GOSSEN METRAWATT D140C Easy Test System User Manual

Contents

GOSSEN

GOSSEN METRAWATT D140C Easy Test System

Safety Instructions

Read and follow these instructions carefully and completely in order to ensure safe and proper use. This document must be provided to everyone who uses this device. Keep for future reference.

General

- Observe and comply with all safety regulations which are applicable for your work environment.
- Always wear suitable and appropriate personal protective equipment (PPE).

Accessories

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

Handling

- Where technically possible, work must be carried out in the absence of voltage.
- For all other applications in which it is not possible to work under voltage-free conditions, perform a standards-compliant test to check whether the correct DC operating and/or nominal voltage has been applied. Do not work at voltages > 90 V DC.
- KE301, KE401, KE701, KE702 (Telekom), KE801, KE801 (Telekom), respectively ET300, ET400, ET720, ET800, P310, P410:
    - Do not use the devices to identify electrical cables and lines.
    - Do not work with these devices in electrical installations and systems.
- KE501 respectively ET500, P510:
    - Before starting with the identification of electrical cables, the equipment must be disconnected from all sources of voltage and the absence of voltage must be checked in compliance with the standards. Make sure that the absence of voltage is maintained and that the workplace is appropriately secured. Observe and comply with the requirements set forth in DIN VDE 0150-100 under all circumstances.
    - Do not work in CAT III or CAT IV environments.
- Only operate the device if it's in good working order. Inspect the device before use. Pay particular attention to damage, broken insulation or kinked cables.
- Accessories and cables may only be used as long as they're fully intact. Inspect all cables and accessories before use. Pay particular attention to damage, broken insulation or kinked cables.
- If the instrument or its accessories don't function flawlessly, permanently remove it from operation and secure it against inadvertent use.
- If the instrument or accessory is damaged during use, e.g. through falling, remove it from operation and secure it against inadvertent use.
- If internal damage to the device or accessories can be detected (e.g. loose parts in the housing), remove it from operation and secure it against inadvertent use.
- The instrument and the included accessories may only be used for the tests/measurements described in the instrument's documentation.

Operating Conditions

- Do not use the instrument after long periods of storage under unfavorable conditions (e.a. humidity. dust or extreme temperature).
- Do not use the instrument after extraordinary stressing due to transport. The instrument must not be exposed to direct sunlight.
- The instrument may only be operated in environments which comply with the specified technical data and conditions.

Batteries

- Only use fully intact batteries. Danger of explosion and fire with batteries!
- Inspect the batteries before use. Pay particular attention to leaking and damage.
- Do not use the instrument if the battery compartment cover has been removed.

Leads and Contacting

- Never touch conductive ends or wires.
- Ensure good contact.

Emissions

Only KE801 / KE801 Telekom / ET800
The device is a class 2 laser product that emits laser radiation (out- put < 1 mW at 650 nm) which can cause of eye or optic damage. Avoid direct eye exposure. Avoid eye exposure through reflection off

APPLICATIONS

Please read this important information! Intended Use/Use for

Intended Purpose

The devices of the EasyTest system are cable and line finders for different purposes.

In each case, a tone sender (ETXXO – short ET) and a contactless receiver (PXXO – also called Probe) are required. The ET feeds a search signal into a cable/line/wire/wire pair; which kind of cables/lines/wire/wire pairs are supported depends on the device. Where it is technically possible, work must be done free of voltage; the maximum allowed voltage is 90 V. In case of electrical cables/lines as part of a electrical installation/system work must always be carried out free of voltage. The maximum length of the cable/line/wire/wire pair is 15 km or 9.3 mi (no load).

Through scanning with the Probe, the signal can be found and traced (scanning range 60 cm or 23.6″). The signal is made audible by the Probe (speaker/earphone jack) and visually indicated (LED). Electrical cables, lines, wires and wire pairs can be found with this method. In addiction, errors and disruptions can be identified.

The devices can be bought individually or as sets (KEXOX) with accessories.

- ET300 (D130A) P310 (D130B) KE301 (D130C)
- ET400 (D140A) P410 (D140B) KE401 (D140C)
- ET500 (D150A) P510 (D150B) KE501 (D150C)
- ET720 (D170A) KE701 (D170C)
- ET800 (D180A) KE702 (Telekom) (D170D)

KE801 (D180C)

KE801 (Telekom) (D180D)

Recommended sender/receiver combinations (equals sets)

ET300	ET400	ET500	ET720	ET800
P3101	X (KE301)			

P410[1]		X (KE401)		X (KE701/ KE702 (Telekom))	X (KE801/ KE801 (Telekom))
P510[1]			X (KE501)		

Other sender/receiver combinations are possible in principle but the devices' individual functions will not be fully available due to the differing combination.
Can also be used with the network and LAN cable tester KE7200 for line detection. See product documentation KE7200.
All devices have a heavy duty housing. All Probes have a built-in torchlight for work in dark environments.

Purpose of Use
All: Finding of electrical cables/lines/wires/wire pairs, continuity testing, resistance testing.

Device/Set	*Connector*	*Applications*	*external voltage protection*
ET300 (D130A) + P310 (D130B) respectively **KE301 (D130C)**	• alligator clips • RJ-11	• telephone cabling	120 V AC
ET400 (D140A) + P410 (D140B) respectively **KE401 (D140C)**	• alligator clips • RJ-11 • RJ-45	• telephone cabling • IT • ISDN signal identification • network port test and port finder function (link blink function)	120 V AC
ET500 (D150A) + P510 (D150B) respectively **KE501 (D150C)**	• isolated banana plugs • plug-on test tips • plug-on extra-strong alligator clips	• electric installations • cable identification	**350 VAC**
ET720 (D170A) + P410 (D140B) respectively **E701 (D170C)** respectively **KE702 (Telekom) (D1?OD)**	• banana plugs • plug-on alligator clips • RJ-11 • RJ-45 • acoustic signals	• telephone cabling • IT • ISDN signal identification • network port test and port finder function (link blink function)	**120 V AC**
ET800 (D1BOA) + P410 (D140B) respectively **KE801 (D180C)** respectively **KE801 (Telekom) (D180D)**	• banana plugs • plug-on alligator clips • RJ-11 • RJ-45 • laser light source (1 mW / 2.5 mm universal ferrule/ for distances < 5 km) • acoustic signals	• telephone cabling • IT • network port test and port finder function (link blink function) • FO search	**120 V AC**

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

Use for Other
Than Intended Purpose Using the device for any purposes other than those described in the condensed operating instructions or these device operating instructions is contrary to use for intended purpose.

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 incorrectly respectively too late performed maintenance and servicing. Furthermore, all guarantee claims are rendered null and void in such cases. Nor does Gossen Metrawatt GmbH assume any liability for data loss.

Documentation Information Concerning
These Instructions Read these instructions attentively and carefully. They include all information required to use this device safely. Follow them in order to protect yourself and others from injury, and to prevent damage to the instrument. The newest version of this document is available on our website: **https://www.qmc-instruments.de/en/services/download-center/down-load-center/**

Descriptions of Instrument Variants
This documentation describes the devices of the EasyTest system in their variants. As a result, features and functions may be described which do not apply to your device. Furthermore, images may differ from your device.

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 female and diverse forms are of course always implied as well.

Trademark Law
Product designations used in this document may be subject to trademark law, brand law and patent law. They are the property of their respective owners.

Copyright

Scope of Delivery

- **KE301**: ET300, P310, protective bag, manual
- **KE401**: ET400, P410, protective bag, manual
- **KE501**: ET500, P510, 2 x plug-on extra strong alligator clips, 2 x plug-on test tips, protective bag, manual
- **KE701**: ET720, P410, 2 x plug-on alligator clips, protective bag, manual
- **KE702 (Telekom):** ET720, P410, 2 x plug-on alligator clips, protective bag, 2 x 9 V battery, adapter Ru-11 socket (6P6C) to TAE, manual
- **KE801**: ET800, P410, protective bag, manual
- **KE801 (Telekom):** ET800, P410, protective bag, 2 x 9 V battery, adapter RJ-11 socket (6P6C) to TAE, manual
- **ET300**/**ET400**/**ET500**/**ET720**/**ET800**: device, manual
- **P310**/**P410**/**P510**: device, manual

Please check for completeness and integrity.
Note: Per device, a 9 V battery is required to operate it which is not included in delivery (**exceptions**: KE702 (Telekom), KE801 (Telekom)).

Optional Accessories
Some applications require optional accessories. Detailed information can be found in the data sheet; this

documentation only mentions the accessory and describes it application.

Device Overview
For technical data please refer to chapter Specifications” auf Seite 39.

Receiver

- P310/P410/P510 The Probe is a contact-free test speaker that receives the signals sent by the ET and makes them audible. The green signal strength LED indicates the precise 1 kHz signal from the ET. Interfering signals, e.g. 50 Hz or the harmonics thereof, are filtered out. The P410 has an additional red LED, with which an ISDN UKO line can be found. This makes it easy to detect an active ISDN UKO line in e.g. distribution boxes.
- A flashlight function with pure white light guarantees clear color recognition of the wire markings in dark distribution boxes. The flashlight automatically turns on when the device is turned on and deactivates automatically when it is turned off.
- The test tip of the Probe is made of fiber-reinforced plastic with a bayonet lock for easy replacement on site without opening the device. For replacements see data sheet.
- At the lower end of the Probe there is a connection socket for an earphone (3.5 mm jack), with which signals from greater distances (up to 150 cm) can still be easily tracked.
- The Probe is switched on and is used by pressing and holding the HIGH or LOW buttons. The HIGH position is the most sensitive level for finding weak signals. In the LOW position, the found wire pair or cable is specified for

Symbols on the Device

 Warning concerning a point of danger (attention, observe documentation!)
 European conformity marking
 The device may not be disposed of with household trash, see page 37.

Tone Sender: ET300/ ET400/ET500/ET720/ET800

The ET is a tone sender which is connected to the end of the cable/line/wire/ wire/wire pair that is to be searched/tested (connectivity depends on product). Voltage resistance in case of accidental connection to external voltage: ET300/ET400/ET720/ ET800: 120 V AC ET500: 350 VAC

Switching on

After pressing the ON/OFF key, a tone is audible to confirm power-up (ET720/ ET800 only) and the ALT and SOLID LEDs light up briefly. For all other versions, depending on the position of the three-stage slide switch, the following LEDs are used as switch-on information: TONE mode = ALT LED flashes, DATA mode = DATA LED lights up in a dim green, CONT mode = CONT LED flashes briefly.

Switching off
Press the ON/OFF button for longer than 1.5 seconds. The ALT and SOLID LEDs light up briefly and it switches off; ET720 and ET800 sound a shutdown tone. The ET switches off automatically after 90 minutes. If it is needed for longer, the ON/OFF button has to be pressed twice within 1 second after the unit is switched on. To confirm that the timeout override mode has been activated, he SOLID LED flashes briefly. If TONE mode and SOLID are active, this function is taken over by the ALT LED. The ET720/ET800 will sound a short confirmation tone.

Low Batt – battery voltage monitoring
When the device is switched on and the battery falls below a voltage of approx. 6 V, the SOL LED flashes briefly three times every 60 seconds to indicate. In TONE mode, the ALT LED will flash instead.ET720/ET800 also emit a warning tone. ET will switch off automatically when 5 V is reached.

Symbols on the Device

 Warning concerning a point of danger (attention, observe documentation!)
 European conformity marking
 The device may not be disposed of with household trash, see page 37.
 Battery information

Initial Startup
The devices are powered with 9 V batteries (not included in delivery; exception: KE702 (Telekom), KE801 (Telekom)).

 Before inserting batteries, disconnect all test leads and turn off the device. Only use batteries according to the specification.

The battery compartments are on the backside of the devices. Open the battery compartments (Phillips screwdriver PH2 required), insert the batteries, and close the battery compartments again.

Operation

You can use the devices for different tests. To perform them, the ET is put into different modes through the switch on the right side of the device

- **TONE** = Sends a tone into the cable/line/wire(s) for finding and tracing
- **CONT** = continuity and resistance testing
- **DATA** = Network port test and port finder function (link blink function to

Identify ports on routers/switches/hubs) (ET400/ET720/ET800 only) In addition, you can find and test fiber optic cables (FO) (ET800 only)

Warning

- Where technically possible, work must be carried out in the absence of voltage!
- Do not work at > 90 V DC! In case of electrical cables/lines as part of a electrical installation/system work must always be carried out free of voltage!
- **ET**: The devices must be switches on before it is connected to cable/lines. Otherwise dangerous error states will not be detected immediately!

1. **1. TONE Mode-Search via Tone Signal**

   Information on the Search

- Tone The ET has six search frequencies and two sound modes (ALT/SOLID). After switching on in TONE mode, the ET starts in Altering mode. Pressing the SOLID or ALT key briefly (< 2 s) toggles between the two modes and this is displayed through the LEDs to the right of the respective key. If the SOLID or ALT key is pressed for longer than 2 s, the search frequency is toggled. The respective clear LED lights up briefly to confirm the keystroke and the selection. With the ET 720/ET800, a short confirmation beep and then the selected frequency is also audible. To select the next frequency, release the key, and press it again for longer than 2 s. In SOLID mode it is possible to switch between 1 kHz, 1.9 kHz and 577.5 Hz.
- In SOLID more, the frequencies can be switched between 1 kHz, 1,9 kHz, and 577,5 Hz In ALT mode, the frequency combinations 880 Hz, 1 kHz, 1.9 kHz, 2.6 kHz, and 577.5 pulses can be selected. The different frequencies can be used to distinguish the search devices.
- Ideally, the cables/lines/wires are voltage-free. However, the search signal can be fed into active (live but max. 90 V) telecommunication and data cables and lines without interference. ET400/ET720/ET800 are high-impedance for data signals, and thus it is possible to send search signals onto active telephone lines with ISDN and ADSL systems without data interference. The ET400 sends, contrary to the other ET, a sinusoidal signal instead of a square wave and also has an additional filter so that interference is reduced even further.

  Searching cables and lines

  To search for cables-also under plaster- and lines, the ET is connected to earth (e.g. protective conductor, water line) with the black test lead and to a single wire or a pair of wires with the red test lead. When searching for shielded cables/lines, the red test lead is connected to the shield and the black one to earth. If there is no shield, two wires (no pair!) are connected to the cable/ line. If the screen is earthed, it must be disconnected on both sides. To find and trace a coax cable, the other end must be open. If this is connected to a distributor, it cannot be found due to the shielding of the coax cable.

  In the case of telecommunication or data cables/lines with twisted wires, these must not be connected together.

- Switch on the device. The selected tone is transmitted. Now select the search frequency.
- If there is a short-circuit, the sound is sent into the cable in a similar way to interrupted twin wires and all wires are charged with it but only up to a maximum of 200 meters.
- The cable/line is searched for with the Probe and can be followed contactless with the Probe from a distance of up to 60 cm away from the cable.
- The Probe is switched on by pressing and holding the LOW or HIGH key. To find a signal from a greater distance or a weak signal, press the HIGH key. In the case of large cable/line bundles at a distributor or in a platform, the Probe is moved flat over the bundle while pressing the HIGH button at the same time.
- Once the cable/line with the strongest signal have been determined, press the LOW key to define the cable you are looking for with millimeter precision.
- The highest signal level is always above the cable. Searching Wire Pairs (Twin Wires).

  Searching Wire Pairs (Twin Wires)

- When searching for twin wires and discovering overloads, an ET test lead is connected to each core of a twin wire. In this case, it must be the twisted pair. This can be done automatically by plugging into a junction box or by connecting to the open cable end.
- Using the Probe and holding the HIGH button down, the pair is found at the other end or at each

distributor. To find the exact pair with the strongest signal, the LOW button is pressed. If the pair is twisted over the whole distance, then the exact pair is found. If, for example, there is a wire break or an exchange of a single wire (split) on the route, several wires with the search signal are found at the distributor. This then indicates a cabling error: Now you have retrace back to narrow down the error.

- For open cable ends, the procedure is similar. The wires are fanned out and the Probe is moved evenly above them while pressing down the LOW button. If the test tip of the Probe is now led over the wires, a high level is displayed over the first wire of the correct wire pair, a minimum level in the middle, and a high level again over the second wire. This identifies the pair exactly. If no minimum can be found, it is either the wrong pair of wires or there is a cable fault, e.g. caused by an interruption, an exchange, or an overcurrent (what is called a split pair).
- The ET sends the search frequency with approx. 12 dB also into cables/lines with a terminating resistor down to 50 0. Thus with the ET, a search tone can also be sent to telephone or data lines carrying supply voltage. The maximum cable/line/wire length is 15 km (unloaded).

2. **Mode CONT – Continuity and Resistance**
   - Testing If the slide switch on the right side of the ET set to CONT, the continuity test mode is activated. A test voltage is applied to the test lead. This way, the continuity of cables, lines, contacts, wires, or resistors up to 100 kQ can be tested easily.
   - The green CONT LED flashes briefly when the test has been activated or when the resistance at the test terminals exceeds 100 kg. It lights up from bright to dark, depending on the value of the resistor. This allows an approximate determination of the resistance. In case of EDP cabling, determining whether the cable is patched is thus easy and interference-free.
   - The ET720 and ET800 have an additional sound test mode built in. This replaces what is called a “beeper”. The frequency of the tone depends on the resistance. At 0 0 (short circuit) approx. 3 kHz and at approx. 100 kO 500 Hz are audible. This makes it possible to estimate resistance values. But capacitors and other components can also be easily tested in this way.

     Fast display of line status

     For live data lines/cables (90 V max.). The ET is high-impedance (~10 MS). The cable/line therefore will not be loaded. The status of the connection cable, for example, is displayed immediately after switching on and plugging the ET into the connection socket. How the ET is connected depends on the de- vice variant, e.g. directly with the RJ-11 plug, or with the optionally available TAE adapter or by simplv connecting to the wires using the crocodile clips.

     Free line

     Supply voltage up to 90 Volt DC (ISDN). The LED POL lights up and its intensity depends on the voltage level. Red: a/b reversed; green: correctly polarized, A wire or minus on red terminal. The ET additionally indicates with a bright red POL LED that the voltage on the test leads exceeds 90 V. This information can 31 also be used to identify the voltage at the ISDN U interface. Starting at 100 V, ET720 and ET800 sound an alarm tone to warn of high voltage.

     Busy line

     Supply voltage between 10 and 20 V DC. LED POL glows darkly. Red: a/b re- versed; green: correctly polarized. Useful e.g. at a distributor to check whether the line is busy or not. Alternating call voltage is indicated by the red and green POL LED lighting up. If the alternating voltage is AC only, the POL LED lights orange. In general, ET can be used to check any type of voltage source (max. 90 V) for polarity, to check the type of voltage and its approximate level.

     3. Mode DATA – Network Port Test and Port Finder Function (Link Blink Function)

(ET400/ET720/ET800 only)

If the slide switch is set to DATA position, the DATA LED lights up dimly green as indication. The additional yellow RJ-45 test lead is used for testing. Plugged into a network port, the green DATA LED lights up brightly in sync with the normal link pulse signal (NI P) if the network port is patched The NLP signal is transmitted every 4 seconds. This is indicates on the ET with a change in the blinking of the DATA LED and at the ET720/ET800 with a tone sequence. With the most common hubs, switches, or routers, the LINK LED belonging to the port is switched on and off in time with the signal?. This way, the port associated with the network socket can be identified.

3. **Finding and Testing Fiber Optic (FO) Cables (ET800 only)**

   The fiber optic test uses a laser light source with visible red light. The trans- mitting power is less than 1 mW (laser class 2).

   Warning: Never look directly into the laser beam!

   The universal socket is suitable for all common plugs with 2.5 mm ferrule. It has a bronze spring so that the ferrule is held firmly in the socket to prevent accidental unplugging. The ceramic material protects the ferrule against metallic impurities. If required, adapters are available from 2.5 mm to 1.25 mm (2180A), from 2.5 mm to POF (Z180B) and from 2.5 mm to SMA 905 (Z180C).

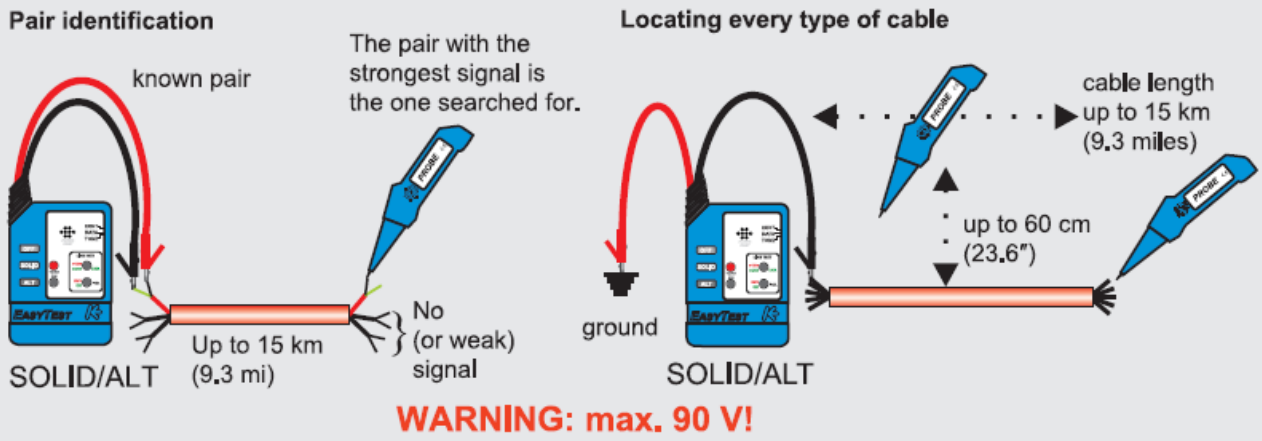
Testing Procedure

- Switch on the ET800 in TONE mode. Now plug the fiber optic cable with the ferrule into the universal socket. To switch on the laser source, press the **SOLID and ALT** keys together for > 1 s. The ET800 confirms the LASER.

  In some cases, the NLP signal filtering must be deactivated in the settings of the hub/ router/switch. mode with a power-on sound and a flashing ALT LED.
- At first the unmodulated mode is active. The FO signal flashes and correspondingly the ALT LED 1 × per second.
- To switch to the equally unmodulated constant FO signal Continuous Wave (CW), press the SOLID key. To change to the modulated mode, press the ALT or SOLID key > 2 s, de- pending on which signal you want. In each mode, 3 possible tone sequences are available which can be activated by pressing the key again for > 2 s. The tone sequence will be audible on the integrated speaker once right after switching In case that several fibers are to be distinguished, several ET800 can be used together but with different modes and in combination with suitable detection equipment connect to the end of the fibers.
- Independent of LASER mode, the laser light source can be used to detect small breaks in bad connections, strong bends and the end of the connected cable. The search distance is > 10 km, but depends on the fiber type.

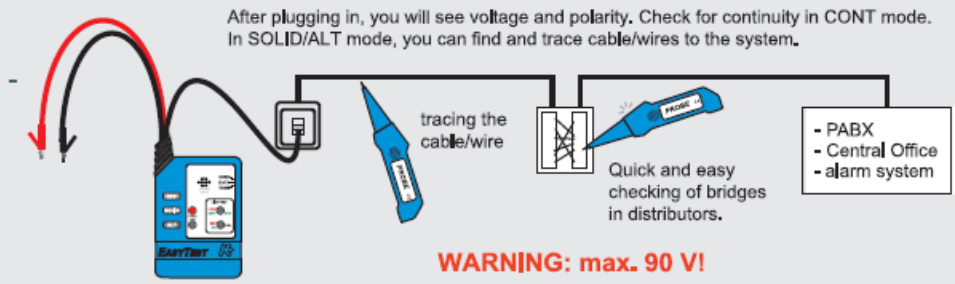
Overview – Applications

General



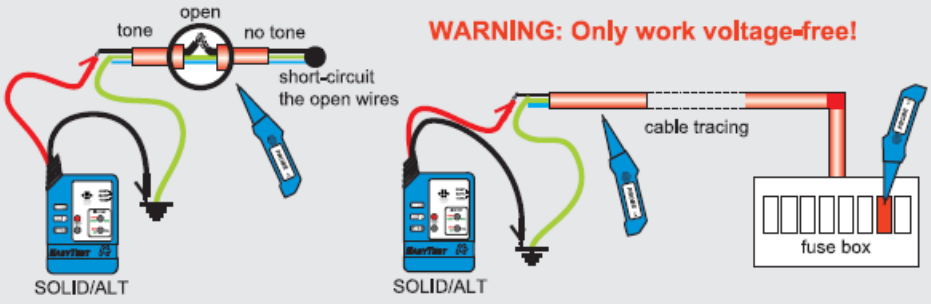
WARNING: max. 90 V!

Telecom



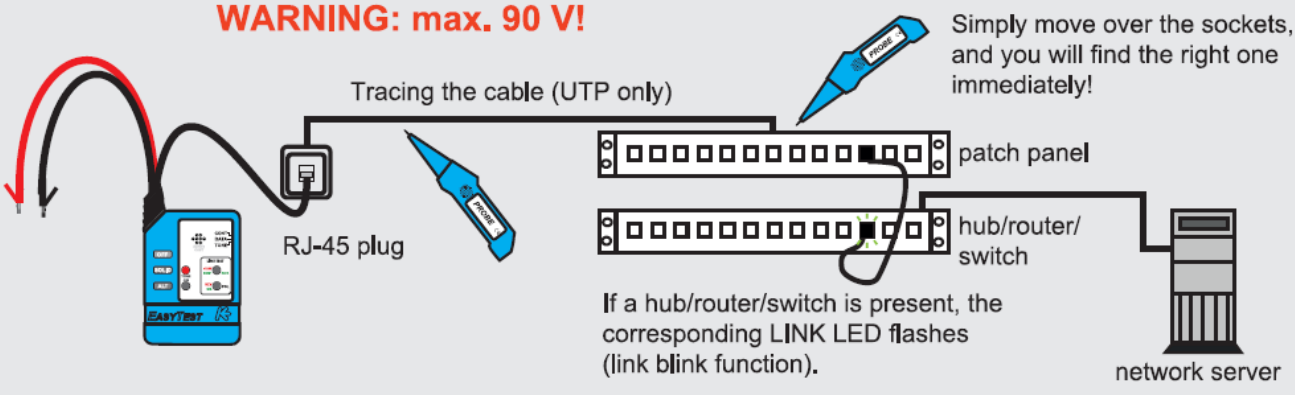
WARNING: max. 90 V!

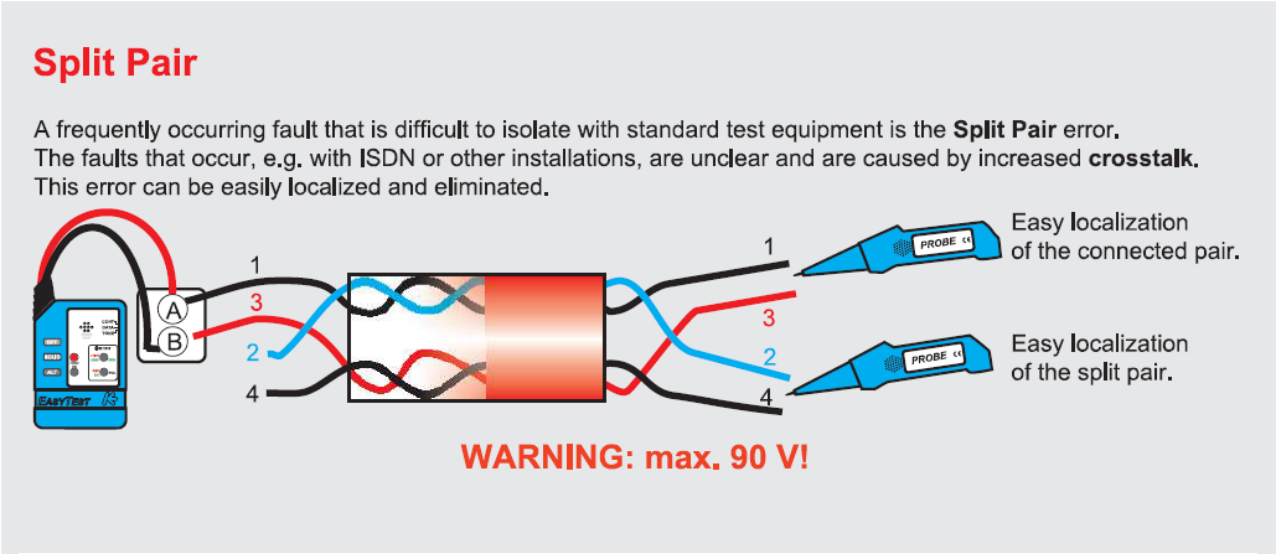
Electric

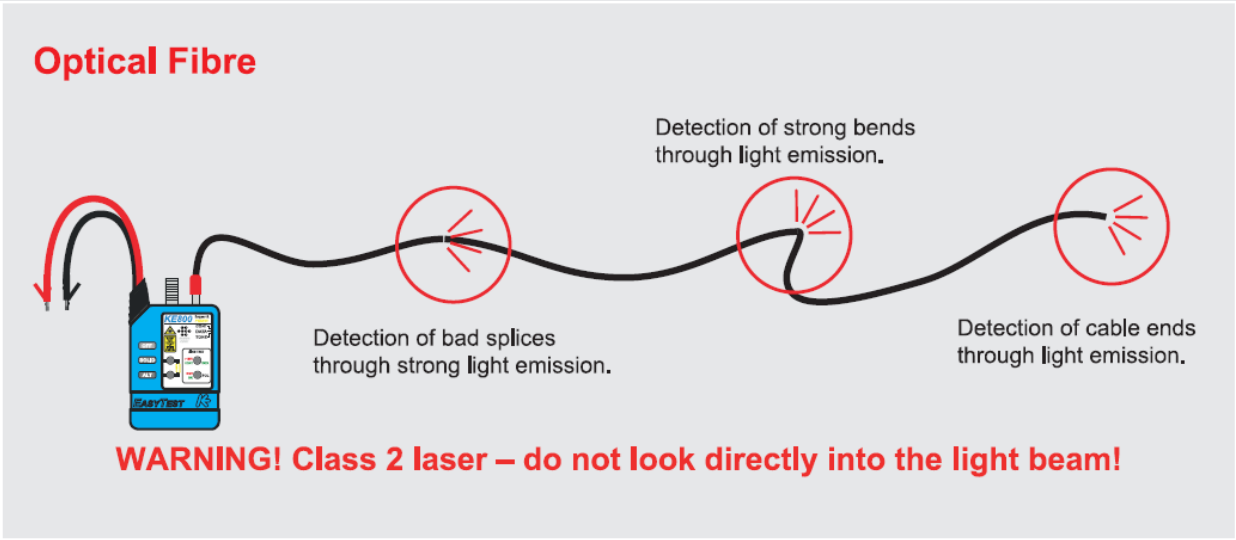


Data

WARNING: max. 90 V!







Storage and Transport

Attention: Improper storage damages the product. Store the device packed up and protected from environmental stress.
Attention: Improper transport damages the product Transport the device packed up and protected from environmental stress
Only use the included pouch to transport the product. Alternatively, we recommend the accessories which are available for the product (transport case). Details are specified in the data sheet.

Maintenance

Cleaning: Keep the outside surfaces of the instrument and any accessories clean.
Attention: Danger of Injury
The instrument, the accessories and all connected conductors must be voltage-free before and during cleaning. Switch the test instrument off and disconnect it from the mains power supply. Never immerse the instrument/accessories in water or other fluids.
Attention: Damage to the Instrument
Never touch the instrument/accessories with wet or moist hands. Unsuitable cleaning agents such as aggressive or abrasive cleansers result in damage to the instrument/accessories.

Contact, Support and Service
Gossen Metrawatt GmbH can be reached directly and simply – we have a single number for everything! Whether you require support or training, or have an individual inquiry, we can answer all of your questions here

- +49 911 8602-0 **Monday – Thursday**: 8 a.m. – 4 p.m.
- Friday: 8 a.m. – 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-/ Service GmbH for repairs, replacement parts and calibration
- +49 911 817718-0
- Beuthener Straße 41 90471 Nürnberg Germany
- **service@gossenmetrawatt.com**
- **www.amci-service.com**

Disposal and Environmental Protection
Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.
Attention: 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 Re- public of Germany. Owners or end users who are subject to other national requirements are required to comply with the respectively applicable national requirements and to 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 labeling. If the abbreviations “Pb” for lead, “Cd” for cadmium or “Hg” for mercury are in- cluded, the battery exceeds the limit 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 re- chargeable 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.

Specifications

- **ET300**/**ET400**/**ET500**/ **ET720**/**ET800**

  Housing
  - Heavy duty housing made from ABS, silicon rubber push buttons.
- **Test Leads**
  - **with strain relief ET300**:Two 10″ (25 cm) flexible PVC test leads with solid alligator clips, one with RJ-11 modular plug.
  - **ET400:** Two 10″ (25 cm) test leads with solid alligator clips, one with RJ-11 modular plug, one with RJ-45 modular plug
  - **ET500**: Two 15″ (39 cm) test leads with 4 mm banana plugs, plug-on test tips, plug- on extra-strong alligator clips
  - **ET720**: Two 10″ (25 cm) test leads with solid banana plugs, plug-on alligator clips, one with RJ-11 modular plug, one with RJ-45 modular plug.
  - **ET800**:Two 10″ (25 cm) test leads with solid banana plugs, plug-on alligator clips, one with RJ-11 modular plug, one with RJ-45 modular plug; laser light source.
  - **External Voltage Protection**
  - **ET300**/**ET400**/**ET720**/**ET800**: 120 VAC
  - **ET500**: 350 V AC
  - **ET500**/**ET720**/**ET800**:The Red alarm LED lights up if voltage on test leads exceeds approx. 90 V.
  - **ET500**/**ET720**/**ET800**: Additional alarm tone if voltage exceeds 100 V.
- **Searching Frequencies**

  Six frequencies selectable
  1. **SOLID**: 1000 Hz
  2. **ALT**: 1000/800 Hz
  3. **SOLID**: 2600 Hz
  4. **ALT**: 2600/1900 Hz
  5. **SOLID**: 577.5 Hz
  6. **ALT**: 577,5 Hz intermittent

     Accuracy < +/-0,5%
- **Signal Output with New Battery**
  - **ET300**/**ET500**/**ET720**/**ET800**

    Output Signal 9V pp square wave

10 dBm at 600 Ohm

9 dBm at 150 Ohm

7.5 dBm at 75 Ohm

Tone over shorted-circuited pair up to 200 m

- **ET400**
  - Output signal 13V pp sine wave
  - 7 dBm at 600 Ohm
  - 3 dBm at 150 Ohm
  - 0 dBm at 75 Ohm

    Tone over short-circuited pair up to 200 m
- **Trace Distance to Cable/Line/Wire/ Wire Pair**
  - Up to 23.6″ (60 cm)
- **Line/Wire/Wire Pair Maximum Length**
  - 15 km Up to 9.3 miles (15 km) at no load
- **Resistance testing**
  - In CONT mode ET300/ET400/ET500
  - Green LED increases in brightness from 0 – 100 kQ. Noticeable up to 100 kQ loop resistance.
  - In CONT-Modus / In CONT mode ET720/ET800
  - Additional resistance depending beeper. If there is a short, 3 kHz tone is audible. At approx. 100 kg 500Hz tone is audible.
- **Network Port Test and Port Finder Function (Link Flashing Function)**
  - only ET400/ET720/ET800
  - LINK LED flashes to identify connected active network port in 10 Mbit /100 Mbit connections.
- **Battery** 9 V (IEC 6F22, 6LR61, 6LP3146 etc.)
  - **ET300 ET400/ET500/ET720**: ca. 100 h
  - **ET800**: ca. 20 h bzw. 10 h bei Laser CW Battery life depends on type and state of model
  - **ET300 ET400/ET500/ET720**: approx. 100 hrs
  - **ET800:** approx. 20 hrs respectively 10 hrs with laser CW

    Low Batt indicated by flashing LED, ET720/ET800 additional warning tone

    Auto shut-off after 90 min. Auto shut-off can be deactivated.

Other Specifications

- LED Device on indication by LED
- ALT indication through blinking LED
- SOLID indication through steady LED
- Separate battery compartment
- **Dimensions**

  68 x 96 x 25 mm/ 2.68″ × 3.75″ x 1.0″
- **Weight**

  150 g

  Batterie 150 g / 2.4 oz without battery
- **Optical Fiber (only ET800)**

  Laser source

- **Wavelength**: 650 nm Optical output power. < 1 mW
- **Maximum FO length**: > 10 km (> 6 miles)
- **Singlemode fiber 9/125 um**: max. 600 W
- **Multimode fiber 50/125 um**: max. 600 W
- **Operating Mode**: continuous wave (CW) and pulse mode with 270 Hz / 1 KHz
- **Laser class**: 2 : 2,5 mm
- **Suitable Ferrule**: 2.5 mm
- **(DIN, E2000, FC, SC, ST)**; adapters optionally available) to 1.25 mm or POF or SMA (905)
- **P310/ P410/P510**
- **Casing** Solides, Heavy duty ABS casing

Specifications

- High impedance carbon fiber tip
- Test tip easily exchangeable through bayonet lock
- Signal strength LED with filter function
- LED Torch light function with bright white LEL 3,5 mm
- Separate battery compartment
- **Battery**

  9 V (IEC 6F22, 6LR61, 6LP3146 etc.) ca. 100 h

  Battery life depends on type and state of model ; approx. 100 hrs
- **Dimensions**

  220 x 40 / 34 x 25 mm

  8.7″ × 1.57″/1.34″ × 0.98″

  Weight 80 g ohne Batterie / 1.28 oz without battery
- **ISDN indication (only P410)**

  Additional LED will light up if ISDN signal is received .
- **ALL**

  Declaration of Conformity

  The device was manufactured according to the following guidelines.

  LVD directive 2014/35/EC

  RoHS directive

  FMC directive 2014/30/FC

  EN 61010-1, EN 61326-1, EN 61326-2-1

CE Declaration
The instrument fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark. The CE declaration is available on our website
https://www.gmc-instru-ments.de/en/services/download-center/download-center/

Documents / Resources

	GOSSEN METRAWATT D140C Easy Test System [pdf] User Manual D140C Easy Test System, D140C, Easy Test System, Test System, System

References

- User Manual