This instrument has been designed and tested according to IEC Publication 61010; Safety Requirements for Electronic Measuring Apparatus. This Instruction manual contains warnings and safety rules which must be observed by the user to ensure safe operation of the instrument and retain it in safe condition. Therefore, read through these operating instructions before using the instrument.

The voltage values used in this manual or on the meter are given in line voltage, unless otherwise specified.

### WARNINGS

1. Never open the instrument when making measurements.
2. If the instrument shows the following conditions, do not try to make measurements and have the instrument checked for inspection or repair:
   - a) Instrument shows visual damage.
   - b) Test leads are damaged.
   - c) Instrument can not be operated for intended measurements.
   - d) Instrument has been stored for a long period of time under abnormal conditions.
   - e) Instrument has been subjected to severe shocks and vibrations.
3. High voltage may be present with high energy levels. Connect the leads to the system carefully with fingers behind all finger guards.
4. If the all open phase lamps are not lit on, any phase may still be live-be careful.

### CAUTIONS

1. Make sure to never apply a voltage more than 600V ACrms. between the test leads of the instrument and earth to avoid damage to the instrument.
2. Do not measure for more than five minutes when measuring on 500V AC or more, although the instrument is designed for the use 110V through 500V AC.

Measurement categories (Over-voltage categories)
To ensure safe operation of measuring instruments, IEC61010 establishes safety standards for various electrical environments, categorized as CAT. I to CAT. IV, and called measurement categories. Higher-numbered categories correspond to electrical environments with greater energy. So a measuring instrument designed for CAT. III environments gives greater protection than one designed for CAT. II.

- **CAT. I**: Equipment connected to a mains outlet socket
- **CAT. II**: Fault category level at a mains socket
- **CAT. III**: Fault category at distribution board level
- **CAT. IV**: The circuit from the service drop to the power meter and primary over-current protection device (distribution panel).

### FEATURES

- **Two Functions in One Unit**
  KEW8031F is designed to check phase sequence. Lamps provided on the unit will also tell you if a phase is open.

- **Highly Reliable**
  Can check a wide range of 3-phase power source from 110V to 500V. Sealed against dust, the unit ensures trouble-free performance.
Make sure that all of the three lamps for phase check are on. If so, there is no open phase. When any of the three lamps is not on there is open phase.

Open phase check
Lamp "L1" is not on
Open phase on terminal where Red alligator clip is connected.

Open phase check
Lamp "L2" is not on
Open phase on terminal where Whight alligator clip is connected.

Open phase check
Lamp "L3" is not on
Open phase on terminal where Blue alligator clip is connected.

*When the open phase check lamps are not on the rotating disc does not turn.

Check the rotating direction of the inside disc through the phase sequence indication window.
*When the rotating disc turns counter-clockwise alternate the connection of the two of the three alligator clips. Then, the rotating disc will turn clockwise.
*When the rotating disc turns clockwise phase sequence is L1,L2 and L3 in order of the power source terminals where the Red, Whight and Blue alligator clips are connected.

Please Note: New European harmonized phase colours are as follows.
Red = Brown      Protective Earth = Green yellow
Whight = Black   Neutral = Blue
Blue = Grey