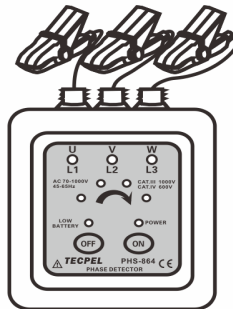


TECPEL[®]

PHASE DETECTOR

PHS-864



MANUAL

TECPEL CO., LTD.

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Precautions For Use

Thank you for purchasing the **PHS-864 Phase Detecor**, manufactured by Tecpel Co., Ltd. In order to better understand the use of this product, please familiarise yourself with its functions before use and keep this user manual for future reference.

In order to operate this product safely, the user must:

—**Read this user manual in detail.**

—**Comply with the operating cautions in this manual.**

- ◆ Under any circumstance, shall pay special attention on safety in using this meter.
- ◆ Pay attention to the text labeled on the panel and backplane of the meter.
- ◆ Before usage, should confirm the insulation layer of the instrument, lead wire and clamp are not damaged, exposure and disconnection.
- ◆ During the test, it is absolutely forbidden to touch the exposed tested conductor.
- ◆ Do not place and store the meter in high temperature and humidity or dewy places and under direct sunlight for a long time.
- ◆ If not use the meter for a long time, please take out the battery.
- ◆ Replace the battery, please pay attention to the polarity of the battery. Do not replace the battery when the clamp is not removed from the tested wire.
- ◆ Due to the reason of this instrument, if it is dangerous to continue using, should stopped and sealed immediately ,and handled by an authorized institution.
- ◆ The meter with the alarm mark " ", users must follow instructions to operate safely.
- ◆ The manual with the danger mark , users must follow instructions to operate safely.

1. Introduction






PHS-864 Phase Detecor breaks through the traditional method for phase sequence detecting. In traditional phase sequence detection, the wiring terminal of the three-phase must be peeled off and connected the three exposed clips or test probes of the phase sequence meter to the three exposed live wires. However, PHS-864 adopts the clamp non-contact induction measurement, no need to peel off the wires or contact the exposed high-voltage live wire, the phase sequence can be detected by directly clamping on the insulation outer skin of the three-phase live wire with three

super inductive high insulation clamps, while audible and visual indicators signify the positive or anti-phase state of the three-phase power phase sequence. Four piece powerful magnets are attached to the back of the meter, which can be attached to the distribution box for use.

PHS-864 Phase Detecor has the functions of live line detection, simple power electricity detect, break circuit searching, break point location, lines maintenance and so on.

PHS-864 Phase Detecor is quick and convenient, the display is clear and obvious, it has greatly improved the field test security, effectively protecting the operators personal safety, while also increasing productivity! It is a safety standard instrument for three-phase power supply phase sequence, motor detection and line maintenance.

2. Electrical Symbols

	Extremely dangerous! The operators must keep to the safety rules strictly, otherwise, electric shock will result in death or injury.
	Warning! The operators must keep to the safety rules strictly, otherwise, personal injury or equipment damage will occur.
	Double Insulation
	Alternate Current (AC)
	Direct Current (DC)

3. Model

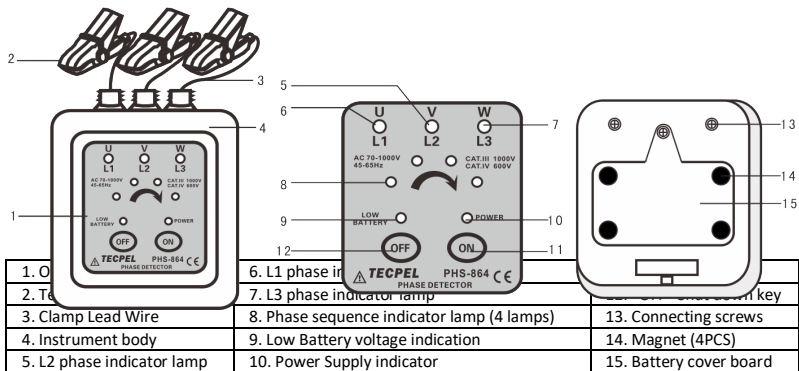
Model	Diameter of wires can be clamped
PHS-864	ø1.6mm-ø16mm

4. Technical Specification

Function	Phase detection(positive phase, anti-phase, default phase), live line detect, simple power electricity detect, break point location, lines maintenance
Power Supply	DC 3V AA alkaline batteries (LR6)×2PCS,continuous working for 70hours
Electricity Testing Range	AC 70~1000V , 45~65Hz (sine wave continuous input)
Available Clamp Wire Size	Diameter: ø1.6mm-ø16mm
LED Display	[Positive phase] The phase detector lamp lights up clockwise [Anti-phase] The phase detector lamp lights up counterclockwise [Electricity Testing] L1, L2, L3 lamps light up in setting voltage range [Default phase] L1 or L2, or L3 lamp will not light up [Open circuit] L1 or L2, or L3 lamp will not light up
Buzzer	[Positive phase] the buzzer sounds intermittently [Negative phase] the buzzer sounds continuously
Battery Check	The POWER indication lamp lights up after boot up; the LOW BATTERY lamp lights up when low battery
Magnet	4pcs magnets are installed on the bottom plate of the meter, which can be attached to the distribution box, load weight 800g

Auto Shutdown	5 minutes after booting up, the meter will automatically shutdown
Meter Dimension	70mm×75mm×30mm
Clamp Lead Length	0.6m
Meter Weight	200g
Working Temperature	-10℃～55℃；below 80%rh
Store Temperature	-20℃～60℃；below 90%rh
Max Measure Voltage	AC 1000V
Insulation Strength	5.4kVrms
Maximum Rated Power	300mVA
Suitable Safety Standard	EN61010-1：2001,EN61010-031：2002,pollution grade 2,CAT III 1000V, Transient overvoltage 6000V

5. Instrument Structure



6. Operation Method

- a. Phase sequence detection.



Danger! High voltage! Please pay attention to safety!

- 6.1.1 Connection: Clamping on three phase wires respectively with the three clamps (Shown in Fig-1).
- 6.1.2 The detected wire at the clamp with mark "▼" (Shown in Fig-2).

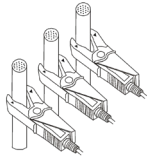


Fig-1

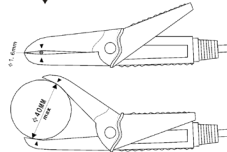


Fig-2

- 6.1.3 Press the red color "ON" startup key, the power indicator lamp will light up. If the power lamp does not light up, this will indicate either a low battery or a damaged instrument, in which case you will need to replace the battery or send it for repair.
- 6.1.4 After starting up, if the four phase sequence indicators light up clockwise, and the instrument makes intermittent short chirps, then the clamped phase line is positive phase sequence L1-L2-L3 (U-V-W) (Figure 1). If the four phase sequence indicators light up counterclockwise, and the instrument makes a continuous sound, then the clamped phase line is in the reverse phase sequence L3-L2-L1. (W-V-U) (Figure 2).
- 6.1.5

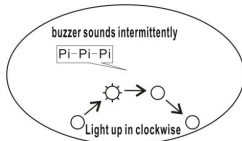


Fig-1 Positive phase sequence

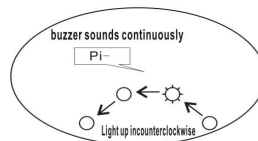



Fig-2 Negative phase sequence

- 6.1.6 Press white color “OFF” key to shut down, the instrument will automatically shut down after about 5 minutes without any operation to reduce battery consumption.


b. Live wire inspection, simple electricity detection.

 **Danger! High voltage! Please pay attention to safety!**

- 6.2.1 Use any clamps to clamp on the tested wire. If the conductor has electricity (within the setting range of live line voltage, AC70 ~ 1000V), the lamp of L1/U, L2/V or L3/W will light up.
- 6.2.2 Clamps and lamps corresponding sheet:

Clamp Mark	Lamp light up symbol
L1/U (Red)	L1/U lamp light up
L2/V (White)	L2/V lamp light up
L3/W (Blue)	L3/W lamp light up

c. Default phase judgment, open circuit searching, breakpoints location.

 **Danger! High voltage! Please pay attention to safety!**

- 6.3.1 Use any clamp to clamp on the three-phase line separately. If it is default phase, the lamp L1, L2 or L3 will not light up.

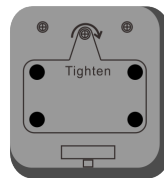
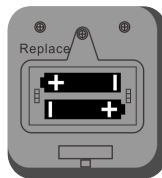
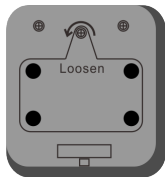
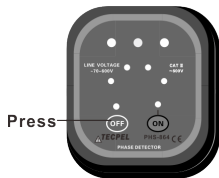
7. Battery Replacement



Pay attention to the battery polarity!

- 7.1. Before replacing the battery, the clamp must be removed from the tested wire. Do not replace the battery during the test.
- 7.2. Press “OFF” key to shut down. (Figure A)
- 7.3. Loosen the screw on the back of instrument and remove the battery cover (Figure B).
- 7.4. Replace the new batteries, pay attention to the battery polarity and specifications (Figure C).
- 7.5. Close the battery cover and tighten the screws (Figure D).
- 7.6. Press “ON” key and check whether the instrument can be started normally. If it cannot be started, please check whether the battery power is enough or operate again according to

step 3.



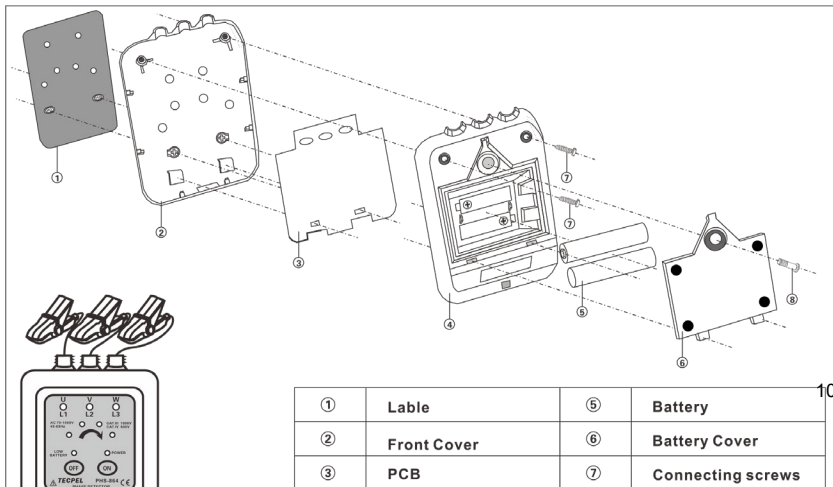
8. FAQ FigureA

Fault Phenomenon	Possible Causes	Solution
Cannot power unit (LED power indicator does not light up, without any display)	Without batteries	Install batteries
	Wrong battery type	Replace with right type
	Low battery power	Replace the new batteries
	Faulty battery polarity	Install batteries in correct polarity
	Poor contact of battery contacts	Replace the battery contacts
	Battery cover not secured	Make sure cover is correctly inserted and tighten screws
	Defect of circuit component	Repair or replace the PCB
LED dim display	Low battery power	Replace batteries
Incapable of measurement	Failed to clamp the wire	Clamp again refer to user manual
	Lead wire break	Change the lead wire

Defect of circuit
component

Repair or replace the PCB

9. Assembly Details



①	Lable	⑤	Battery
②	Front Cover	⑥	Battery Cover
③	PCB	⑦	Connecting screws

10. Accessories

Instrument	1 PCS
Carry Box	1 PCS
Instrument Bag	1 PCS
Manual	1 PCS

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