

# Non-Contact SAFETY PHASE ROTATION DETECTOR

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**INSTRUCTION MANUAL**

<b>Index</b>	<b>Page</b>
1. Introduction.....	1
2. Safety notes.....	2-3
3. Features.....	4
4. Specifications.....	5
5. Instrument layout.....	6
6. Measurement.....	7-8
7. Live wire check.....	9
8. Maintenance.....	10

*Due to our policy of constant improvement and development, we reserve the right to change specifications without notice.*

# 1. Introduction

## **NOTE**

*This Non-Contact PHASE DETECTOR has been designed and tested According to CE Safety Requirements for Electronic Measuring Apparatus, IEC/EN 61010-1 and other safety standards. Follow all warnings to ensure safe operation.*

## **WARNING**

**READ "SAFETY NOTES" (NEXT PAGE) BEFORE USING THE NON-CONTACT DETECTOR.**


- CAT IV - Is for measurements performed at the source of the low-voltage installation.
- CAT III - Is for measurements performed in the building installation.
- CAT II - Is for measurements performed on circuits directly connected to the low-voltage installation.
- CAT I - Is for measurements performed on circuits not directly connected to Mains.

## 2. Safety notes


1. Read the following safety information carefully before attempting to operate or service the detector.
2. Use the detector only as specified in this manual. Otherwise, the protection provided by the detector may be impaired.
3. This instrument can not find the missing line of earth line (S line).
4. Do not touch the clips during measurements to get accurate results.
5. Do not pull the cable when removing the Measurement clips from the measured conductors. It may cause a injury in cable.
6. Do not expose the instrument to direct sunlight, high temperature and humidity or dew.
7. Do not use the instrument while it is wet. Keep dry for use!
8. Do not use new battery and old one which are mixed.
9. Never open battery compartment cover while live detecting.
10. Never give shocks, such as vibration or drop, which may damage the instrument.

11. Rated environmental conditions :
- (1) Indoor AC1000V Max. Outdoor AC 600V Max.
  - (2) Installation Category III.
  - (3) Pollution Degree 2.
  - (4) Altitude up to 2000 meters.
  - (5) Relative humidity 80% max.
  - (6) Ambient temperature 0~40°C.

12. Observe the International Electrical Symbols listed below :

 Detector is protected throughout by double insulation or reinforced insulation.

 Warning ! Risk of electric shock.

 Caution ! Refer to this manual before using the detector.

 AC.....Alternating current.

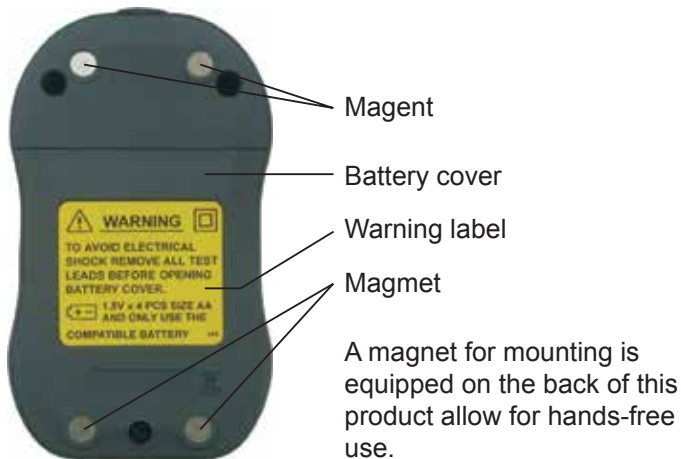
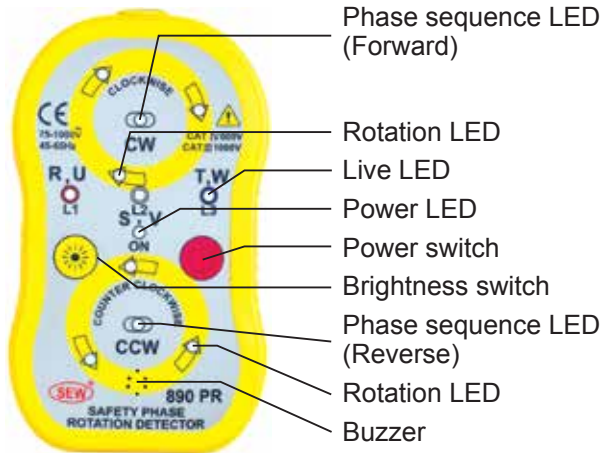
### 3. Features

- 890 PR is a phase detector indicate with LED display and Buzzer beeping to inform the detection of AC 3-phase sequence.
- Two functions in one unit. Including open phase and phase sequence.
- Auto-off. (5 min Approx.)
- Clipping the right 3-phase lines(up to color) over the jacket with non-contact sensor clips **which promote safety of measurement.**
- Brightness switch is convenient to make the indication visible in dimly areas or sun light.
- Back cover magnet fix the instrument onto the AC distribution panel offer easy measurement.
- 3-Phase AC 75 to 1000V is fitted for detection.
- Detect frequency range is from 45 to 65 Hz.
- Safety standard :  
EN 61010-1 CAT III 1000V  
EN 61010-1 CAT IV 600V  
EN 61326-1  
EN61557-7

## 4. Specifications

Measurement Principle	Static induction
Input Voltage	75~1000Vac
Frequency Range	45-65Hz
Auto-Off	5 min. after power on without detection
Low Battery Warning	Power LED flashes at 4.6 ±0.1V or less
Current consumption	16mA
Operating Temperature & Humidity	-10°C~50°C Max. 80% R.H.
Storage temperature & Humidity	-20°C~60°C Max. 80% R.H.
Power Source	1.5V(AA) x 4 alkaline battery
Dimensions	118 (L) x 69 (W) x 38 (H) mm
Cable Length	Approx. 800 mm
Weight	Approx. 370 g (batteries included)
Accessories	Instruction manual Soft case Batteries

## 5. Instrument layout

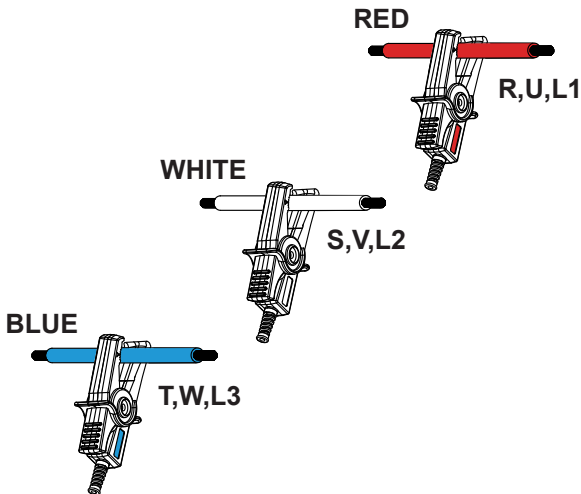




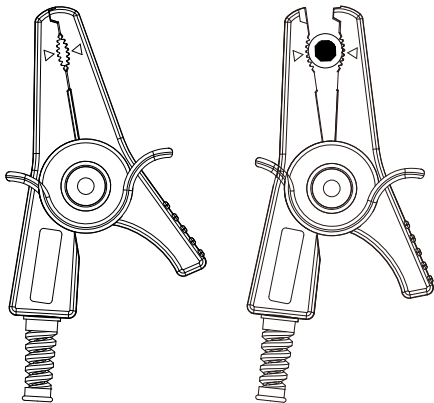
## 6. Measurement

Before proceeding measurement, read the safety notes.

1. Press the power switch to turn on the instrument.  
All of the LEDs shall flash during the 2 seconds.  
Only the power LED keeps on at the self demonstration later. Do not use the instrument when any of the LED does not work.
2. Apex of "▼" mark on each measurement clip hold on the center of each measurement conductor.  
Connect three clips as shown:  
Red to L1, Phase-R,U. White to L2, Phase-S,V.  
Blue to L3, Phase-T,W.



Lines connecting the apexes of "▼" marks should pass through the center of the conductor.



3. Measure a covered conductor AC75V or more first to confirm each live LED lights up.
4. Presence of live wires and phase sequence are informed by LED indication and buzzer beeping as soon as complete detection.
5. R,U. S,V. T,W LED always light up while instrument is detecting the live phase.
6. CW LED ON is correct phase sequence but CCW is incorrect.

## 7. Live wire check

State	Indication
Live	Phase with L1,L2,L3 ON is live state
Missing line of Earth line	LED doesn't light up for missing line of earth line
Earth line (Delta connection)	Phase with flashing LED is an earth phase
Positive phase	When the Green Rotation LED flashes in clockwise direction orderly as indicated with "arrow" mark, the circuit will be forward under test. The buzzer sounds intermittently. (Bi-Bi-Bi)
Negative phase	When the Red Rotation LED flashes in anti-clockwise direction orderly as indicated with "arrow" mark, the circuit will be reverse under test. The buzzer sounds continuously. (BEE——)
Detect Indications	L1, L2, L3 LED ON is live phase indication. Open phase which LED is off.
	CW ON is correct phase sequence.
	CCW ON is incorrect phase sequence.

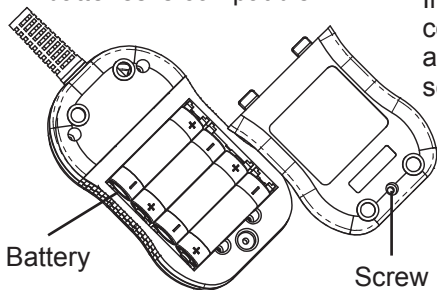
## 8. Maintenance

- **Battery replacement :**

When low battery LED flashes the detection is well as normal. It is better to prepare new batteries.

Change them as follow steps:

- (1) Remove all the clips from the conductors and power off the instrument if using.
- (2) Loosen the screw fixing the Battery compartment cover.
- (3) Slide the Battery compartment cover downwards to remove it.
- (4) Replace the batteries with new ones as the shown correct polars. Four 1.5V AA size or Alkaline batteries is compatible.



Install the Battery compartment cover and tighten the screw.

- **Cleaning and storage :**

Periodically wipe the case deterged with a damp cloth; do not use abrasives or solvents.

When turn off the instrument, the standby current is below 500uA.

If the meter is not to be used for periods of longer than 60 days, remove the batteries and store them separately.