GOSSEN METRAWATT

Operating Instructions

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5/4.12

PROFI**SAFE** | 400
PROFI**SAFE** | 690

Voltage-Continuity Tester

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1 Test electrodes
2 Rectangular LED (green) for continuity check, lights up constantly up to 500 kΩ
3 7 round LEDs (red) for two-pole voltage testing
PROFISAFE | 400: 12 … 400 V
PROFISAFE | 690: 24 ... 690 V
4 2 round LEDs (red) for indicating voltage type AC/DC and polarity
5 Triangular LED "Pol-L1"
for phase test and phase sequence test
6 Accessible electrode "Pol-L1-Sensor" for phase and phase sequence test
7 Connection cable

Contents

1 Application

The **PROFISAFE** is a two-pole voltage tester in accordance with EN/IEC 61243-3 (VDE 0682 part 401) with LED display. You can use the **PROFISAFE** to measure DC and AC voltages
PROFISAFE 400: 12 ... 400 V
PROFISAFE 690: 24 ... 690 V.
Furthermore you can determine polarity, phase and phase sequence and perform continuity tests up to 500 kΩ. The proprietary energy source is not necessary for voltage testing.
An integrated storage lithium battery, which is charged with each voltage test, supplies the energy for continuity, phase sequence and phase tests. Thanks to its high degree of protection (IP 65) the **PROFISAFE** may even be used in rain.

Meanings of Symbols on the Instrument

Warning concerning a point of danger (Attention: observe documentation!)

Mark of approval from VDE test authority

Indicates EC conformity

2 Safety Precautions

You have chosen an instrument which provides you with a high level of safety. The **PROFISAFE** voltage tester has been approved by VDE test authorities for application of VDE GS marking. When used for its intended purpose, the safety of the operator, as well as that of the instrument, is assured.

In order to maintain flawless technical safety conditions, and to assure safe use, it is imperative that you read these operating instructions thoroughly and carefully before placing your instrument into service, and that you follow all instructions contained therein.

Observe the following safety precautions

- The voltages indicated on the **PROFISAFE** are nominal values. The voltage tester may only be used in systems working with the specified nominal voltage range.
- Faultless indication of display values is only guaranteed between –10 ° and +55 °C.
- Hold the instrument by its handles only, to avoid covering the display and touching the test electrodes before and during tests.
- Just before they are used, voltage testers need to be checked to ensure they function correctly.
- Carry out the function test and check the instrument at a familiar voltage source – e.g. a 230 V socket. If the display of one or several systems fails in the course of testing, the instrument may no longer be used.
- The **PROFISAFE** must not be switched on for more than 30 seconds.
- For the determination of phase conductors and phase sequence by means of the accessible electrode, the perceptibility of the display may be impaired, e.g. when using protection means against direct contact, in unfavourable locations, for example on wooden ladders or insulating floor coverings, as well as in unfavourable lighting conditions and in an improperly grounded AC voltage system.
- The voltage tester may only be dismantled by authorized personnel.
- Voltage testers must be clean and dry.

3 Start-Up

The innovative concept of the **PROFISAFE** allows for voltage measurements even with entirely depleted storage batteries. Thanks to the permanently integrated lithium storage battery the **PROFISAFE** is always ready for continuity tests without the need for battery replacement. Please proceed as follows to test the correct functioning of the **PROFISAFE**:

3.1 Function test

To test the functions and the proprietary energy source, put the test electrodes together. The rectangular green LED (continuity test) lights up permanently. Subsequently, test the instrument at a familiar voltage source, e. g. a 230 V mains outlet.

Attention!
If the LED (one or several stages thereof) fails during the test, or if the instrument does not indicate operativeness, the instrument may no longer be used.

Note!

If the green LCD, after putting the test electrodes together, flickers or does not light up, you have to recharge the storage battery (see chapter 6) for continuity tests. Voltage tests can still be conducted without the storage battery.

4 Testing

4.1 General Instructions

Voltage testing is always active.
PROFISAFE | 400 U ≥ 12 V:
Voltage is indicated by red LEDs V
PROFISAFE | 690 U ≥ 24 V:
Voltage is indicated by red LEDs V
PROFISAFE | 400 / **PROFISAFE | 690** U = 0 V:
Switch-over to continuity test,
continuity is indicated by green LED Ω

The energy for the additional test functions (phase/phase sequence/continuity) is supplied by an integrated storage lithium battery. It is automatically charged during each voltage test.
Frequent use of the additional test functions may necessitate an additional recharging of the storage battery (see chapter 6).
The storage battery is not required for voltage testing.

4.2 Testing Voltage and Polarity

Attention!
The maximum allowable on-time for voltage testing is 30 seconds (exception: battery charging from a 230 V socket, see chapter 4.1)

Alternating Voltage

Both lower 12 V/24 V LEDs (±) light up alternatively when an AC voltage within the nominal voltage range is applied to both test electrodes. The LED chain located above lights up according to the voltage applied.

Direct Voltage and Polarity

When a DC voltage within the nominal voltage range is applied to both test electrodes, one of the lower 12 V/24 V LEDs (±) and the LED chain located above light up according to the voltage applied. Polarity is determined as follows: The "+" 12 V/24 V electrode lights up when the test probe marked "+" is connected to the positive pole.

4.3 Tests with the Accessible Electrode

The **PROFISAFE** is equipped with an accessible electrode "Pol-L1-Sensor", and a triangular LED for phase testing and phase sequence indication.

Attention!

While working with the accessible electrode the perceptibility of the display may be impaired (see chapter 2, Safety Precautions).

Note

Tests with the accessible electrode only function in properly grounded AC voltage systems with voltages as from approx. 165 V towards earth.

Phase Test

The phase conductor is identified by establishing contact between one of the two test probes and the conductor, and by simultaneously touching the accessible electrode "Pol-L1-Sensor" with your finger. If the triangle lights up, the conductor is energized.

Phase sequence test

To determine the phase sequence between two phases in a grounded 230/400 V 3-phase system by applying both test electrodes and touching the accessible electrode, proceed as follows:

- ➪ Search for the phase conductors using one pole (see phase test).
- ➪ Apply both test electrodes to two phase conductors (display value: approximately 400 V).
- ➪ Touch the accessible electrode with your finger.

If phase L1 is applied to the test probe (+L1) with display and phase L2 to the other test probe (without display), the triangle lights up if rotation is clockwise. If the triangle does not light up, the direction of rotation is counter-clockwise. If 230 V is displayed instead of 400 V, the neutral conductor may have been contacted with one of the test probes.

4.4 Continuity Test, Diode Test

Apply the test electrodes to the conductor to be tested. The rectangular green LED lights up at a resistance of 0 to about 500 kΩ. The green rectangle lights up if the test probe of the **PROFISAFE** marked "+" is applied to the anode of a semiconductor. Otherwise the semiconductor is connected in the reverse direction.

Note!

The instrument is immediately ready for the next test. Voltage readings always take priority (see chapter 3).

5 Technical Data

Display	9 LEDs for voltage, continuity, phase and phase sequence
Nominal voltage range	**PROFISAFE | 400**: 12 ... 400 V AC/DC in increments of 12, 24, 50, 120, 230, 400 V **PROFISAFE | 690**: 24 ... 690 V AC/DC in increments of 24, 50, 120, 230, 400, 690 V
Frequency range	0 ... 200 Hz
Current (peak value, Is)	3,4 mA at 400 V/690 V
Input resistance	**PROFISAFE | 400**: 117 kΩ **PROFISAFE | 690**: 202 kΩ
On-time	30 s
Continuity test	0 ... 500 kΩ
Measuring category	CAT IV per EN 60664-1
Housing	ABS, IP 65

Extract from table on the meaning of IP codes

IP XY (1st digit X)	Protection against foreign object entry	IP XY (2nd digit Y)	Protection against the penetration of water
6	dust-tight	5	water jets

Connecting cable	polyurethane sheathed cable 1000 V, 1 m

6 Maintenance

6.1 Testing and charging the storage battery

If the green LED does not flash or light up when putting together the test probes, you have to recharge the battery. Insert the test electrodes of the **PROFISAFE** into a 230 V mains socket to this end so that the LEDs light up until 230 V. The 400 V LED may not light up. Leave the **PROFISAFE** in the mains socket for at least 10 hours to allow for the storage lithium battery to be completely recharged.
The on-time of 30 s is of no significance in this case. Perform the function test before putting the instrument back into operation (see 3.1).

6.2 Housing

The voltage tester should be kept dry and clean. The plastic housing can be cleaned with a cloth dampened with isopropyl alcohol or soapy water. Clean the cloth afterwards.

6.3 Device Return and Environmentally Compatible Disposal

The instrument is a category 9 product (monitoring and control instrument) in accordance with ElektroG (German Electrical and Electronic Device Law). This device is not subject to the RoHS directive.

We identify our electrical and electronic devices (as of August 2005) in accordance with WEEE 2002/96/EG and ElektroG with the symbol shown to the right per DIN EN 50419 . These devices may not be disposed of with the trash. Please contact our service department regarding the return of old devices (address see chapter 7).

7 Repair and Replacement Parts Service Calibration Center* and Rental Instrument Service

If required, please contact:

GMC-I Service GmbH
Service Center
Thomas-Mann-Straße 20
90471 Nürnberg, Germany
Phone +49 911 817718-0
Fax +49 911 817718-253
E-Mail service@gossenmetrawatt.com
www.gmci-service.com

This address is only valid in Germany. Please contact our representatives or subsidiaries for service in other countries.

* **DKD** Calibration Laboratory for Electrical Quantities DKD – K – 19701
accredited per DIN EN ISO/IEC 17025:2005

Accredited measured quantities: direct voltage, direct current values, DC resistance, alternating voltage, alternating current values, AC active power, AC apparent power, DC power, capacitance, frequency and temperature

8 Product Support

If required, please contact:

GMC-I Messtechnik GmbH
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