether the battery level is correct. If the correct operation check fails, replace the battery and do the check again. If it still fails you must return the unit to the manufacturer. Please contact your local Pico representative to arrange the return.

Note 2: The “correct operation check” function is there to make sure that the test leads, battery, and electronic circuit integrity are working and correct.



#### 3.3. Battery level indicator

The  symbol gives information on the battery level.

#### 3.4. AC or DC voltage verification and measurement

Place the test probes in contact with the source you want to check. If the voltage is only a few volts (< 3 V) no signal will sound and the display will remain dark. The presence of voltage > 3 V will be displayed according to the voltage characteristics. The screen will become blue for voltages of ≤ 36 V AC RMS and ≤ 36 V DC. A voltage level > 36 V is indicated by the illumination of the harmful voltage presence LED, red backlighting on the screen and the emission of an intermittent audible signal.

This device will always indicate the presence of harmful voltage (> 36 V) with the indicator light, even if the batteries are out of service.

- The presence of an alternating voltage is confirmed by the illumination of the  symbol.
- The presence of a direct voltage is confirmed by the illumination of the  symbol.
- The display will automatically stop as soon as the measuring probes are disconnected.
- The display has a resolution of 1 V.
- The unit has an accuracy of ( $\pm 5\% \pm 2$  digits).

Note: Do not use the verification indicators alone for voltage measurements.

### 3.5. Polarity check (direct voltage)

- If the red test probe is connected to the positive terminal of the source, the ⊕ symbol is displayed.
- If the red test probe is connected to the negative terminal of the source, the ⊖ symbol is displayed.

### 3.6. Phase/neutral check (alternating voltages)

It is easy to spot neutral phases with the TA466. You perform this operation with the red test probe while holding the device. The black probe is not required and can be left clipped in place on the back the voltage detector


If the red test probe comes in contact with a phase, the *Phase* symbol comes on (the display will turn blue). This provides an indication of contact with a phase only and is not an indication of safe working voltage at the contact point of the probe.

### 3.7. Phase order check (three-phase system on AC mains)

You can use the TA466 to determine the phase order in a three-phase system. You perform this operation in two sequences, using the two test probes. First, make sure that there is voltage present and that it has the same value for each of the three phases (at least 127 V).

Keep the red test probe in contact with phase 1 during the entire operation (Step 1 and Step 2).

Step 1:

- Place the black test probe in contact with phase 2.
- The device is ready for the next sequence when the  symbol blinks.


Step 2:

- Move the black test probe to phase 3:
- If the symbol rotation is clockwise, the phase order is as well (L1, L2, L3).
- If the symbol rotation is counter-clockwise, the phase order is as well (L3, L2, L1).
- If the symbol disappears or keeps blinking, the three-phase system is not balanced.

Repeat the two steps to confirm the result.

Note 1: You only have 10 seconds to carry out Step 2.

Note 2: In the case of counter-clockwise order, we advise you to check the phase shift again by reversing the order of connections 2 and 3 to confirm the phase sequence.

Note 3: To start a new check (from Step 1 again), disconnect the device from the source you are checking and wait until the  symbol stops blinking.

### 3.8. Continuity check

Perform this operation in power-off mode.

Place the two test probes at the terminals of the item you want to check and press the test button .

A continuity resistance of less than 100  $\Omega$  is indicated by:

- A red backlight on the display.
- A rapidly pulsating audible signal.

A continuity resistance of more than 100  $\Omega$  will cause the voltage detector to show no indication.

### 3.9. Pocket lamp function

Press the test button.

### 3.10. Battery replacement

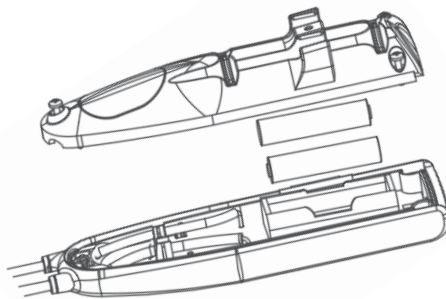
Make sure that the device is disconnected from all voltage sources.

The battery must be replaced when the correct operation check (self-test) fails.

1. Use a Pozidriv screwdriver to undo the three screws on the bottom cover.
2. Remove the bottom cover.
3. Insert two AAA batteries (LR03: 1.5 V), make sure you observe the polarity indicated on the battery holder.
4. Replace the bottom cover. Take care to reposition the joint before you tighten the three screws.
5. Secure with an adequate torque (about 0.75 Nm).

Note 1: Remove the batteries if the voltage detector will be unused for a longer period of time.

Note 2: The batteries have an expiration date indicated on the body. Replace them before they expire.



### 3.11. General maintenance

The TA466 requires no general maintenance, but you can clean it by using a cloth moistened with alcohol or a mild detergent.

We recommend performing the following inspections daily or before each use:

- Make a visual inspection and a test for proper operation.
- Confirm that there is no severe scratches or cracks on the cap of the device.
- Confirm that there is no grease, dust and / or other foreign matter.
- Confirm the correct operation of the appliance by pressing the test button.

NOTE : For any non-compliance during the daily inspection perform a periodic inspection.

### 3.12. Periodic maintenance

To be performed once a year:

- To remove dust and small debris and to recreate and/or increase the insulation, clean the device with a cloth coated with silicone MO984.
- Change the batteries.
- Perform daily inspection.

Note: For any non-compliance during the periodic inspection you need to return the device to the manufacturer for a check.

The connecting leads are equipped with a wear indicator. If the white insulating layer appears on the cable, the connecting leads must be replaced.

Unauthorised staff must not disassemble the voltage detector.

### 3.13. Cable replacement and checks:

The two-pole voltage tester is a safety test tool and must not be used when damaged or with visible wear. It is required to be checked by the manufacturer every six years.

Because it is a safety test tool, the checks and replacements must be carried out at the factory. Please contact your local Pico representative to arrange the applicable service for your device.

### 3.14. Connecting accessories

Use only accessories (cables, clamps, etc.) that comply with EN 61010-031.

### 3.15. Technical specifications

Voltage range, operating	3 V to 690 V AC (950 V DC)
Overvoltage protection	CAT IV 600 V, CAT III 1000 V relative to earth (ground)
Indicators	Audible alarm and light
Display counts	1000
Input resistance	700 kΩ at 50 V AC
Frequency	50/60 Hz ± 3%
Operating temperature	-15 °C to +45 °C (class N)
Storage temperature	-15 °C to +55 °C
Pollution degree	2
Altitude	2000 m max
Relative humidity	95% RH max
Safety	See the <a href="#">PicoScope® 4225A and 4425A automotive oscilloscope and accessories Safety Guide</a> for the complete safety information.
Ingress protection	IP65
Shock	1 J max.
Batteries supplied	2 x AAA (1.5 V)
Operating cycle, on	30 s
(maximum time for which the device can be connected to the maximum operating voltage)	
Operating cycle, off	240 s
(minimum idle time for the device to cool down after operating cycle, on, during which the detector must not be connected to an energized part)	
Storage	In a clean, dry place
Location of use	Indoor/outdoor use
Weight	220 g
Accuracy	(±5% ±2 digits)
Resolution	1 V

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