GOSSEN METRAWATT

Operating Manual

Ethernet Performance Tester
KE7200

LAN Cable Tester
KE7100

Operating Manual

KE7200 / KE7100

Kurth Electronic GmbH

All of the brand names and trademarks cited herein are the property of their registered owners.

Introduction

The *KE7200 / KE7100* you purchased is an easy-to-operate, intuitive LAN tester.Please read the entire instruction manual first to help you use the *KE7200 / KE7100 effectively*.

The device was manufactured according to the following guidelines:
EMC directive 2014/30/EC
EN 61326-1:2013
EN 61326-2-1:2013
LVD directive 2014/35/EC
EN 61010-1:2010
EN 61010-2-033:2012
RoHD directive 2011/65/EC
WEEE compliance 2012/19/EC

Should you have additional questions regarding the operation and use of this device, please contact:

**Ethernet com port
Test port**

Display

ID:4 568A STP   VF:66%
1 2 3 4 5 6 7 8 S   Länge
                        40,1m
1 2 3 4 5 6 7 8 S
Details SEL Speichern Test Type

KE7200 Ethernet performance tester

ESC (back) button

ESC
x

SEL (enter) button

SEL
✓

**Menu
UP – DOWN
controls**

Menu
LEFT – RIGHT
controls

ON-OFF button

www.kurthelectronic.com

KURTH ELECTRONIC

ON-OFF

KE7200 / KE7100

Safety Instructions

The *KE7200 / KE7100* may only be operated with the accessories originally provided. Using the device with accessories that are not original or for applications for which it was not intended can lead to incorrect test results and may damage the device.
The relevant safety regulations in VDE 0100, 0800 and 0805 must be observed.

- The use of cables other than those provided can damage the device. The device should not be connected to high voltage sources such as AC power circuits. Kurth Electronic assumes no liability for damage resulting from improper use.

- Never open the device. There are no parts in the device that need to be serviced or calibrated. To change the battery, open the battery compartment. See the instructions in Appendix A.

- The tester is protected from splashing water and dust by the front covering. It is not water-tight, however.

- Never pull unnecessarily on the device's cables. To hang it up, use the eyelet in the device and the provided strap.

- For end-to-end cable testing, only use the KE7010 test remote that was supplied or which can be ordered.

Operating Manual
KE7200 / KE7100

Table of contents

Operating Manual

KE7200 / KE7100

KE7200 / KE7100

Applications:

Testing and starting up 10/100/1000 Mbit LAN networks,
Verifying new LAN installations
Troubleshooting existing LAN installations
Logging network tests
Cable mapping
Fault finding
Testing PoE/PoE+/PoE++ performance
Measuring length, finding cables of all kinds, coaxial cables,
etc.

KE7200 only:
IP tests; static or with DHCP
Ping and stress tests
Storage of Measurements

Measurement and display of:

Cable test
- Mis-wiring
- Short circuit
- Open circuit
- Split pair
- Length of cables and wires with TDR up to 150 m
- External voltage

Power over Ethernet
- PoE Version A or B
- Available power in Watts according to IEEE 802.3af/at/bt
  up to 90 watts

Cable/port
- Link Light Blink with Normal Link Pulse
- Transmit 4 different trace tones

KE7200 only:

Test active 10/100/1000 Mbit network
- Information about service type
- Static IP or DHCP
- Network scan
- List all found subscribers
- Display name, IP address, MAC address
- Targeted ping of individual addresses
- Display lost responses, min/max/average response times
- Stress test devices by constant ping
- Ping frame size adjustable from 32 to 1024 bytes

Other
- 16 different predefined wiring versions
- Original predefined versions can be created
- Cable types with predefined VP value
- Original cable types can be created
- Illuminated graphical display
- Automatic shutoff time can be set
- Display illumination time can be set

KE7200 only:
- Save the results in the device and PC
- Printout using a PC with the KE Manager software

Remote KE7010 unit
- Active remote unit with microprocessor
- Display of pass/fail with green LED
- Remote ID programmable from 1– 32
- Max. 32 remotes

Power supply
4 x UM-3 / AA battery or 4 x rechargeable batteries of the
same size

Battery life with a good quality battery
(such as a GP Super Alkaline or Varta Industrial)
Measurement always with the illuminated display

- Powered on with no testing: approximately 40 hours
- Cable test without remote: approximately 35 hours
- Cable test with remote: approximately 18 hours
- IP test: approximately 15 hours

The available testing time can be extended by turning off
the device or limiting the display lighting time.

**Note: Testing is continuous. Different durations may
result with batteries of different quality. Only use
batteries from the same manufacturer with the same
capacity. Remove the batteries if the device will not be
used for a long time. If the battery compartment is
damaged by leaking batteries, it can be exchanged.**

KE7200 / KE7100

Using the KE7200 / KE7100

Keypad

When the KE7200 / KE7100 was developed, emphasis was placed on
fast and easy operation. For this reason, the KE7200 / KE7100 has only
seven buttons despite its many test options.

ESC
Similar to a PC, the ESC button means "undo the last step."

ON/OFF
Button for turning the device On and Off. This button has a delay of
approx. 1 sec. when turning off.

Four arrow buttons
The arrow buttons are for menu scrolling UP▲ /DOWN ▼and LEFT◄
/RIGHT►.

SEL button
The SELECT button. Press this button to select a function or start a test.
Similar to a PC Enter key.

Test settings

Wiring (Main menu>Setup>Wiring)
You can select from the list of different possible types of wiring (which pin
to which wire). This can even be changed during the cable test. It is
important to precisely specify the correct type of wiring because a
Pass/Fail result relies on it. The proper identification of errors in the case
of split pairs also requires a precise definition.
Sixteen popular versions are predefined. The following abbreviations are
used:
UTP = **U**nshielded **T**wisted **P**air in a cable
STP = **S**hielded **T**wisted **P**air in a cable
CR = cross connected cable

Velocity (Main menu>Setup>Velocity)
This is the propagation velocity (VP) of the signal in the cable expressed as a fraction of the speed of light. This information is necessary to measure length with the TDR function. The value must be correct if the measurements are to be precise.

Obtain the VP data from the cable manufacturer. If there is no data on the cable, the VP factor can be determined from a piece of cable with a known length.
First perform the *cable test* on this piece of cable without a remote. After the test is finished, go to the *Velocity* menu. The measured length for the set VP is displayed here. Press the ▲ or ▼ buttons until the known cable length is displayed. The displayed VP value is the one that will be used for this cable. You can then create your own table definition in the *Test settings/cable definition* menu.

Cable Type (Main menu>Setup>Cable type)
You can retrieve the cable definitions. Seven different cable types with the VF factor are predefined.

Device settings (Main menu>Setup>Device setups)

These are preset values and can be left unchanged. If needed there is a selection to "Reset to defaults." The possible control selections for the menu are shown on the bottom status line.

Language
Select German (default)
or English

Units
m (meters) or ft (feet)

Battery type
The KE7200 / KE7100 can be operated with 4 AA batteries, or 4 AA rechargeable batteries. Since the voltage is lower with rechargeable batteries, the capacity display can be changed to reflect primary batteries and rechargeable batteries.

Back light
Duration of back lighting each time a button is pushed in seconds. Set the time with the ▲ *or* ▼ button, select with **SEL**.

Auto power off
The time when the tester automatically turns off after the last button has been pressed. Set with the ▲ *or* ▼ button, select with **SEL**.

Key beep
On or off

Sound
On or off. This sound occurs when the cable test finishes.

Contrast
LCD contrast setting value, default: 14. Set with ▲ or ▼, confirm with **SEL**

Reset to factory setting
All of the settings are reset to the factory defaults.

Program update
If new or improved functions or possibly bug fixes will be available, they can be installed in conjunction with the KE7x00_FLASH.exe. Run the program, connect the tester via Ethernet cable to the PC and start the update process under **Settings / DeviceSettings / Program update**. For the update, all data must be deleted, run this by simultaneously pressing the **<** and **>** keys, then enter the in the FLASH program displayed IP address. Herewith the update process is finished and the tester is equipped after a restart with the new firmware.

Test settings
(Main Menu>Setup>Test Setups)

Cable definition
You can select from the list of the different cables in use. The cable type is assigned to the name and associated VP value. The VP value is needed for measuring length. The cable type only appears in the saved or printed results. Enter the cable that is being used.
You can create your own definitions. See Appendix A.

Wiring definitions
Approximately 16 different wiring versions are predefined for your selection. You need to correctly choose the wiring version to be tested to obtain Pass/Fail information. This information must be correct (pin to pair assignment) to test for crosstalk.
With the KE7200 / KE7100, the wire to pin assignment is checked and the correct pair assignment is also checked. This is done with a high frequency test signal to provide true results.
You can also create your own versions in this menu. See Appendix A.

Remote ID
KE7010 remote test units are all delivered with a number "32" identity for simplicity.
With the *Remote ID* function from the *Test Setup* Menu you can set any KE7010 remote to any ID number from 1 to 32. After changing the number, write down the new number with a pencil in the label space on the remote.

MAC address - KE7200 only
The KE7200 comes with a MAC address set. All of the testers have the same address when delivered. To work in networks with MAC address verification, the address can be set to any value in this menu

IP address (Main menu>Setup>IP address)
The IP address of the *KE7200* is preset but can be changed. This address is used as the device address even during the IP test, for example as a static network address.. Simply set the address with the ▲ and ▼ / ◄ and ► buttons and save with **SEL**. The change can also be made directly during the IP test in the same manner.

Testing with the KE7200 / KE7100

The *KE7200 / KE7100* checks the connected line for external voltage each time before starting one of the four possible tests. If external voltage is present, the test is not started and the level of the voltage is displayed in volts. The test may only be run after the external voltage has been turned off.
External voltage does not have anything to do with PoE during this type of detection. With PoE systems working properly, the voltage supply always needs to be activated.

Cable test (Main menu)
The cable test can be run with or without the KE7010 remote unit. If it is run without the 7010 remote, only cable length is measured and a split pair check is done.

When the remote unit is connected to the end, measuring the length using the TDR method is accurate enough to determine if a cable is within the 90 meter maximum length standard. This test can measure a maximum of 150 m.
We recommend measuring the length of installed cables separately without the remote. This measurement of length is more precise since a specific end is detectable without the remote.

Performing the test
Using the supplied patch cables, connect up to 32 remote units to the ports to be measured. If only one remote is being used, the remote needs to be brought to the next connection point after the test. When using a helper, the helper can determine whether the test yielded any errors by the flashing rhythm of the LED. If no errors are found, the LED flashes slowly once every second and the remote can be brought to the next port. We generally recommend using several remotes, one for each room. With 32 possible unique remote IDs somewhat larger facilities or a section of a facility can be easily covered.
The main advantage is that it saves time since only one person is required. The unique remote ID numbers show up in the saved records, too.

With the 0.5 m patch cable, connect the *KE7200 / KE7100* (supplied) to the port to be tested in the patch panel or wall jack.
On the Main menu select "Cable test," start the test by pressing the SEL button. The message "Cable test running" indicates that the test is underway and the progress is displayed as a percentage. If the test is without errors, a long beep sounds and the okay checkmark is shown in the display. The LED in the remote flashes once every second signifying a Passed test.
If an error is found, two short beeps sound, the LED in the remote flashes quickly 4 times (0.5 seconds in length), then pauses for one second, and then flashes again quickly 4 times, etc.
The number of the remote unit is always displayed in the *KE7200 / KE7100* at the top left of the display. This is followed by the type of cable wiring selected. This can be changed by pressing the ▼ button. Then the set VF value is displayed. It is either selected by choosing a cable type, or by setting it directly beforehand.

The wire mapping is displayed in the main window. This clearly identifies any circuitry errors. Split pairs are displayed with a branch to the linked wire which then returns. The measured distance to the panel appears in right field. Distances of less than 2 m are not shown. The measurement is too imprecise at this close range.

The maximum length that can be measured is approximately 150 m. However, this depends on the cable itself.

The bottom display line is the dialogue line. The possible operating steps for the current test are displayed in this line.

Navigate with the ◄ / ► buttons to see the identified details per wire. This allows for example an open or short to be clearly assigned to the near or far end. If the fault is somewhere in between, then its location is indicated in meters.
The ◄ button reveals the length of the wires and the ► button indicates the number of errors, type of errors, the affected pin, where it should be and where it actually is, if misconnected, as well as the distance to the fault. In the case of split pairs, of course only the linked pair can be defined. Sometime individual couplings between other wires can be identified. Because of the split pair, the crosstalk also relates to other neighboring wire pairs. **Make sure that the selected wiring version (such as 568A) corresponds to the actual cabling.**

Save the data - KE7200 only
After the measurement has been taken, you can either exit measuring by pressing ESC, or you can save the measurement. Press the SEL button to open the *Save the data* menu. The default name of the measurement is displayed, followed by a number. A unique name must be provided if you want to associate the data at a later time. We recommend the customer name or number. Enter the name by pressing the ▲ or ▼ button. This allows you to scroll through the alphabet and numbers 0-9. Press SEL to enter the desired character. Change the cursor position by pressing ◄ and ►.
The name remains entered until it is overwritten. That is, if the customer remains the same, you do not have to change anything when saving the next measurement. The number of the measurement is automatically incremented. Afterward, you can sort, print out and save based on the customer number or name. Remember that this setting may need to be changed before starting a series of measurements at a different facility. The available memory is displayed in the second line. A total of approximately 14,000 entries is possible.

KE7200 / KE7100

Cable/wire trace
The *KE7200 / KE7100* has two different ways of identifying a known jack on the patch panel, switch or hub. Insert the test cable of the *KE7200 / KE7100* into the outlet box in the room and select Test Link/Blink in the *Cable/wire trace* menu. This only tests if the box is active in the network. The response is displayed in the status line. If there is an active connection, the message appears: "Ethernet 10/100/1000 Mbit connection"
and only the identified speed is displayed.
If the port is not active, "No connection" is displayed. Then you can switch to one of the 4 tone transmission modes. The trace tone is transmitted on all of the wire pairs. The assigned port in the patch panel can be clearly identified with the PROBE.

PoE/PoE+/PoE++ test per IEEE 802.3af/at/bt
Start the test by pressing the SEL button. The *KE7200 / KE7100* activates the PoE port and shows in the display whether the PoE is available or not. If the PoE can be activated, it is. Then the maximum load is applied to drain the cable charge. The maximum available power is then measured. This is done according to IEEE 802.3af/at and to IEEE 802.3bt. The standard regulates the voltage that can be on the line when a specific current is flowing. If the voltage is below the standard value, the *KE7200 / KE7100* reduces the load until the voltage lies within the normal range. This power is then calculated and displayed. **Start the test new for each measurement.**
This information is important in every network with PoE powered devices since faults repeatedly arise because the power supply in the switch has reached the limit. If a small, additional load is created, for example from different operating conditions such as turning on an infrared light, the network fails and the switch only provides the emergency power. This situation cannot be detected without the proper test equipment.

IP test – KE7200 only
In the IP test, the *KE7200* can search the network for IP addresses and users. This can be done in DHCP mode or with a fixed IP. If the network is also monitoring MAC addresses, the MAC address of the *KE7200* can be changed.
First, DHCP mode is started by selecting "IP test/DHCP request". A connection to the network is established. Once this is available, it is shown in the status line. The IP address allocated to the *KE7200* via DHCP is displayed. The search for allocated IP addresses starts immediately in the assigned address space. The number found is also displayed. The *KE7200* then queries all of the addresses for information

which it lists. If names are available, they are displayed; if not, only the IP address is displayed.

This procedure can take a while, especially if there are many users in the network. You can monitor the changing of the found IP addresses.

"Network" is displayed at the top position. Press SEL to show general network information such as the connection speed, the actual IP address and netmask. Press the ▼ button to go to the next page. The following is displayed:

Domain name of the network
IP address of the DNS server
IP of the DHCP server
IP of the router

Press SEL to save these data.

Press ESC to open the user list. When a user is selected, the IP and MAC address are displayed in addition to the name. This address can then be pinged in this menu.

Select SEL to open the PING menu. The range is displayed in the top left corner. This can be changed from 32 to 124 bytes with the ▲ / ▼ buttons.

Start pinging by pressing SEL.

The **KE7200** continuously transmits pings to the selected address. This is done at the maximum speed so that a stress test is simultaneously performed for all components.

The success of the test is displayed by the number of sent pings and the number of lost pings. Then the maximum, minimum and average response times are displayed.

Transmit measurements - KE7200 only

The saved measurements can be sent to the KE Manager for further use.

Start the Manager on the PC.

Connect the **KE7200** to the PC using an Ethernet cable. In the main menu, select "*Transmit measurements.*"

The saved data are transmitted immediately after synchronization and appear in the Manager window. The **KE7200** can now be disconnected from the network.

If there are no saved measurements, this is reported.

The data on the *KE7200* can be deleted. If they should not be deleted, press ESC.

Appendix A

Changing the battery

Changing batteries:
First loosen the two bottom screws in the bottom bumper. Pull the bumper downward.
The four AA batteries are in a holder. Remove the old batteries and replace them with new batteries. Note the polarity. Do not combine new and old batteries. Always use batteries of the same type and date of manufacture.
Return old batteries to the supplier or a recycling facility.

Test settings

Cable definitions (Main menu>Setup>Test setups>Cable definition)
You can enter the different types of cables used. The types which already have been entered can also be overwritten.

After selecting the cable type to be changed or the last position without an entry, select it by pressing SEL. The display shows "Name:". You can enter a unique cable name. Fifteen characters are available. At the flashing cursor position, press the ▲ and ▼ buttons to scroll through the alphabet and the numbers 0-9 including a space. Select the character or number at the cursor position by pressing SEL. Once the name is entered, confirm it by pressing SEL. The following appears:

"Velocity: xx%". This is the percentage velocity of propagation (VP) in the cable in relation to the speed of light. Enter either the value indicated by the cable manufacturer, the previously determined value, or an approximate value. The value is approximately 64 – 68 for telephone and Cat3 cables, approximately 72 for Cat5/6, and approximately 77 for Cat6/7.

Note that the cable lengths can only be correctly measured when the VP is correct.

After entering the VP value, save it by pressing SEL. This allows you to quickly and easily predefine the cable types that are being used.

Wiring definitions (Main menu>Setup>Test setups>Wiring definition)
You can add to the wiring versions used. E.g., "568B UTP".
It is helpful if you write down the pin/pair assignment of the wiring version to be created.
Sixteen common versions are predefined. The abbreviations UTP, STP, and CR are described on page 10 under Wiring. The list appears after the menu item "*Wiring definition*" is selected. The first item is "NO TEST". Do not change this one.
After selecting a wiring version to be changed or the last "*NOT USED*" item, the "*Name:*" menu appears
You can enter a unique wiring name such as "568C." Fifteen characters are available. At the flashing cursor position, press the ▲ and ▼ buttons to scroll through the alphabet and the numbers 0-9 including a space. Select the character or number at the cursor position by pressing SEL. Once the name is entered, confirm it by pressing SEL.

The "*Connections*" menu appears. The assignment
PIN to PIN and wire pair can be made that corresponds to the wiring version. This assignment is needed for identifying split pairs and good/bad information after the test. The scroll bar is at

Pin	to	Pin	line pair
1		*NC*	*none*.

Select it by pressing SEL. You are then in the menu

"*Connection to pin 1*"

An option appears where you can select all 8 pins that can be assigned to pin 1. Press the ▲ and ▼ buttons to select the right pin and press SEL.

You then go the menu

"*Pair*"
You can now assign the selected pins to a pair by pressing SEL.
You then go to the menu

"*Connections*"

19
KURTH ELECTRONIC FERNMELDETECHNIK

The assignment of the first pin is displayed. Press the ▼ button to move the scrollbar to the next item and continue as before with the assignment.

The assignments cannot be deleted. If you make incorrect assignments while practicing, you can correct them. As an alternative, you can select the item "Device settings/reset to defaults." This resets all definitions that you have created.

KE Manager - KE7200 only

Installing the KE Manager

Run the KE Manager, **supplied as KE7200_manager_setup.exe**, on the PC you will be using for test records. The program is installed and an icon is created on the desktop that you can use to open the Manager. A new icon is created for any updates. Before starting the new installation, you should therefore delete the old icon from the desktop to prevent any confusion.
The directory *Kurth_Electronic* is created in the program folder.

The KE Manager is only available in a Windows version. Operating systems: Windows 2000 – Windows 7, 8.1 and 10

Functions
The KE Manager is a flexible tool for managing the *KE7200* and downloading measurement data. It has the following functions:

- Configuring the Manager
- Setting the language
- Displaying the *KE7200* hardware version
- Displaying the current device software version
- Displaying the operating instructions
- Downloading saved tests
- Supplementing downloaded data
- Printing and saving tests
- Retrieving saved tests
- Uploading/downloading between the *KE7200* and the PC

PC setup
The PC must have at least one free Ethernet port.

Starting the KE Manager
After the program is opened, double-click the Manager icon to start the Manager and display its version number.
A few settings are necessary. After connecting the *KE7200* and starting "*Transmit measurements,*" the data are sent to the Manager.

The following selection options are offered:

Load data (PC)
Saved test sequences can be reloaded here.

Save data
Sequences loaded by the *KE7200* are saved on the PC or on the network.

Save displayed data
After the data are selected, they are saved as a separate list.

Delete selected line
A line is deleted.

Print data
A print version is created and can be printed on any printer.

Print options
You can indicate a graphics file as a header for the printout of the test reports.

Configuration table
The display of the shown data can be changed here.

Update
If new or improved functions or possibly bug fixes will be available, they can be installed in conjunction with the KE7x00_FLASH.exe.
(see page 12)

Manager function

After all the records have been downloaded from the *KE7200*, the data or measurements may be from different customers.

However this assignment must be performed on site when saving. See
[Save measurements](#)

Selecting/sorting by customer
The selection "Display the following measurements" is at the top left. A
list opens with all the saved records. You can then select the customer
whose records you want to compile, comment on and print as a log.
You can then save the selection with "*Save displayed data*" by specifying
your information (customer name, number, etc.).

Customer address
In the bottom section, you can enter the customer address, technician
and any comments.
The address entered in the first record is output as the first item in the
log. You can then enter the technician, room name and comments
separately for the individual records.

Display results
The saved results from the selected line are displayed again at the
bottom right.
The results are output as a wire map and error list.

The footer provides information about the connection status and the
language.
The IP list is shown on the second page. The use and information are the
same as the first page.

Operating Manual

KE7200 / KE7100

Overview of technical data

KE7200 Ethernet Performance Tester / KE7100 LANcheck

Copper wiring test:
Test of the data line assignment with the pin and pair assignment.
Sixteen predefined connection versions; easily create your own definitions as simple as single pair.
Clearly laid-out graphic display for quickly identifying errors.
Identification of split pairs (crosstalk) starting at 2 m with a graphic display.
Measure the individual wire lengths with TDR and display in m or ft.

Power over Ethernet (PoE) test:
Activate PoE functions, measure voltage and determine power available according to IEEE 802.3af/at/bt

IP network test:
Connection by either DHCP or static IP
Set your own IP and MAC address
List active stations by name (if defined), IP and MAC address
Ping test of selected addresses, the ping range can be set from 32 to 1024 bytes
Display ping results for received/lost and times

Cable trace:
Link - blink function with NLP
Trace tone for tracing cables with capacitive probe
Choose from four frequencies:
1. SOLID: 1,000 Hz
2. ALT: 1000/800 Hz
3. SOLID: 2,600 Hz
4. ALT: 2600/1,900 Hz

Surge projection:
Up to 100 V

Housing:
Sturdy and impact resistant, weather resistant ABS housing

KURTH ELECTRONIC FERNMELDETECHNIK

Power supply:
Four 1.5V alkaline batteries provide a life greater than 40 hours
or four NImH rechargeable batteries with an operational lifetime that
depends on the capacity.
Neither is included.

Dimensions:
195 x 100/78 x 45 mm (7.7 x 3.9/3.0 x 1.8 inches)
Weight:
380 g (14 ounces) without battery
Operating environment:
Operating temperature: -5 to +50°C
Storage temperature: -25 to +75°C
Relative humidity: 90%, no condensation

Basic model of *KE7200* comes with:
KE7200 network tester; 2 KE7010 remote units; 3 shielded CAT6 test
cables, 0.5m long; 1 RJ45/RJ11 test cable, 4/5 pin, 2m long; 1 RJ45 test
cable with two 4-mm banana plugs with alligator clips, 2m long; 1
RJ45/BNC adapter; 1 BNC/F adapter; software for Windows; operating
instructions and protective pouch

KE7100 comes with:
KE7100 network tester; 1 KE7010 remote units; 2 shielded CAT6 test
cables, 0.5m long; 1 RJ45/RJ11 test cable, 4/5 pin, 2m long; 1 RJ45 test
cable with two 4-mm banana plugs with alligator clips, 2m long; 1
RJ45/BNC adapter; 1 BNC/F adapter

KE7010 active remote unit
Housing:
Solid, impact-resistant and water-resistant ABS housing
Performance features:
ID programmable for 01 - 32
LED for Pass/Fail display
Surge protection up to 100V

Dimensions:
61 x 41 x 26 mm (2.4 x 1.6 x 1.0 inches)
Weight:
30 g (1.1 ounces)

KURTH ELECTRONIC FERNMELDETECHNIK