OPERATION MANUAL

PHASE SEQUENCE AND MOTOR ROTATION DIRECTION TESTER

TKF-13

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CE

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We appreciate your having purchased our phase sequence and motor rotation direction tester. The TKF-13 tester is a modern high-quality, simple and safe device. However it is recommended to get acquainted with the present manual in order to avoid measuring errors and prevent possible problems related to operation of the meter.

Note:
The producer reserves the right to modify the appearance, equipment and technical data of the device.

1. Safety measures

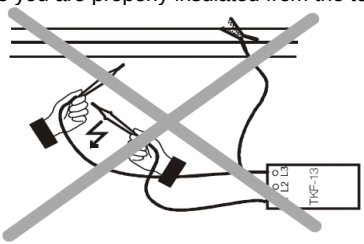
The TKF-13 tester complies with the safety requirements specified in the norm EN 61010-1.
In order to protect yourself and the device do observe the rules described in the present manual.

Warning:

- Do not perform tests in a humid environment, which contains explosive or inflammable gases (materials), water vapour or dust.
- Having carried the device from a cold environment to a warm one, wait 0.5 hour before you proceed to perform

measurements for the purpose of acclimatisation, if necessary wipe out the condensed water vapour.

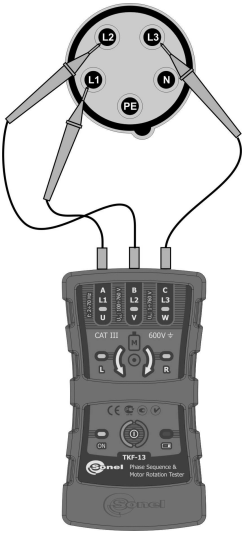
- During measurements do not touch the metal parts of the socket, lead terminals, fastening elements, circuits, etc.
- Make sure you are properly insulated from the tested object.



- Do not perform measurements using an out-of-order device, whose casing or leads are damaged (broken, cracked, deformed, contaminated, etc.).
- The TKF-13 tester may be operated exclusively by qualified personnel who are properly authorised to perform work on electric installations. Should the device be operated by unauthorised personnel, the device may be damaged and there may be a serious danger for the operator.
- The tester may be connected to the mains solely by means of dedicated leads provided by the manufacturer. Solely such leads guarantee compliance with safety regulations.
- If phase-to-phase voltage exceeding 760V AC will be connected to the device, the tester may be damaged and there may be a risk for the operator.
- If the device will be used for any other purpose than those specified in the present operating manual, the tester may be damaged and there may be a serious risk for the operator.

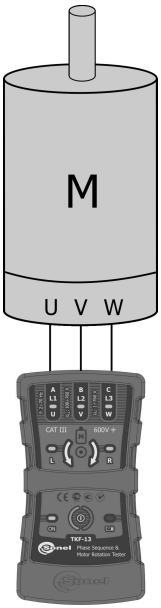
2. Phase spin direction test

- Press  to turn the tester on. The green diode should go ON signalling that the device is ready for operation.
- Connect measurement probes to the TKF-13 tester.
- Connect measurement probes to the points where there is the expected three-phase voltage (see the illustration below).



- If the phases at the given measurement points are compliant with the L1, L2, L3 description, the R diode of the tester will go on; otherwise the L diode will go on.
- The light of the given neon lamp (L1, L2, L3) signalises a voltage exceeding 100V between the corresponding probe and one of the remaining probes.

Note: Incorrect indications of the tester may be caused by one of the following:
- connection of two probes to one phase,
- connection of one of the probes to the neutral lead,
- lack of connection of one of the probes to the mains.

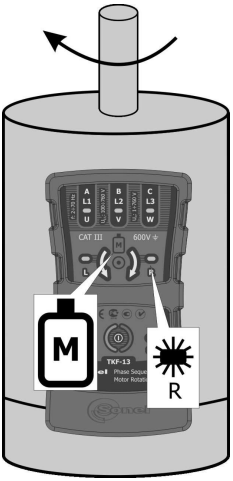


3. Motor shaft spin direction (using leads).

- Disconnect the motor from the mains.
- Press  to turn the tester on. The green diode should go ON signalling that the device is ready for operation.
- Connect measurement probes to the TKF-13 tester.
- Connect measurement probes to the tested motor (see the adjacent illustration).

- Rotate the motor shaft energetically in the desired direction.
- The light of the R diode means the connection to the U, V and W motor terminals of phases L1, L2 and L3, respectively, will cause rotation of the motor in the direction the shaft spun during the test.
- The light of the L diode means the connection to the U, V and W motor terminals of phases L1, L2 and L3, respectively, will cause rotation of the motor in the opposite direction to the direction the shaft spun during the test.
- Make sure the shaft rotates in the desired direction once the motor has been connected to the power supply source performing a phase sequence test (see Chapter 2).

4. Motor shaft spin direction (connectionless).



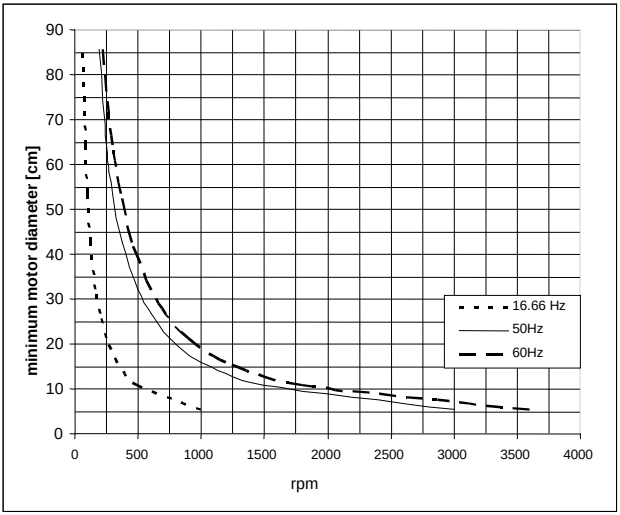
- Press  to turn the tester on. The green diode should go ON signalling that the device is ready for operation.
- Put the rear part of the TKF-13 tester to a working motor along its axis (the position of the axis in accordance with the adjacent illustration). The distance between the tester and the motor should not exceed 2-3cm.
- The light of the R diode means the motor shaft spins clockwise. The light of the L diode means the motor shaft spins anticlockwise.
- Lack of indications (diodes L and R are off) may mean the motor is not working or the signal is too weak.

Note:

- In case of certain single-phase inductive motors, indications may be hindered.

- The device has not been designed for the purpose of tests of single-phase commutator motors.
- The device has not been designed for the purpose of tests of motors powered through electronic power converters (inverters).

Below there is a diagram illustrating the minimum motor diameter for the given revolution and the frequency of the mains at which the indications of the tester are reliable.



5. Power supply turn-off.

If within five minutes the L or R diode does not go on, the tester is automatically turned off, and the ON diode goes off.

Note: It is not possible to turn the power supply off manually.

6. Battery charge signalling

- When the tester detects the battery charge amounts to 10% of its full charge, the battery charge diode  starts to blink once a second. Measurements are still possible.
- If the battery is discharged, then the battery charge diode  is it continuously and it is impossible to perform measurements. **It is necessary to replace batteries.** If the battery is not replaced, then after five minutes the tester will be automatically turned off.

7. Replacement of batteries

- Disconnect the measurement probes from the mains.
- Remove the elastic protection from the casing.
- Unscrew the rear part of the casing and remove it.
- Remove the battery from the tester and disconnect it.
- Connect a new battery, screw the rear flap and place the elastic protection upon the casing.

8. Cleaning and maintenance

NOTE!
Use solely the maintenance techniques specified by the manufacturer in the present operating manual.

The tester may be cleaned with a soft, damp cloth using all-purpose detergents.
Do not use any solvents or cleaning agents which might scratch the casing (powders, pastes, etc.).
The electronic system of the meter does not require maintenance.

9. Storage

In the case of storage of the device, the following recommendations must be observed:

- Make sure the tester is dry.
- Should the tester be stored for a prolonged period of time, the battery will be removed.

10. Dismantling and utilization

Worn-out electric and electronic equipment should be gathered selectively, i.e. it must not be placed with waste of another kind.

Worn-out electronic equipment should be sent to a collection point in accordance with the law of worn-out electric and electronic equipment.

Before the equipment is sent to a collection point, do not dismantle any elements.

Observe the local regulations concerning disposal of packages, worn-out batteries and accumulators

11. Technical data

a) Kind of insulation: double, in accordance with EN 61010-1
b) Measurement category: III 600V in accordance with EN 61010-1
c) Ingress protection in accordance with EN 60529: IP42
d) Frequency range: 2 ÷ 70Hz
e) Nominal phase-to-phase voltage range: 127 ÷ 690VAC
f) Phase-to-phase working voltage range: 120 ÷ 760VAC
g) Motor voltage range: 1 ÷ 760V AC
h) Measurement current (per each phase): <3.5mA
i) Working temperature: -10 ÷ 45 ºC
j) Storage temperature: -20 ÷ 60 ºC
k) Battery charge diode blinking rate: approximately 1s
l) Time before automatic turn-off: approximately 5min
m) Tester power supply: alkaline battery 6LR61 (9V)
n) Dimensions: 130x72x31mm
o) Mass of the tester (with battery, without leads): ca 150g

12. Equipment

Standard:

- 1,2m test leads (red, black and yellow) – 3 pcs,
- crocodile clip black K01,
- probe with banana plug (red, black and yellow) – 3 pcs,
- battery 9V – 1 pcs,
- operating manual.

Additional:

- crocodile clips red and yellow,

- case,
- three-phase adapter AGT-16P,
- three-phase adapter AGT-32P,
- three-phase adapter AGT-63P.

13. Manufacturer

The manufacturer of the device, which also provides guarantee and post-guarantee service is the following company:

SONEL S.A.
ul. Wokulskiego 11
58-100 Świdnica
Poland
tel. +48 74 858 38 60
fax +48 74 858 38 09
E-mail: export@sonel.pl
Web page: www.sonel.pl

SONEL S.A.
Wokulskiego 11, St
58-100 Swidnica
Poland

+48 74 85 83 860
+48 74 85 83 800
fax +48 74 85 83 808

http://www.sonel.pl
e-mail: export@sonel.pl