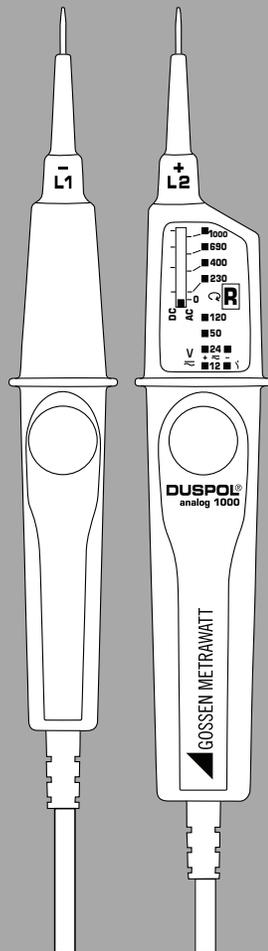


GOSSEN METRAWATT

- (D) Bedienungsanleitung
- (GB) Operating manual
- (F) Mode d'emploi
- (E) Manuel de instrucciones
- (BG) Инструкция за експлоатация
- (CZ) Návod k použití zkoušečky
- (DK) Brugsanvisning
- (GR) Οδηγίες χρήσεως
- (H) Használati utasítás
- (I) Istruzioni per l'uso
- (IS) Notkunarleiðbeiningar
- (N) Bruksanvisning
- (NL) Gebruiksaanwijzing
- (PL) Instrukcja obsługi
- (RO) Instrucțiuni de Utilizare
- (RU) Инструкция по эксплуатации индикатора напряжения
- (S) Bruksanvisning
- (SRB) Upute za rukovanje
- (TR) Kullanma Talimatı

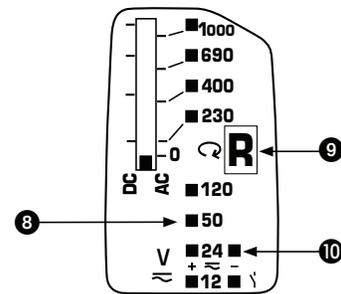
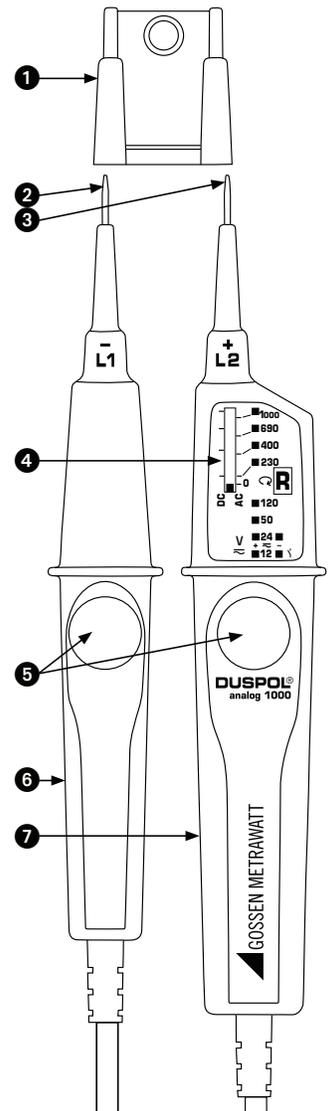
DUSPOL® analog 1000

T-Nr. 10079314.04 02/2019

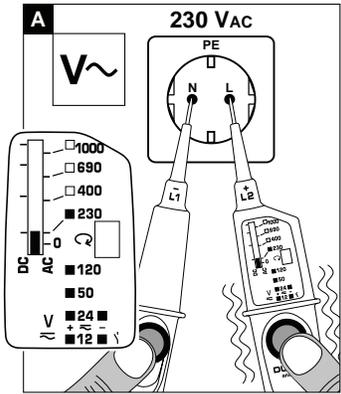


(D)

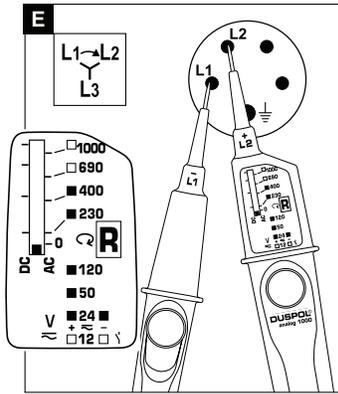
(D)



D

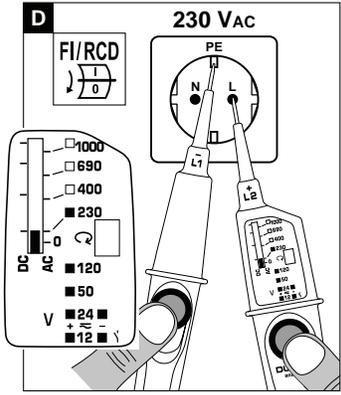
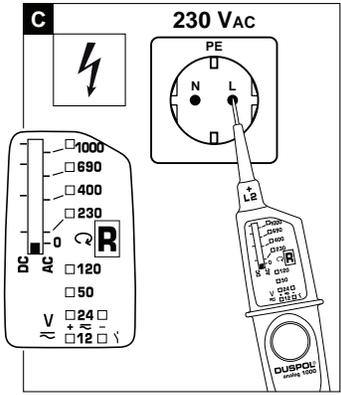
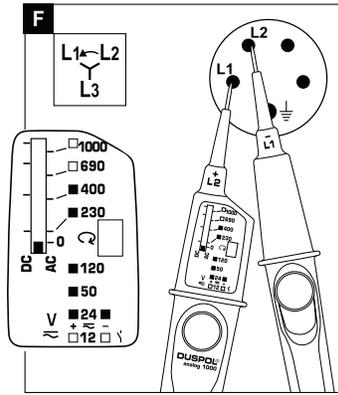
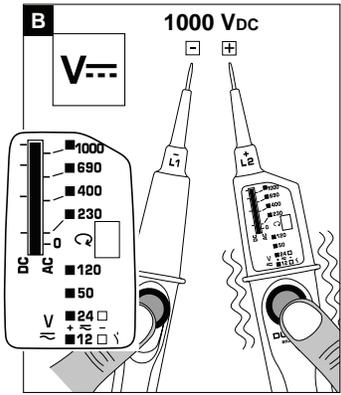


D



D

D



nen die Funktion beeinträchtigen.

Achtung!

Eine Spannungsfreiheit kann nur durch eine zweipolige Prüfung festgestellt werden.

7. Drehfeldprüfung (Bild E/F)

- Umfassen Sie vollflächig beide Griffe L1 **6** und L2 **7** um eine kapazitive Kopplung gegen Erde zu gewährleisten.
 - Legen Sie die Prüfspitzen L1/- **2** und L2/+ **3** an zwei Außenleiter (Phasen) eines Drehstromnetzes (ohne Betätigung der Drucktaster **3**) und prüfen Sie ob die Außenleiterspannung von z.B. 400 V anliegt.
 - Eine Rechtsdrehfolge (Phase L1 vor Phase L2) ist gegeben, wenn auf dem LC-Display **3** ein „R“-Symbol erscheint. Das LC-Display bleibt erloschen, wenn keine Rechtsdrehfolge erkannt wurde.
 - Die Drehfeldprüfung erfordert stets eine Gegenkontrolle! Zeigt das LC-Display die Rechtsdrehfolge über das „R“ Symbol an, muss bei der Gegenkontrolle mit vertauschten Prüfspitzen L1/- **2** und L2/+ **3** das LC-Display erloschen bleiben.
- Zeigt das LC-Display in beiden Fällen ein „R“-Symbol an, liegt eine zu schwache Erdung vor.

Hinweis:

Die Drehfeldprüfung ist ab 400 V - 900 V, 50/60 Hz (Phase gegen Phase) im geerdeten Drehstromnetz möglich. Schutzkleidung und isolierende Standortgegebenheiten können die Funktion beeinträchtigen

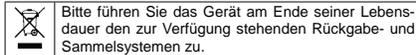
8. Technische Daten

- Vorschrift: DIN EN 61243-3: 2015, IEC 61243-3: 2014
- Nennspannungsbereich: 12 V bis AC/DC 1.000 V
- Nennfrequenzbereich f: 0 bis 60 Hz
- Max. Anzeigefehler: $U_n \pm 15\%$, ELV $U_n + 0\%$, $- 15\%$
- Impedanz (Innenwiderstand) Messkreis/ Lastkreis: 200 k Ω / 5 k Ω
- Stromaufnahme Messkreis: $I_n < 6,0$ mA (1.000 V)
- Stromaufnahme Lastkreis: $I_n < 550$ mA (1.000 V)
- Polaritätsanzeige: + 24 V LED, - 24 V LED, + 12 V LED, - 12 V LED (bei Drucktasterbetätigung)
- Außenleiterprüfung (Phasenanzeige): $\geq U_n$ 230 V, 50 Hz/ 60 Hz
- Drehfeldprüfung: $\geq U_n$ 400 V, 50 Hz/ 60 Hz
- Vibrationsmotor, Anlauf: $\geq U_n$ 200 V
- Überspannungskategorie: C $\bar{A}T$ IV 600 V, \perp CAT III 1000 V
- Schutzart: IP 65 (DIN VDE 0470-1 IEC/ EN 60529)
- 6 - erste Kennziffer: Schutz gegen Zugang zu gefährlichen Teilen und Schutz gegen feste Fremdkörper, staubdicht
- 5 - zweite Kennziffer: Geschützt gegen Strahlwasser. Auch bei Niederschlägen verwendbar.
- max. zulässige Einschaltdauer: ED = 30 s (max. 30 Sekunden), 600 s Pause
- Gewicht: ca. 250 g
- Verbindungsleitungslänge: ca. 1000 mm
- Betriebs- und Lagertemperaturbereich: $- 20$ °C bis $+ 45$ °C (Klimakategorie N)
- Relative Luftfeuchte: 20 % bis 96 % (Klimakategorie N)
- Rückregelzeiten (thermischer Schutz): Spannung/Zeit: 230 V/30 s, 400 V/9 s, 690 V/5 s, 1000 V/2 s

9. Allgemeine Wartung

Reinigen Sie das Gehäuse äußerlich mit einem sauberen trockenen Tuch.

10. Umweltschutz



Operating Manual DUSPOL® analog 1000

Before using the DUSPOL® analog 1000 voltage tester, proceed as follows: Please read the operating manual and absolutely observe the safety instructions!

Table of Contents

1. Safety instructions
2. Device description
3. Functional test before use to ensure the absence of voltage of an installation
4. Checking the absence of voltage of an installation
5. Load connection with vibration motor
6. External conductor test (phase indication)
7. Phase sequence test
8. Technical data
9. General maintenance
10. Environmental protection

1. Safety instructions:

- During use, touch the tester at the insulated handles L1 **6** and L2 **7** only and do not touch the probe tips L1/- **2** and L2/+ **3**!
- Check the voltage tester for correct functioning immediately before and after using it in order to ensure the absence of voltage of an installation (see section 3)! Do not use the voltage tester, if one or more indications are not working or if it does not seem to be ready for operation! Please repeat the test with another voltage tester afterwards.
- The voltage tester must be used only within the stated nominal voltage range and in electrical installations of up to 1,000 V AC/DC!
- The voltage tester must be used only in electric circuits of overvoltage category CAT III with max. 1,000 V or over-

voltage category CAT IV with max. 600 V for phase-to-earth measurements.

- The voltage tester is designed for being used by qualified electricians and under safe working conditions.
- The LED step indicator is intended for indicating the voltage range. It is not intended for measuring purposes.
- Creating a voltage tester for more than 30 seconds voltage (maximum duty cycle = 30 s)!
- Do not dismantle the voltage tester!
- The voltage tester must be protected against contamination and damaging of the housing surface.
- To protect them against damaging, provide the probe tips with the enclosed probe tip protector ❶ after using the voltage tester!
- Please observe that the impedance (internal resistance) of the voltage tester influences the indication of interference voltages (capacitively or inductively induced)!

Depending on the internal impedance of the voltage detector, there will be a different capability of indicating the presence or absence of operating voltage in case of the presence of interference voltage.

Low-impedance voltage tester (impedance < 100 kΩ), interference voltage is suppressed or reduced:

A voltage tester of relatively low internal impedance, compared to the reference value of 100 kΩ, will not indicate all interference voltages having an original voltage value above the ELV level (50 V AC/ 120 V DC). 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 to install earthing equipment before starting work.

High-impedance voltage tester (impedance > 100 kΩ): Interference voltage will not be suppressed or reduced:

A voltage tester of relatively high internal impedance, compared to the reference value of 100 kΩ, may not permit to clearly indicate the absence of operating voltage in case of presence of interference voltage. When the indication "voltage present" appears on a part that is expected to be disconnected from the installation, it is highly recommended to confirm by another means (e.g. use of an adequate voltage tester capable of distinguishing between operating voltages and interference voltages, visual inspection 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 tester is an interference voltage.

Voltage testers capable of distinguishing between operating voltage and interference voltage by means of load connection:

A voltage tester stating 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.

Electrical symbols on the device:

Symbol	Meaning
	Important documentation! The symbol indicates that the guide described in the manual, to avoid any risks
	Device or equipment for working under voltage
	Push-button
	Alternating voltage (AC)
	Direct voltage (DC)
	Direct and alternating voltage (DC/AC)
	Earth (voltage to ground)
	Push-button (manually actuated); indicates that the respective indications are made only with both push-buttons being actuated
	Clockwise phase sequence; the phase sequence can be indicated only at 50 or 60 Hz and in an earthed mains
	Plunger coil level indicator

2. Device description

- ❶ Probe tip protector
- ❷ Probe tip L1/-
- ❸ Probe tip L2/+
- ❹ Plunger coil level indicator
- ❺ Push-button
- ❻ Handle L1
- ❼ Display handle L2
- ❽ LED step indicator
- ❾ LC display mit "R" symbol für external conductor test (phase indication) and phase sequence indicator (clockwise)
- ❿ +/- LEDs of the polarity indication

3. Functional test before use to ensure the absence of voltage of an installation

- Check the voltage tester for correct functioning immediately before and after using it!
- Test the voltage tester with familiar voltage sources, e.g. with a 230 V socket.
- Do not use the voltage tester, if the voltage indication, the phase indication and the vibration motor are not working properly!

4. Checking the absence of voltage of an installation (figure A/B)

For checking the installation, please test the absence of voltage by checking the voltage indication, the phase indication (the phase indication only works in an earthed AC voltage mains) and the vibration motor (the vibration motor is activated by actuating both push-buttons). The installation is only free of voltage, if all three test circuits (voltage indication, phase indication and vibration motor) are signaling the absence of voltage.

- Apply the two probe tips L1/+ ② and L2/- ③ to the system parts to be tested.
- The level of voltage applied is indicated by means of the LED step indicator ⑧.
- Actuate both push-buttons ⑤ to connect the plunger coil level indicator ④, the 12 V LED step (+/-) and an internal load in the voltage tester.
- Alternating voltages (AC) are indicated by the +24 V LED and the -24 V LED lighting up simultaneously.
- Direct voltages (DC) are indicated by the +24 V LED or the -24 V LED lighting up. The polarity indication ⑩ shows the polarity (+ or -) applied to the probe tip L2/+ ③.
- To differentiate between low-energy and high-energy voltages (e.g. capacitively induced interference voltages), an internal load in the voltage tester can be connected by actuating both push-buttons (see section 5).

5. Load connection with vibration motor (figure A/B)

Both handles L1 ⑥ and L2 ⑦ are equipped with push-buttons ⑤. Actuate both push-buttons to switch to a lower internal resistance. Here, voltage is applied to a vibration motor (motor with unbalanced mass). From approx. 200 V on, this motor is set in rotary motion. With the voltage increasing, the motor's speed and vibration increases as well. The duration of the test with a lower internal resistance (load test) depends on the level of voltage to be measured. In order to avoid an inadmissible warming of the device, it is provided with a thermal protection (controlled reduction). With this controlled reduction, the speed of the vibration motor is reduced and the internal resistance increases.

The load connection (with both push-buttons being actuated) can be used ...

- to suppress reactive voltages (inductive and capacitive voltages),
- to charge capacitors,
- to trip 10 mA/ 30 mA RCD safety switches. The tripping of the RCD safety switch is done by testing the external conductor (phase indication) to PE (earth). (figure D)

6. External conductor test (phase indication) (figure C)

- Fully grasp the handles L1 ⑥ and L2 ⑦, in order to ensure a capacitive coupling to earth.
- Apply the probe tip L2/+ ③ to the system part to be tested. During the single-pole external conductor test (phase indication), make absolutely sure not to touch the probe tip L1/- ② and that it remains contactless.
- If an "R" symbol is shown on the LC display ⑨, the external conductor (phase) of an AC voltage is applied to this system part.

Note:

The single-pole external conductor test (phase indication) can be carried out in an earthed mains from 230 V, 50/60 Hz (phase to earth) on. Protective clothing and insulating conditions on site might impair the function.

Attention!

The absence of voltage can only be determined by means of a two-pole test.

7. Phase sequence test (figure E/F)

- Fully grasp both handles L1 ⑥ and L2 ⑦, in order to ensure a capacitive coupling to earth.
- Apply the probe tips L1/- ② and L2/+ ③ to two external conductors (phases) of a three-phase mains (without actuation the push-buttons ⑤) and check whether the external conductor voltage of e.g. 400 V is applied.
- A clockwise phase sequence (phase L1 before phase L2) is given, if an "R" symbol is shown on the LC display ⑨. Nothing is shown on the LC display, if no clockwise phase sequence has been detected.
- The phase sequence test always requires a countercheck! If the LC display shows the clockwise phase sequence by means of the "R" symbol, the LC display must show nothing during the countercheck with the probe tips L1/- ② and L2/+ ③ being inverted. If the LC display shows the "R" symbol in both cases, the earthing is too weak.

Note:

The phase sequence test can be carried out in an earthed three-phase mains from 400 V - 900 V, 50 / 60 Hz (phase to phase) on. Protective clothing and insulating conditions on site might impair the function.

8. Technical data

- regulation: DIN EN 61243-3: 2015, IEC 61243-3: 2014
- nominal voltage range: 12 V to 1,000 V AC/DC
- nominal frequency range f: 0 to 60 Hz
- max. indication error: $U_n \pm 15\%$, ELV $U_n +0\% -15\%$
- Impedance (internal resistance) of measuring circuit/ load circuit: 200 k Ω / 5 k Ω
- current consumption of measuring circuit: $I_n < 6,0$ mA (1,000 V)
- current consumption of load circuit: $I_n < 550$ mA (1,000 V)
- polarity indication: + 24 V LED, - 24 V LED, + 12 V LED, - 12 V LED (with push-buttons being actuated)
- external conductor test (phase indication): $\geq U_n$ 230 V, 50 Hz/ 60 Hz
- phase sequence test: $\geq U_n$ 400 V, 50 Hz/ 60 Hz
- vibration motor, start: $\geq U_n$ 200 V

- overvoltage category: CAT IV 600 V, $\frac{1}{2}$ CAT III 1,000 V
- protection category: IP 65 (DIN VDE 0470-1 IEC/ EN 60529)
- 6 - first index: protection against access to dangerous parts and protection against solid impurities, dustproof
- 5 - second index: protected against water jets. The device can also be used in the rain.
- max. allowable Duty cycle: 30 s (max. 30 seconds), 600 s off weight: approx. 250g
- length of connecting cable: approx. 1,000 mm
- operating temperature and storage temperature range:
 - 20 °C to + 45 °C (climatic category N)
- relative air humidity: 20 % to 96 % (climatic category N)
- times of controlled reduction (thermal protection):
 - voltage/time: 230 V/30 s, 400 V/9 s, 690 V/5 s, 1000 V/2 s

9. General maintenance

Clean the exterior of the device with a clean dry cloth.

10. Environmental protection



Please lead the device at the end of its useful life to the available return and collection systems.

Mode d'emploi DUSPOL® analog 1000

Avant d'utiliser le contrôleur de tension DUSPOL® analog 1000 : Lisez le mode d'emploi et tenez impérativement compte des consignes de sécurité !

Table des matières

1. Consignes de sécurité
2. Description de l'appareil
3. Contrôle de fonctionnement avant l'utilisation afin d'assurer l'absence de tension d'une installation
4. Vérification de l'absence de tension d'une installation
5. Connexion de charge avec moteur à vibration
6. Contrôle du conducteur extérieur (indication de phase)
7. Test d'ordre de phases
8. Caractéristiques techniques
9. Entretien général
10. Protection de l'environnement

1. Consignes de sécurité :

- Lors de l'utilisation, ne touchez l'appareil qu'aux poignées isolées L1 ⑥ et L2 ⑦ et ne touchez jamais les pointes d'essai L1/- ② et L2/+ ③ !
- Contrôlez toujours le bon fonctionnement du contrôleur de tension immédiatement avant et après de l'utiliser afin d'assurer l'absence de tension de l'installation (voir paragraphe 3) ! Le contrôleur de tension ne doit être utilisé dès lors qu'une ou plusieurs affichages ne fonctionnent plus ou dès lors l'appareil n'est plus opérationnel ! Ensuite, répétez ce contrôle au moyen d'un autre contrôleur de tension.
- Le contrôleur de tension ne doit être utilisé que dans la plage de tension nominale spécifiée et dans les installations électriques jusqu'à 1.000 V AC / DC !
- Le contrôleur de tension ne doit être utilisé que dans les circuits électriques de la catégorie de surtension CAT III avec un maximum de 1.000 V ou de la catégorie de surtension CAT IV avec des conducteurs de 600 V max. par rapport à la terre.
- Le contrôleur de tension est conçu afin d'être utilisé par des électrotechniciens en combinaison avec des procédés de travail sûrs.
- L'affichage de niveau par LED sert à indiquer la plage de tension et n'est donc pas prévu afin d'effectuer des mesures.
- Création d'un testeur de tension pour tension de plus de 30 secondes (cycle d'utilisation maximal)
- Le contrôleur de tension ne doit être pas démonté !
- Protégez le contrôleur de tension contre les impuretés ainsi que contre l'endommagement de la surface du boîtier.
- Comme protection contre les blessures, les pointes d'essais doivent être munies du protecteur de pointe d'essai ci-inclus ① suite à l'utilisation du contrôleur de tension !
- Tenez compte du fait que l'impédance (résistance interne) du contrôleur de tension influencera l'affichage de tensions parasites (couplées de façon capacitive ou inductive) !

Selon l'impédance interne du contrôleur de tension, il existe une capacité différente à indiquer la présence ou l'absence de tension de service en présence d'une tension parasite.

Contrôleur de tension à basse impédance (impédance < 100 kΩ), la tension parasite sera supprimée ou réduite :

Un contrôleur de tension présentant une impédance interne relativement basse, comparée à la valeur de référence de 100 kΩ, n'indique pas toutes les tensions parasites dont la tension d'origine est supérieure au niveau de la TBT (tension très basse, 50 V AC/ 120 V DC). Lorsque le contrôleur de tension est en contact avec les pièces à contrôler, il peut évacuer temporairement la tension parasite à un niveau inférieur à la TBT (tension très basse), puis revenir à la valeur d'origine suite au retrait du contrôleur de tension.

Si l'indication « présence de tension » n'apparaît pas, il est fortement recommandé de mettre le dispositif de mise à la terre avant de commencer le travail.

Contrôleur à haute impédance (impédance > 100 kΩ) : La tension parasite ne sera pas supprimée ou réduite :

Un contrôleur de tension présentant une impédance interne relativement élevée, comparée à la valeur de référence de 100 kΩ, ne peut pas clairement indiquer l'absence de tension de service en cas de présence d'une tension parasite. Si l'indica-