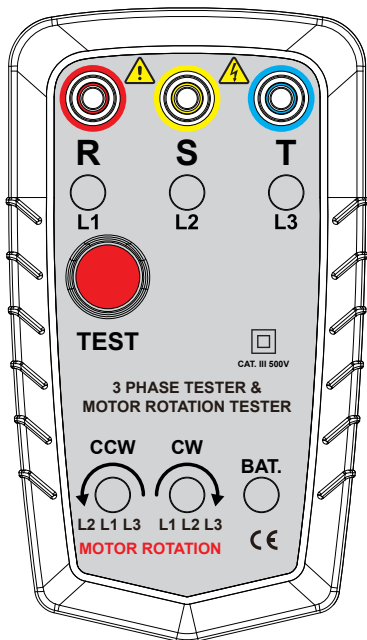


# 3 PHASE TESTER & MOTOR ROTATION TESTER

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## INSTRUCTION MANUAL

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# 1. INTRODUCTION

## NOTE

This meter has been designed and tested according to EN 61010-1 EN61326-1 EN 61557-1 EN 61557-7 and other safety standards. Follow all warnings to ensure safe operation.

## WARNING

**READ "SAFETY RULES" (NEXT PAGE)  
BEFORE USING THE METER.**

## **2. SAFETY RULES**

This tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and/or lethal when lack of caution or poor safety practices are used.

Do not carry out field measurements in power system grounding, during periods of forecast lightning activity, areas that encompass the station being measured, or when the power network is connected to the station being measured. In the event that lightning occurs, stop all testing and isolate any temporarily installed test spikes.

Preparations for testing of power system grounding can leave personnel vulnerable to exposure caused by faults at or fed from the system under test, transferred potentials from remote test grounds, and inadvertent line energizations.

While the probability of the occurrence of one of these events is low, personnel safety will, nevertheless, be enhanced by the following:

When working near high tension systems, rubber gloves and shoes should be worn. Work on clean, dry crushed rock or an insulating blanket. Avoid bare hand-to-hand contact between the tester and extended test leads.

When using the tester with test leads, ensure that they are safe and properly authorized.

Disconnect the tester from any external circuit when changing the batteries.

Follow the instructions in the manual for every measurement. Read and understand the general instructions before attempting to use this tester.

### **3. SAFETY CHECK**

Before using the tester, check the condition of the batteries. This is done by switching the tester ON.

If the BAT OK LED does not light up, the battery needs to be replaced.

Battery and fuse replacement are described in the maintenance section of this user's manual.

When changing the battery, fuses, or removing the cover to access the internal circuitry, always disconnect the test leads.

When replacing the fuse, use only the type specified, 5 x 20mm, 0.5A, 500V fuse, and insert correctly into the fuse holder.

Double check the switch setting, and lead connections before making measurements.

### **4. DO NOT TOUCH**

Do not touch exposed wiring, connections or other "Live" parts of an electrical circuit. If in doubt, check the circuit first for voltage before touching it.

Do not use cracked or broken test leads.

## 5. SAFETY NOTES

- Rated environmental conditions:
  - (1) Indoor use
  - (2) Installation Category III
  - (3) Pollution Degree 2.
  - (4) Altitude up to 2000 Meter
  - (5) Relative Humidity 80% Max
  - (6) Ambient Temperature 0~40°C
- Observe the International Electrical Symbols listed below.



Meter is protected throughout by double insulation or reinforced insulation.



Warning! Risk of electric shock.



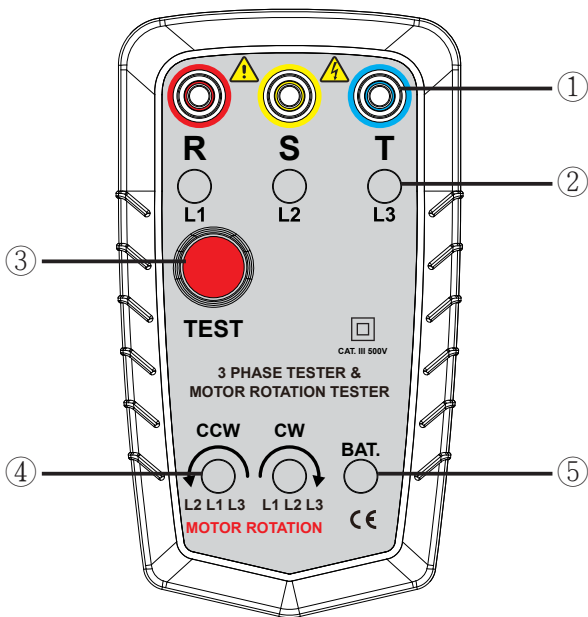
Caution! Refer to this manual before using the meter.

## 6. FEATURES

- Brighter LED indication
- Three functions in one unit; including open phase, phase sequence and motor rotation indication.
- This model is ideal for installing conveyor lines, pump systems and interconnected drivers.
- Identifies 3-phase sequence and open phase check.
- Battery operated.
- EN61010-1 CAT III 500V  
EN61557-1 EN61557-7  
EN61326-1



## 7. LAYOUT



- ① Phase Rotation Input Terminal
- ② Open Phase Indicator
- ③ Test Button
- ④ Phase Rotation Indicator
- ⑤ Tester Power On Indicator

## 8. MEASURING METHODS

- Operation of 3 Phase Rotation Tester:
  - (1) Connect the test lead to 3-phase input terminals by R-S-T
  - (2) Connect color alligator clips to the terminals of a 3-phase power source. Connecting order may be optional.
  - (3) Make sure that all of the three LEDs R, S, T for open phase check are lit. If so, there is no open phase. If any of them are not lit, this indicates open phase.

Open phase  
if LED "R" is  
not lit



Open phase on  
terminal where  
RED alligator clip  
is connected

Open phase  
if LED "S" is  
not lit



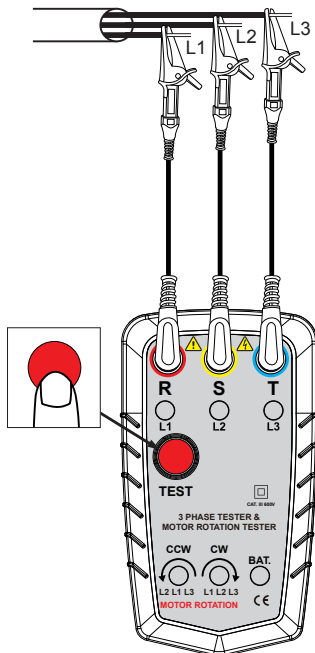
Open phase on  
terminal where  
YELLOW (or  
WHITE) alligator  
clip is connected

Open phase  
if LED "T" is  
not lit

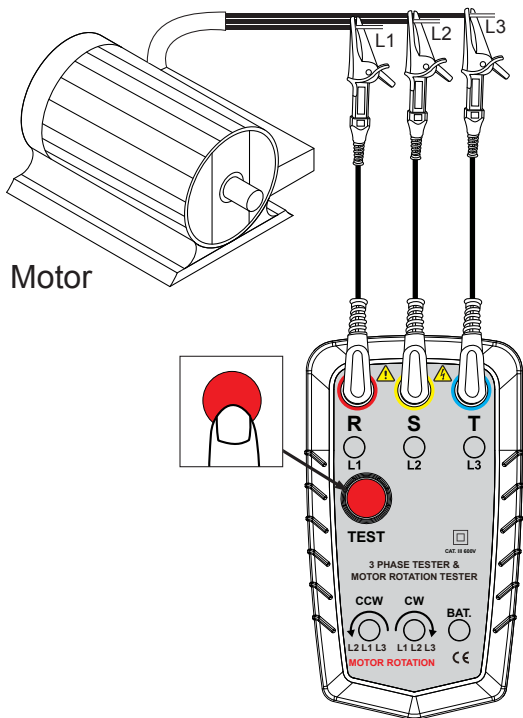


Open phase on  
terminal where  
BLUE alligator clip  
is connected

- (4) Press the test button, check the rotation direction of the rotation indicator.
- If the counter clockwise LED is lit, alternate the two connections of the three alligator clips.
- If the clockwise LED is lit, phase sequence is R, S, and T in order of the power source terminals where the RED, YELLOW (or WHITE) and BLUE alligator clips are connected.



- Operation of Motor Rotation Tester:
  - (1) Make sure there is no voltage present.
  - (2) Connect the test lead to the motor input terminal by L1-L2-L3, and press the power button (Fig1). The power indication green LED is lit. (If the clockwise or counter-clockwise LED is lit before rotating the motor shaft, it means there is voltage present. Discontinue the test, remove the test leads and turn off the external power). Rotate the motor shaft in clockwise. If the green clockwise LED is lit, This means there is 3-phase motor connection to the power supply by L1-L2-L3.
  - (3) Connect the lead to a 3-phase motor by L1-L2-L3, and press the power button. The power indication green LED will illuminate. Rotate the motor shaft in counter-clockwise. If the Red counter clockwise LED is lit, this means there is a 3-phase motor connection to the power supply by L2-L1-L3.



## 9. SPECIFICATIONS

### ELECTRICAL

#### Determination of the Phase Presence

Nominal Voltage for Phase Presence Indication  
(the voltage required for the LEDs L1, L2, L3 to  
light up) ..... From 100Vac to 500Vac.  
Frequency Range ..... From 40Hz to 400Hz.

#### Determination of the Phase Rotary Field

##### Direction:

Direction (the voltage required to have the  
direction LEDs L1-L2-L3 or L2-L1-L3 to  
indicates) ..... From 100Vac to 500Vac.  
Frequency Range ..... From 40Hz to 400Hz.

#### Determination of Motor Connections

##### (requires > 1/2 turn)

Direction (the voltage required to have the  
direction LEDs L1-L2-L3 or L2-L1-L3 to  
indicates) ..... From 100 to 500Vac.  
Frequency Range ..... From 2Hz to 400Hz.

#### Protection

Over Load ..... 550V (between all terminals)  
Over Voltage ..... Class III 500V towards Ground.  
Fuses..... 5 x 20mm, 0.5A, 500V fuse

## General

Battery .....	9V battery
Current Consumption .....	Max 18 mA.

## MECHANICAL

Size .....	128 x 72 x 45 mm
Material .....	Poly carbonate/ABS
Weight .....	Approx. 220g (with battery)
Display .....	LEDs

## ENVIRONMENTAL

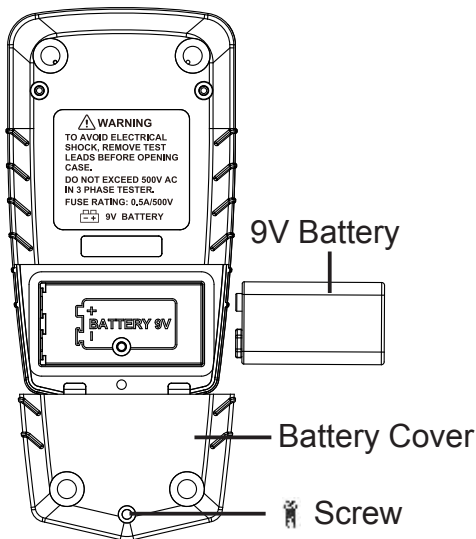
Operating temperature:	-15 °C to + 55 °C
Storage temperature:	-20 °C to + 70 °C

## ACCESSORIES

- Test leads
- Carry Pouch

## 10. MAINTENANCE

- Battery Replacement:
  - (1) Replace the battery when the green LED light is dull.
  - (2) Use a screwdriver to remove the screws on the back cover then open the case. Remove the battery and replace with new battery type (DC 9V).  
Remove the battery and replace with new battery type (DC 9V).
  - (3) Reinstall the case.





- Fuse Replacement:
  - (1) Replace the fuse when the LED indicators for R or T show no connection. The same applies even if the R & T terminals were inserted reversely.
  - (2) Use a screwdriver to remove the screws on the back cover, then open the case. Remove the broken fuse and replace with new fuse (0.5A, 500V).
  - (3) Reinstall the case.
- Cleaning and Storage:

#### WARNING

To avoid electrical shock or damage to the meter, do not get water inside the case.

Periodically wipe the case with a damp cloth and detergent. Do not use abrasives or solvents.

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

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