

Current-Voltage Tester TIS 8000

GB Manual

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References marked on instrument

or in instruction manual:

- A Warning of a potential danger, follow with instruction manua
- Reference! Please pay attention.
- A Caution! Dangerous voltage. Danger of electrical shock
- Continuous double or reinforced insulation category II IEC 536 / DIN EN61140.
- \bigotimes Equipment for working under live voltage.
- **C** € Conformity symbol, the instrument complies with the valid directives. It complies with the EMV Directive (2014/30/EU). Standard EN61326-1 are fulfilled. It also complies with the Low Voltage Directive (2014/35/EU), Standard EN61243-3:2014 is fulfilled.
- X Tester complies with the standard (2012/19/EU) WEEE.
- The instruction manual contains information and references, necessary for safe operation and maintenance of the tester.

Prior to using the tester (commissioning / assembly) the user is kindly requested to thoroughly read the instruction manual and comply with it in all sections.

 \triangle Failure to read the tester manual or to comply with the warnings and references contained herein can result in serious bodily injury or tester damage.

All health and safety practices must be strictly followed at all times.

 \triangle The voltage tester is not a measurement device, it is only allowed to use for testing purposes.

1.0 Introduction / Product Package

The FM TIS 8000 is an universal applicable tester for voltage, current, continuity and rotary field testing and various additional features. The tester is constructed according to the latest safety regulations and guarantee safe and reliable working.

It complies with the standard for two pole voltage testers EN61243-3:2014.

FM TIS 8000 is characterized by the following features:

- · Designed to meet international safety standards EN61243-3:2014.
- Measurement Category CAT IV / 600 V
- Measurement Category CAT III / 1000 V
- AC and DC voltage test up to 1000 V with LEDs
- Current test up to 200 A AC
- AC voltage test up to 1000 V 200A AC and DC voltage test up to 1500 V with LCD
- Cable break tests by Non Contact Voltage detection
- Polarity indication
- Single-pole phase test
- Phase rotation test and Continuity test.
- Resistance measurement
- Frequency measurement
- Vibration motor
- Auto-power ON/OFF
- Torch light and IP64 protection
- Exchangeable test leads

After unpacking, check that the instrument is undamaged.

The product package comprises:

1 pc TIS 8000

2 pcs 4 mm test tip adapters

2 pcs GS38 rubber caps

2 pcs batteries 1.5V. IEC LR03

1 pc operating instructions

2.0 Safety Measures

- A The testers have been constructed and tested in accordance with the safety regulations for voltage testers and have left the factory in a safe and perfect
- △ The operating instructions contain information and references required for safe operation and use of the tester. Before using the tester, read the operating instructions carefully and follow them in all respects.
- Depending on the internal impedance of the voltage tester there will be a different capability of indicating the presence or absence of operating voltage in case of the presence of interference voltage.
- \bigtriangleup A voltage tester of relatively low internal impedance. compared to the reference value of 100 k Ω , will not indicate all interference voltages having an original voltage value above the ELV level. When in contact with the parts to be tested, the voltage tester may discharge temporarily the interference voltage to a level below the ELV, but it will be back to the original value when the voltage tester is removed.
- When the indication "voltage present" does not appear, it is highly recommended installing earthing equipment before work.
- A voltage tester of relatively high internal impedance, compared to the reference value of 100 k Ω , may not permit to clearly indicate the absence of operating voltage in case of presence of interference voltage.
- \bigtriangleup When the indication "voltage present" appears on a part that is expected to be disconnected from the installation, it is highly recommended confirming by another means (e.g. use of an adequate voltage tester, visual check of the disconnecting point of the electric circuit, etc.) that there is no operating voltage on the part to be tested and to conclude that the voltage indicated by the voltage detector is an interference voltage.
- A voltage tester declaring two values of internal impedance has passed a performance test of managing interference voltages and is (within technical limits) able to distinguish operating voltage from interference voltage and has a means to directly or indirectly indicate which type of voltage is present.

3.0 Danger of electric shock and other dangers

- \triangle To avoid an electric shock, observe the precautions when working with voltages exceeding 120 V (60 V) DC or 50 V (25 V) eff AC. In accordance with DIN VDE these values represent the threshold contact voltages (values in brackets refer to limited ranges, e.g. in agricultural areas).
- A The tester must not be used with the battery compartment open.

- A Before using the tester, ensure that the test lead and device are in perfect working order. Look out for broken cables or leaking batteries etc.
- \triangle Hold the tester and accessories by the designated grip areas only, the display elements must not be covered. Never touch the test probes
- \triangle The tester may be used only within the specified measurement ranges and in low-voltage installations up to 1000VAC and 1500VDC.
- A The tester may be used only in the measuring circuit category it has been designed for.
- A Before and after use, always check that the tester is in perfect working order (e.g. on a known voltage source).
- A Make sure that the cables tested for current are dou ble insulated
- \triangle The tester must no longer be used if one or more functions fail or if no functionality is indicated.
- ⚠ It is not permitted to use the tester during rain or precipitation.
- A perfect display is guaranteed only within a temperature range of -15°C to +55°C at relative air humiditv less than 85%.
- \triangle If the safety of the user cannot be guaranteed, the tester must be switched off and secured against unintentional use.
- ⚠ Safety is no longer guaranteed e.g. in the following
- obvious damage
- broken housing, cracks in housing
- if the tester can no longer perform the required measurements / tests
- stored for too long in unfavorable conditions

The tester complies with all EMC regulations. Nev-

Never use the tester in an explosive environment.

⚠ Operational safety is no longer guaranteed if the

A The tester may be opened by an authorized service

A The current test should only be performed on double

△ Operate the tester only with original test leads cor-

⚠ It is not allowed to use the delivered exchangeable

The tester may be used only under the conditions and

for the purposes for which it was designed. Therefore,

observe in particular the safety instructions, the technical

test lead in combination with other devices which

A Tester must be operated by trained users only.

ertheless it can happen in rare cases that electric

devices are disturbed by the electrical field of the

tester or the tester is disturbed by electrical devices.

damaged during transport

tester is modified or altered.

are not explained in this manual.

data including environmental conditions.

technician only.

insulated cables

rectly attached.

4.0 Intended Use

leaking batteries

5.0 Testers Information

- 1. Opening for current measurement
- 2. Test leads (at the rear)
- LED display
- 4. LCD display
- 5. On/Off and function button
- 6. Torchlight and hold button
- 7. Battery compartment
- 8. Sensor for cable break detection, NCV
- 9. Marking middle position of measured cable 10. Test lead positions to ensure 19mm distance 11. between test leads for socket testing
- 12. Exchangeable test leads



LED Display information 1. Voltage indication 2. Polarity indication (120 V LEDs) 3. ELV / Single pole indication 4. Continuity indication

(11)-

5. Rotary field indication



LCD Display information

- 1. HOLD symbols
- 2. AC/ DC and polarity symbols
- 3. Function symbols (from left to right, upper row: voltage test, current test, low voltage test, resistance test; lower row: diode test, frequency test, cable break detected by NCV. continuity test).
- 4. Low battery indication
- 5. 4 digit 7 segment display



6.0 Preparation for tests

6.1 Auto-power-on/ switching on

- The tester switches on when it detects shorten tips. or an AC or DC voltage above approx. 6 V or a live phase on L2+ (single pole test).
- It can be switched on with a button.

6.2. Auto-power off

- The tester is automatically powered off after approx. 10 sec when there is no signal contacted to the
- · The torch light automatically switches off after approx. 30 sec.

7.0 Conducting Tests

7.1 Voltage test

- · Connect both probes to the object under test.
- The voltage is indicated by LEDs if >120 V.
- The buzzer and vibration function turn on if the voltage is higher than 50 V AC or 120 V DC.
- Voltage polarity is indicated in following manner on LCD:
- AC: AC symbol is on
- ► +DC: DC symbol is on
- ► -DC: symbol and DC symbol is on
- · Above 120 V. the polarity is shown on the LED display as well.
- ► AC: both 120 V LEDs are on
- ► +DC: left 120 V LED is on
- -DC: right 120 V LED is on
- When the tester is power on, it will automatically measure voltage in range 6 V-1000 V AC / 1500 V DC.
- When the L2 probe + is the positive (negative) potential, the Polarity indication LED indicates "+DC" ("-DC").
- B During voltage test, L or R LED/Symbol should light up.
- In case of flat batteries, only the ELV LED lights up >50 V.

7.1.1 Low Voltage mode - 1 V - 1000 V AC / 1500 V DC

 Press On/Off/Function button repeated until LCD shows <10 V symbol.

- In Low Voltage mode it is possible to measure AC and DC voltage from 1 V.
- · Connect both probes to the object under test.
- Voltage display is as in 7.1 described.
- Continuity mode is disabled in Low Voltage Mode.

7.2 Current test

- Press On/off/ Function button repeated until LCD shows A symbol.
- In current test mode, currents between 0.1 A and 200 A can be tested.
- · AC and DC currents can be tested.
- . The cable needs to be positioned in center of the opening at the height of the markings left and right.
- · Make sure that only double insulated cables are measured
- · Store test probes safely to avoid any unintended connection.
- · The tester switches to voltage measurement if voltage is detected >6 V.

7.3 Single-pole phase test

- Current test accuracy depends on the cable position in the opening and stray fields around the tester. Best results are achieved if the centre point of the measured cable is in line with markings on the fork.
- Function of this test may not be fully achieved if the insulation condition/ grounding conditions of user or of the equipment under test aren't good enough. Verification of live-circuit shouldn't be dependent on this Single-pole phase test only, but on the voltage test.
- · Hold the tester correctly in your hand. Connect the "L2 +" probe to the object under test. Live circuit LED lights up and buzzer sounds when a voltage of approx. 100 V AC or more exists in the object under test. (Pol≥100 V AC).
- · Indication of Single Pole is via LED.

7.4 Phase rotation test

- · L LED (symbol) and R LED (symbol) for Phase rotation test will operate on various wiring systems, but effective testing results can be obtained only on three-phase 4-wire system.
- · Hold the tester correctly in your hand and connect both probes to the object under test.
- Phase-to-phase voltage is indicated by Voltage LEDs and LCD.
- R LED lights up for Right rotary field.
- L LED lights up for Left rotary field.
- · Measurement principle: The instrument detects the phase rising order regarding the user as earth.
- Function of this test may not be fully achieved if the insulation condition/ grounding conditions of user or of the equipment under test is not good enough.

7.5 Continuity test L Rx

- A Make sure the object under test isn't live.
- · Connect both test probes to the object under test.
- Continuity is shown by illumination of the LED and a sound if resistance is below 500 kOhm.
- · If a lower threshold for continuity is preferred, low continuity mode can be selected.
- Press Torchlight-function button repeatedly until

- LCD shows LRx symbol is shown on LCD.
- Continuity is shown by illumination of LED and sound if resistance is below 20 Ohm.
- Continuity test performed automatically in all modes except in Low Voltage and Resistance
- Tester switch to voltage measurement if voltage is detected during continuity testing >6 V.

7.6 Diode test

- A Make sure the object under test isn't live.
- Switch into diode testing mode by a short press of bol is shown on LCD. Connect both test probes to the diode under test.
- ► The continuity LED lights and the buzzer sounds when L1 is connected to the anode and L2 is connected to the cathode.
- Continuity indication will be off if L1 tip is connected on Cathode of diode and L2 tip on Anode.
- ► The tester switches to voltage measurement if voltage >6 V or Single pole is detected during diode testing.

7.7 Resistance test

- Make sure the object under test isn't live.
- Switch into resistance measurement by pressing On/Off-function button repeatedly kΩ symbol is shown on LCD. Connect both test probes to the object under test. Resistance up to 100 k Ω can be shown on LCD. For resistance less than ~20 Ω buzzer sounds continuously to indicate low continuity.

The tester switches to voltage measurement if voltage >15 V or Single Pole is detected.

7.8 Frequency test

· Switch into frequency measurement by short pressing On/Off-function button repeatedly until Hz symbol is shown on LCD. Connect both test probes to the AC voltage under test. Frequency from 1 Hz to 800 Hz can be shown on LCD.

Frequency measurement is possible for voltages >10 V AC.

The level of voltage will be shown only on bar graph for voltages >120 V. ELV diode will indicate voltages >50 V AC and >120 V DC.

7.9 Cable break detection by NCV

connection

7.10 Torch light

- Switch into NCV measurement by pressing On/ Off-function button repeatedly. LCD will show NCV symbol
- The NCV function is used to find cable breaks etc. · Hold the voltage tester with the sensor against

the wire or cable. The voltage tester indicates the

· Store test probes safely to avoid any unintended

The tester switches to voltage measurement if volt-

age >6 V or single pole is detected between probes.

Press the "torchlight" button to turn on the light and

after approx. 30 s it will turn itself off.

strength of the signal digitally on the LCD screen

· LEDs and all LCD segments and vibration motor. torch light, ELV indication and buzzer are turned on for a second after battery replacement.

Selftest can be activated:

7.11 Self test

7.12 HOLD Function

7.13 Backlight

turned on.

the battery door.

as replacements.

measurements.

correct

· Detach the test leads.

► Shorting L1(-) and L2(+) probe tips while device is turned OFF - leave the device OFF for 30 seconds before shorting the tips.

 Holding down (2 seconds) on the torchlight button activates the HOLD function and freezes the display value. A short press on the torchlight button releases the HOLD function. When HOLD function is HOLD symbol will be shown on LCD.

. The backlight is turned on when the torch light is

8.0 Battery Replacement

A Remove the probes from any testing point, when opening the battery case. Batteries are dead when the continuity test with test probes connected does not work, and the low battery symbol is shown.

Follow the procedure below and replace batteries with new ones (type IEC LR03 1.5 V).

· Unscrew the battery door.

· Pull out the battery door and replace the batteries. Insert new batteries according to the engraving on

· Re-assemble battery door.

Confirm that the battery door case is properly locked prior to measurements.

8.1 Test Lead Replacement

A Remove the probes from any tetsing point when detaching the test leads. Test leads need to exchanged if wear and tear is visible. Use only original test leads

Attach new test leads. Orientation needs to be

⚠ Confirm that the test leads are fully inserted prior to

9.0 Technical Data

| Voltage Range | 11000 V AC (15800 Hz), 11500 V DC(±) |
|--|---|
| ACV | (1 V – 29.9 V) 3% ±1.0 V (30 V – 1000 V) 1.5% ±3 V |
| DCV | (1 V – 29.9 V) 3% ±1.0 V (30 V – 1000 V) 1.5% ±3 V |
| LED nominal Voltage | 120/230/400/690/1000V |
| LED tolerances | EN 61243-3 |
| ELV indication LED | >50 V AC, >120 V DC |
| Response time | <1s at 100% of each nominal value |
| LCD Range | 11000 V, AC (15800 Hz), 11500 V DC(±) |
| LCD Resolution | 0.1 V (129.9 V), 1 V (301500 V) |
| LCD Accuracy | ±3% ±1.5 V (129.9 V) ±3% ±3 dgt (301500 V) |
| LCD Overrange indication | "OL" |
| Current Test | 0.1200AAC(±3% +5 dgt) Resolution 0.1A Frequency range 4565Hz |
| Safety current | ls < 3.5 mA (at 1000 V AC), <6 mA at 1500 V DC |
| Measurement Duty | 30s ON, 240s OFF |
| | |
| Internal battery consumption | approx. 120 mA |
| Internal battery consumption Single-pole phase test voltage range | approx. 120 mA 1001000 V AC (50/60 Hz) |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 kΩ +50% |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5 % ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3 % ±3 digits (25 A - 200 A) 3 % ±3 digits |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) 3 V (IEC LR03 1.5 V x 2) |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery Temperature | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) 3V (IEC LR03 1.5 V x 2) -1555°C operation; -2070°C storage; No condensation |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery Temperature Humidity | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) 3V (IEC LR03 1.5 V x 2) -1555°C operation; -2070°C storage; No condensation max. 85% RH |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery Temperature Humidity Altitude | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) 3V (IEC LR03 1.5 V x 2) -1555°C operation; -2070°C storage; No condensation max. 85% RH up to 2000 m |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery Temperature Humidity Altitude Overvoltage | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5% ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3% ±3 digits (25 A - 200 A) 3% ±3 digits 1001000 V AC (50/60 Hz) 3V (IEC LR03 1.5 V x 2) -1555°C operation; -2070°C storage; No condensation max. 85% RH up to 2000 m CAT IV/600 V, CAT III/1000 V |
| Internal battery consumption Single-pole phase test voltage range Phase rotation test Continuity test Resistance measurement Frequency measurement AC Current Measurements NCV Test Battery Temperature Humidity Altitude Overvoltage Standard | approx. 120 mA 1001000 V AC (50/60 Hz) 1701000 V phase-to-phase, AC (4070 Hz) 0500 k Ω +50% (1 Ω - 100 k Ω) 3% ±5 digits 1800 Hz ±5 % ±5 dgt; resolution: 1 Hz (0.1 A - 24.9 A) 3 % ±3 digits (25 A - 200 A) 3 % ±3 digits 1001000 V AC (50/60 Hz) 3 V (IEC LR03 1.5 V x 2) -1555°C operation; -2070°C storage; No condensation max. 85 % RH up to 2000 m CAT IV/600 V, CAT III/1000 V EN/IEC 61243-3:2014 |

10.0 Cleaning and storage

- A The tester does not need any special maintenance if used according to user manual.
- Remove tester from all test points before cleaning
- Let use a lightly damp cloth with neutral detergent for cleaning the instrument. Do not use abrasives or solvents.
- Do not expose the instrument to direct sun light, high temperature and humidity or moisture.
- A Remove batteries when the instrument will not be in use for a long period.

Warranty

Our instruments are subject to strict quality control. However, should the instrument function improperly during normal use, you are protected by our 12-month warranty (valid with invoice or receipt).

Within the warranty period we will decide whether to exchange or repair the defective instrument. We will repair free of charge any defects in workmanship or materials, provided the instrument is returned unopened and untampered with.

Damage due to dropping or incorrect handling are not covered by the warranty. If the instrument shows failure following expiry of warranty our service department can offer you a guick and economical repair.

Subject to changes without notice!



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