KURTH ELECTRONIC
GMC-INSTRUMENTS GROUP

Made in Germany

Operating Instructions

3-447-212-03
1/11.23

Cable Tester

KE7000

Ethernet FlexiTest

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1. Safety Instructions



Read and follow these instructions carefully and completely in order to ensure safe and proper use.

The instructions must be made available to all persons who use the instrument.

Keep for future reference.

General

- Observe and comply with all safety regulations which are applicable for your work environment, in particular relevant safety regulations in accordance with DIN VDE 0100, DIN VDE 0800 and DIN VDE 0805.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the instrument.

Accessories

- Use only the specified accessories (included in the scope of delivery or listed as options) with the instrument.
- Carefully and completely read and adhere to the product documentation for optional accessories. Retain these documents for future reference.

Handling

- Use the instrument in undamaged condition only.
  Inspect the instrument before use. Pay particular attention to damage.
- Use the accessories in undamaged condition only.
  Before use, inspect the accessories, in particular for any damage.
- If the instrument or its accessories don't function flawlessly, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- Do not apply any external voltage to the instrument.
- If the instrument or accessories are damaged during use, for example if they're dropped, permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the instrument or accessories (e.g. loose parts in the housing), permanently remove the instrument/accessories from operation and secure them against inadvertent use.
- The instrument and the accessories may only be used for the tests/measurements described in the documentation for the instrument.

Operating Conditions

- Do not use the instrument and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not use the tester and its accessories after extraordinary stressing due to transport.
- Do not expose the tester to direct sunlight.
- Only use the instrument and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).

Rechargeable Batteries / Batteries

- Use batteries in undamaged condition only. Risk of explosion and fire in the case of damaged batteries!
- Inspect the batteries before use. Pay particular attention to leaky and damaged batteries.
- Use the instrument with inserted and closed battery compartment only. Touch contact with dangerous voltage is otherwise possible.

Cables

- Plugging in the cables must not necessitate any undue force.
- Never apply unnecessary strain to the cables connected to the instrument.

2. Applications

Please read this important information!

2.1 Intended Use / Use for Intended Purpose

The KE7000, hereinafter referred to as the instrument, is a simple test instrument for LAN, telecommunications and patch cables in the fields of IT and telecommunications.

Unshielded or shielded cables with twisted pairs and RJ-11 or RJ-45 connectors (UTP, STP, FTP, 568A, 568B, USOC) can be tested. These are commonly found in installed networks or as patch cables. Maximum cable length is 150 meters.

Coaxial cables (BNC or F female connectors) can also be tested using the optionally available adapter set (RJ-45 to coax adapter / Z170A).

Cables are tested for continuity, interruption, reversal, short-circuit, multiple faults and shield continuity. Cable status appears at the display.

The instrument may only be used in voltage-free installations.

Safety of the user, as well as that of the instrument, is only assured when it's used for its intended purpose.

2.2 Use for Other than Intended Purpose

Using the instrument for any purposes other than those described in these instrument operating instructions constitutes improper use.

2.3 Liability and Guarantee

Gossen Metrawatt GmbH assumes no liability for property damage, personal injury or consequential damage resulting from improper or incorrect use of the product, in particular due to failure to observe the product documentation. The same applies to maintenance measures which are not executed properly or in due time. Furthermore, all guarantee claims are rendered null and void in such cases.

Nor does Gossen Metrawatt GmbH assume any liability for data loss.

3. Instructions

Information Concerning these Instructions

Read these instructions carefully and attentively. They contain all necessary information for safe use of the instrument. Comply with them in order to protect yourself and others from injury, and to avoid damaging the instrument.

The latest version of these instructions is available on our website: https://www.gossenmetrawatt.de/en/services/download-center/

Errors and Suggestions for Improvement

These instructions have been prepared with utmost care in order to ensure correctness and completeness. Unfortunately, errors can never be entirely avoided. Continuous improvement is part of our quality goal, so we always appreciate your comments and suggestions.

Gender Equality

For better readability, only the masculine form is used in these instructions in a grammatically impartial sense. The feminine and diverse forms are of course always implied as well.

Trademark Law

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4. The Instrument

4.1 Scope of Delivery

2 ea. KE7000

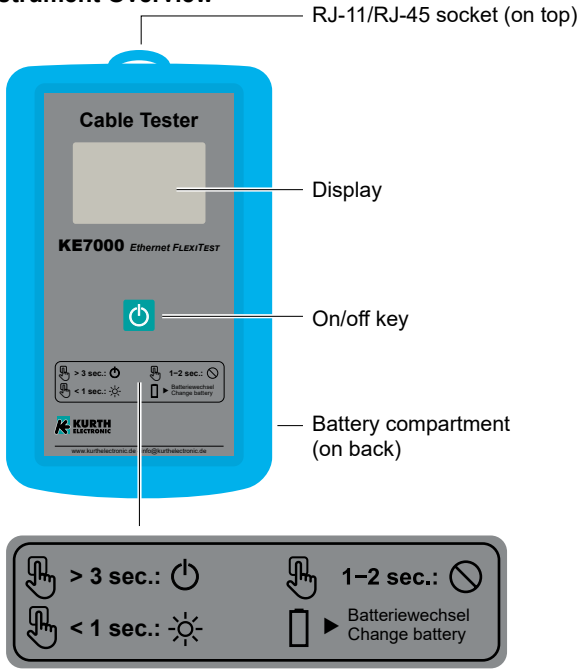
1 ea. pouch

4.2 Optional Accessories

Some measurements/tests necessitate optional accessories.

- RJ-45 to coax adapter (Z170A) for testing coaxial cables:
  Adapter set consisting of 2 ea. RJ-45 to BNC plug adapter and 2 ea. BNC to F female plug adapter

4.3 Instrument Overview



4.4 Symbols on the Instrument



Warning concerning a source of danger (attention: observe documentation!)

CE European conformity marking



The test instrument may not be disposed of with household trash (see Page 14).

4.5 Technical Data

Cable Type	UTP (up to 4 pairs), STP, FTP, 568A, 568B, USOC, coaxial* * only with optionally available adapter
Error Display	Continuity, interruption, reversal, short-circuit, multiple faults, shield continuity
Cable length	Max. 150 m
Operating time	Approx. 100 hrs.
Battery	9 V block battery
Dimensions	160 × 95 × 35 mm
Weight	160 g (without battery)
Housing	Impact-resistant ABS with fall protector
Operating conditions	0 to 50 °C, no condensation
Interference voltage protection	60 V_{DC}

5. Initial Startup

The instruments are powered by means of 9 V batteries (not included).

Before inserting the batteries, disconnect all cables and switch the instrument off. Only use batteries which comply with the applicable specifications.

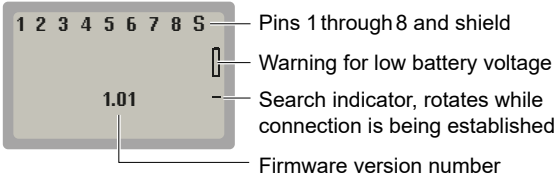
The battery compartment is located on the back of the instrument. Open the battery compartments with a Phillips PH2 screwdriver, insert the batteries and then reclose the battery compartments.

6. Operation

6.1 Switching the Instrument On/Off

Switching On and Starting the Instrument

The instrument is switched on by pressing the on/off key. Various information appears at the display during the startup process:



Switching the Instrument Off

Press and hold the on/off key for about two seconds in order to switch the instrument off.

Automatic Shutdown

The instrument is shut down automatically after approximately 70 minutes of operating time.

6.2 Background Illumination

Display backlighting is switched on by briefly pressing the on/off key during operation. In order to prolong battery life, backlighting is switched back off after a short time.

7. Performing Tests

2 instruments are required for testing.

UTP (up to 4-pair), STP, FTP, 568A, 568B, USOC and coaxial[1] cables can be tested for continuity, interruption, reversal, short-circuit, multiple faults and shield continuity.

7.1 Procedure



Ensure that cables are voltage-free.

Connect one end of the cable under test to one of the instruments and the other cable end to the other instrument via the RJ-11/RJ-45 sockets. Use the RJ-45 to coax adapter set (Z170A) for coaxial cables – two RJ-45 to BNC plug-in adapters and two BNC to F female plug-in adapters are included in the set.

Switch the instrument on. After switching the instrument on, it looks for another device at the other end of the cable. The search indicator rotates (see “Switching the Instrument On/Off”, on page 8).

As soon as both instruments have detected each other, one of them is automatically configured as the primary device (signal injector) and the other as the secondary device (signal receiver) (automatic primary-secondary mode).

Both devices then display the ascertained cable status. See “Results (examples)”, on page 11.

The results are displayed until another cable is tested or the instruments are switched off.

In order to test further cables, connect as described above. Make sure that the search indicator rotates and then stops again – results have not been updated until this process has been completed!

Second Instrument Not Connected or Found

In the event that no instrument has been connected to the far end of the cable or if the second instrument cannot be found (indicated by endless rotation of the search indicator), the attempt to establish connection can be aborted by pressing the on/off key. The instrument then attempts to determine the status of the cable from one end only.

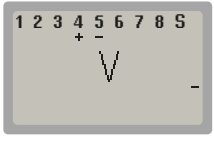
1 Necessitates optionally available RJ-45 to coax adapter set (Z170A).

Interference Voltage Protection

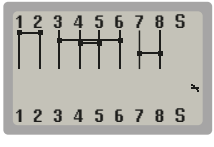
The instrument is protected against inadvertent contact with interference voltage of up to 60 V_{DC}.
If (interference) voltage is inadvertently applied, this is indicated by the instrument (see examples below). The following screen is displayed until interference voltage has been eliminated.

Eliminate interference voltage before continuing work!

Example 1: Analog Telephone Connection
Voltage at pins 4 and 5 with polarity display for the respective pins (pin 4 plus, pin 5 minus)

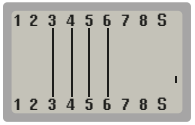
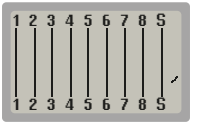
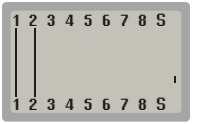
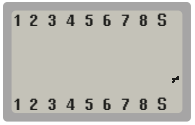
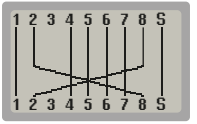
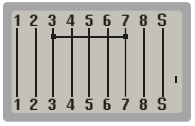
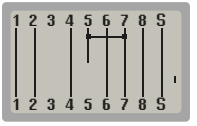
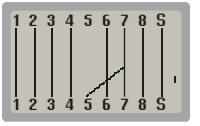


Example 2: Gigabit Switch at Far End of the Cable, Measurement at One End Only and Interference Voltage
If jumpers between the individual wires are displayed in the measurement results, this usually indicates an active switch at the far end of the cable. The number of wires in use (4/8) can generally be used for the allocation of 100 or 1000 MBit.



Results (examples)

The results are shown directly at the display.

RJ-11 cable, no errors, wires 3 through 6 connected. 	RJ-45 cable, no errors, all wires and shield connected. 	Coaxial cable, no errors, wires 1 and 2 connected (pin 1: inner conductor, pin 2: shield). 
Cable open 	Wires 2 and 8 reversed, wire 3 interrupted. 	
Short circuit between wires 3 and 7, all wires connected, short-circuit at the near or far end. 	Short-circuit between wires 5 and 7, wire 5 interrupted, short-circuit at near end. 	Short-circuit between wires 5 and 7, wire 5 interrupted, short-circuit at far end. 

8. Storage and Transport



Caution: Improper storage results in damage to the product.

Store the instrument in its packaging and protect it from environmental influences.



Caution: Improper transport results in damage to the product.

Transport the instrument in its packaging and protect it from environmental influences.

Transport the instrument only in the supplied pouch. The case which is available as an accessory is recommended as an alternative (refer to data sheet for details).

9. Maintenance

Cleaning: Keep the outside surfaces of the instrument and its accessories clean.



Caution: Danger of Injury

The instrument, the accessories and all connected conductors must be voltage-free before beginning, as well as during cleaning. Switch off the device and disconnect it from the power supply.

Never immerse the instrument/accessories in water or other liquids.



Caution: Damage to the Instrument

Never touch the instrument/accessories with wet hands.

Unsuitable cleaning agents such as aggressive or abrasive cleansers result in damage to the instrument/accessories.

Use a cloth for cleaning, which has been slightly dampened with water. Avoid the use of cleansers, abrasives or solvents.

10. Contact, Support and Service

Gossen Metrawatt GmbH can be reached directly and hassle-free – we have a single number for all of your needs! Whether you require support or training, or have an individual inquiry, we can answer all of your questions here:

+49 911 8602-0 Monday through Thursday: 8 a.m. to 4 p.m.
Friday: 8 a.m. to 2 p.m.
Or contact us by e-mail at: info@gossenmetrawatt.com

Do you prefer support by e-mail?
Measuring and Test Technology: support@gossenmetrawatt.com
Industrial Measuring Technology: support.industrie@gossenmetrawatt.com

Please contact GMC-I Service GmbH for repairs, replacement parts, and calibration:

+49 911 817718-0 Beuthener Str. 41,
90471 Nuremberg, Germany
service@gossenmetrawatt.com
www.gmci-service.com

11. Disposal and Environmental Protection

Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.



Caution: Environmental Damage
Improper disposal results in environmental damage. Follow the instructions concerning return and disposal included in this section.

The following comments refer specifically to the legal situation in the Federal Republic of Germany. Owners or end users who are subject to other national regulations must comply with the respectively applicable requirements and implement them correctly on site. Relevant information can be obtained, for example, from the responsible national authorities or national distributors.

Waste Electrical Equipment, Electrical or Electronic Accessories and Waste Batteries (including rechargeable batteries)

Electrical equipment and batteries (including rechargeable batteries) contain valuable raw materials that can be recycled, as well as hazardous substances which can cause serious harm to human health and the environment, and they must be recycled and disposed of correctly.



The symbol on the left depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end user (German electrical and electronic equipment act ElektroG and German battery act BattG) not to dispose of used electrical equipment and batteries with unsorted municipal waste (“household trash”). Waste batteries must be removed from the old device (where possible) without destroying them and the old device and the waste batteries must be disposed of separately. The battery type and its chemical composition are indicated on the battery’s labelling. If the abbreviations “Pb” for lead, “Cd” for cadmium or “Hg” for mercury are included, the battery exceeds the limit value for the respective metal.

Please observe the owner’s or end user’s responsibility with regard to deleting personal data, as well as any other sensitive data, from old devices before disposal.

Old devices, electrical or electronic accessories and waste batteries (including rechargeable batteries) used in Germany can be returned free of charge to Gossen Metrawatt GmbH or the service provider responsible for their disposal in compliance with applicable regulations, in particular laws concerning packaging and hazardous goods. Further information regarding returns can be found on our website.

Packaging Materials

We recommend retaining the respective packaging materials for the case that you might require servicing or calibration in the future.



Warning: Danger of Asphyxiation Resulting from Foils and Other Packaging Materials

Children and other vulnerable persons may suffocate if they wrap themselves in packaging materials, or their components or foils, or if they pull them over their heads or swallow them.

Keep packaging materials, as well as their components and foils, out of the reach of babies, children and other vulnerable persons.

In accordance with German packaging law (VerpackG), the user is obligated to correctly dispose of packaging and its components separately, and not together with unsorted municipal waste (“household trash”).

Private end consumers can dispose of packaging free of charge at the responsible collection point. Packaging which is not subject to so-called system participation is returned to the appointed service provider. Further information regarding returns can be found on our website.

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