



## Warning



**Thank you for buying our 1000 Non-Contact Phase Sequence Detector! For making better use of our products, please obey the follows by all means:**

- Read this manual carefully
- Strictly obey all the safety rules and points for attention listed in this manual

- ⊔ In any case, particularly be careful when using this detector.
- ⊔ Pay attention to the labeled characters and signs on the panel and backplane of this detector
- ⊔ To be sure there are no damage, no bare part and no wire breakage on the insulating layers of this detector, lead wires and pliers before using.
- ⊔ When detecting, it's forbidden to contact the detected bare wires.
- ⊔ Please don't place and store this detector for a long time at the location with high temperature, humidity, condensation and straight sunshine.
- ⊔ Don't extrude the LCD display window

- ⊔ Please take out the batteries when the detector is idle for a long time.
- ⊔ Please pay attention to its polarity when replacing battery. It's forbidden to replace battery when the pliers are still on the detected wire.
- ⊔ Use, Disassembly and maintenance of this detector must be carried out by the operator who enjoys the authorized qualification.
- ⊔ Due to its bugs, the detector will bring about dangers when continuing to be used. In this case, it must be stopped and mothballed immediately by the institution that enjoys the authorized qualification.
- ⊔ Users must conduct the operation safely according to the indication of warning sign“⚠”on detector and manual.
- ⊔ Users must conduct the operation safely according to the indication of danger sign“⚡”in this manual.

## I. Introduction

Non-contact phase sequence detector **1000** is completely independent of traditional phase-sequence detecting methods which must poke the wiring posts of three-phase wire and connect the three bare alligator clips or testing pins of Phase Sequence meter to the three bare fire wires. **1000** conducts the pincer-like non-contact inductive measurement instead of poking the wires and contacting the bare high-voltage fire wires. It directly uses the three super-inductive high-insulating pliers to clamp the insulating sheath of three-phase fire wires, respectively to detect the phase sequence. At the same time, it displays the normal-phase or reverse-phase state of phase sequence in three-phase power supply.

The three super-inductive high-insulating pliers of **1000** are made of Permalloy which has high magnetic Permeability in Weak Magnetic Field. So the sensitivity and reliability have been improved significantly in detecting induction. Moreover, the display window is made of a wide and luxurious LCD blue screen. Its displaying effect is clear at a glance.

**1000** features the two functions such as live-wire detection and simple electricity detection.

**1000** boasts the characteristics of being safe, time-saving, rapid and convenient, which improve the safety of in situ test dramatically, strengthen the protection of operator's personal safety and accordingly enhance the productivity! It is a safety instrument involving phase-sequence detection, motor detection and line maintenance of three-phase power supply!

## II. Electrical Symbol

	Extremely dangerous! Operators must strictly obey the safety rules, otherwise will be in danger of suffering from electrical shock, even injuries or casualties.
	Warning! Operators must strictly obey the safety rules, otherwise will suffer from injuries or the equipments be damaged.
	double insulation
	AC
	DC

## III. Technical Specifications

1. Function: phase detection (normal phase and reverse phase), live-wire detection and simple electricity detection.
2. Power supply: DC3V 2 "AA" size Mn-alloy batteries (R6P); the continuously using time is about 200 hours.
3. LCD size: 40mm×33.5mm; Display region: 38mm×26mm.
4. LCD Display mode: HTN luxurious blue screen.
5. Live electricity range: AC70~600V, 45~65Hz (Continuous Sine Wave Input), electrostatic conducting detection.
6. Size of wire for clamping: Insulated wire with outer diameter  $\phi 18\text{mm}$  (equivalent cross-sectional area of wire  $110\text{mm}^2$ ).
7. Display: normal phase, 4 phase-detecting lights and 1 arrow light; the lights

will be turned on in turn clockwise.

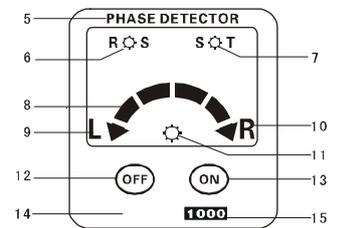
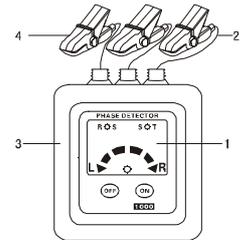
Reverse phase, 4 phase-detecting lights and 1 arrowhead Light; the lights will be turned on in turn anticlockwise.

Live electricity, the light R-S, S-T are on under the setting range of voltage.

8. Power-on indication: after being started, the backlight of LCD and power-on indicator will be on.
9. Automatically power off: about 3 minutes after being started, the detector will be power-off automatically.
10. Size of detector: width-height-thickness70mm×75mm×30mm.
11. Lead wire of pliers: 1m long.
12. Weight of detector: about 200g.
13. Working temperature and humidity:  $-10^{\circ}\text{C}\sim 55^{\circ}\text{C}$ ; below 80%rh.
14. Storing temperature and humidity:  $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$ ; below 90%rh.
15. The highest detected voltage: AC600V.
16. Insulating Strength: 5.4kVrms.
17. The maximum rated power: 100mVA.
18. Safety suitable for: EN61010-1: 2001, EN61010-031f: 2002, pollution level 2, CAT III (600V), Instantaneous Overvoltage 6000V.

## IV. Detector Configurations

1. LCD Display
2. Lead Wire of Pliers
3. Detector Body
4. Inductive Pliers
5. Product Name
6. R-S Indicator
7. S-T Indicator
8. Phase-Sequence Indicator and Arrow Light
9. Symbol of Reverse Phase "L"
10. Symbol of Normal Phase "R"
11. Power-on Indicator
12. "OFF" Power-off Key
13. "ON" Power-on Key
14. Brand Mark of Product
15. Types of Product

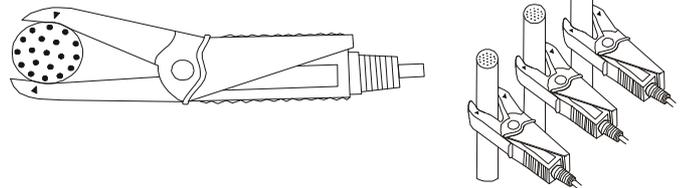


## V. Operation Method

### 1. Phase-Sequence Detection

**⚠ Dangerous! High Voltage! Please Be Careful!**

- (1). Detecting the connection  
Arbitrarily use three pliers to clamp the detected three-phase wires (shown in right figure)
- (2). The detected wires are at the location of pliers symbol "⚡" (Shown in figure below)



- (3). Press red power-on key "ON", the LCD backlight on blue screen lights up and the power-on indicator is also turned on. Meanwhile, R-S and S-T are flashing one time. The normal power-on state is shown in Figure 1.
- (4). In the process of detection, when 4 phase-sequence and 1 arrow indicators light up in turn clockwise, simultaneously the symbol "R" illuminates and both R-S and S-T are flashing intermittently, the clamped phase wire is of normal phase sequence (shown in Figure 2). On the contrary, when 4 phase-sequence and 1 arrow indicators light up in turn counter-clockwise, simultaneously "L" illuminates and both R-S and S-T are flashing intermittently, the clamped phase wire is of reverse phase sequence (shown in Figure 3).



Figure 1



Figure 2



Figure 3

- (5). Press the white power-off key "OFF", the detector will be automatically shut down about 3 minutes after it starts. This case will lower the power consumption of battery.

**Note: When the power-on LCD display turns relatively dark, the capacity of battery is possibly insufficient. Please replace the battery according to the indication in this manual.**

### 2. Live wire detection and simple electricity detection

**⚠ Dangerous! High Voltage! Please be careful!**

- (1). Use any pliers to clamp the detected wire. If the wire has current (in the range AC70~600V set by live-wire voltage), R-S or S-T light will flash

intermittently. Therefore, the detector can detect whether the wire has current and whether there is line failure.

(2). Table for pliers and corresponding lights

Identification of pliers	symbol of light
R (Red)	only R-S lights up
S (yellow)	R-S and S-T light up
T (Blue)	only S-T lights up

## VI. Replacing Battery

 Please pay attention to the polarity of battery!

- Before replacing battery, must move pliers away from the detected wires. Don't replace battery during testing.
- Press key "OFF" to shut off the detector (Figure A)
- Loose a screw on the rear cover of battery and then open the rear cover (Figure B)
- Replace with brand-new qualified batteries. Please pay attention to the polarity and specifications of battery (Figure C).
- Close the rear cover and tighten the screw (Figure D).
- Press key "ON". Check if the detector can start normally, otherwise repeat step 3 or check if the capacity of battery is sufficient.



Figure A



Figure B



Figure C



Figure D

## VII. FAQ

failures	possible reasons	solutions
Fail to be power-on (the LCD backlight is off, no display)	no battery	Install the qualified batteries
	violate the specifications of battery	Replace with the batteries up to specifications
	low battery capacity	replace with brand-new qualified batteries
	reverse placement of battery	Reinstall the batteries according to their correct polarities
	loose contact of batteries	adjust the place of batteries and reinstall them

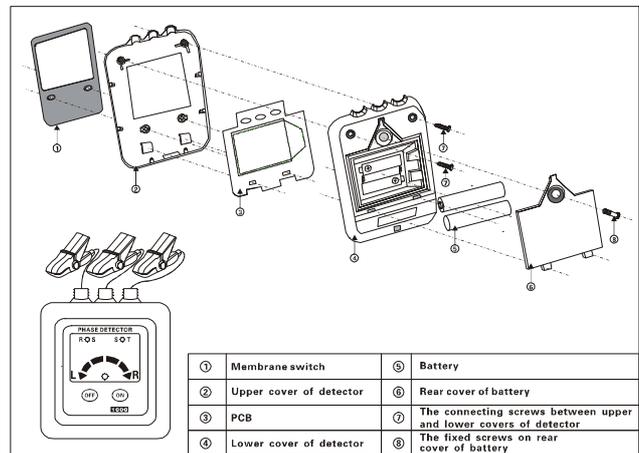
Continue:

failures	possible reasons	solutions
Fail to be power-on (the LCD backlight is off, no display)	fail to close the rear cover of battery	close the rear cover of battery tightly
	loose contact or breakage of power lines in batteries	Re-weld or replace power lines
	Loose contact of power-on button	Replace the power-on button
	bad membrane switch	replace the membrane switch
	bad LCD	Repair or replace LCD
	bad elements on circuit board	Repair or replace the circuit board
the LCD backlight is on after being power-on, but no display	low battery capacity	Replace with the brand-new qualified batteries
	bad LCD	Repair or replace LCD
	bad elements on circuit board	Repair or replace the circuit board
Be power-on and conduct the detection normally,	low battery capacity	Replace with the brand-new qualified batteries
	bad LCD	Repair or replace LCD

Continue:

failures	possible reasons	solutions
but the display of LCD becomes dark	bad elements on circuit board	Repair or replace the circuit board
Be normally power-on, but fail to conduct the detection	The three detected phase wires have no current	Not the problem in detector, the phase sequence can't be detected until the detector is electrified
	Pliers fail to clamp the detected phase wires	Re-clamp the phase wires based on the manual's requirement
	The lead wire of pliers is broken	Replace the lead wire of pliers
	low battery capacity	Replace with the brand-new qualified batteries
	bad LCD	Repair or replace LCD
	bad elements on circuit board	Repair or replace the circuit board

## VIII. Assembly Drawing



## IX. Packing list

- detector 1 piece
- carrying box 1 piece
- strap 1 piece
- "AA" size Mg-alloy batteries (R6P) 2 pieces
- user manual 1 piece
- warranty card 1 piece
- certification 1 piece

*Delton*

1141 Budapest, Fogarasi út 77. Tel.: \*220-7940, 220-7814, 220-7959, 220-8881, 364-3428 Fax: 220-7940  
 1095 Budapest, Mester utca 34. Tel.: \*218-5542, 215-9771, 215-7550, 216-7017, 216-7018 Fax: 218-5542  
 Mobil: 30 531-5454, 30 939-9989 Mobil: 30 940-1970, 20 949-2688

E-mail: delton@delton.hu Web: www.delton.hu

**www.holdpeak.hu**