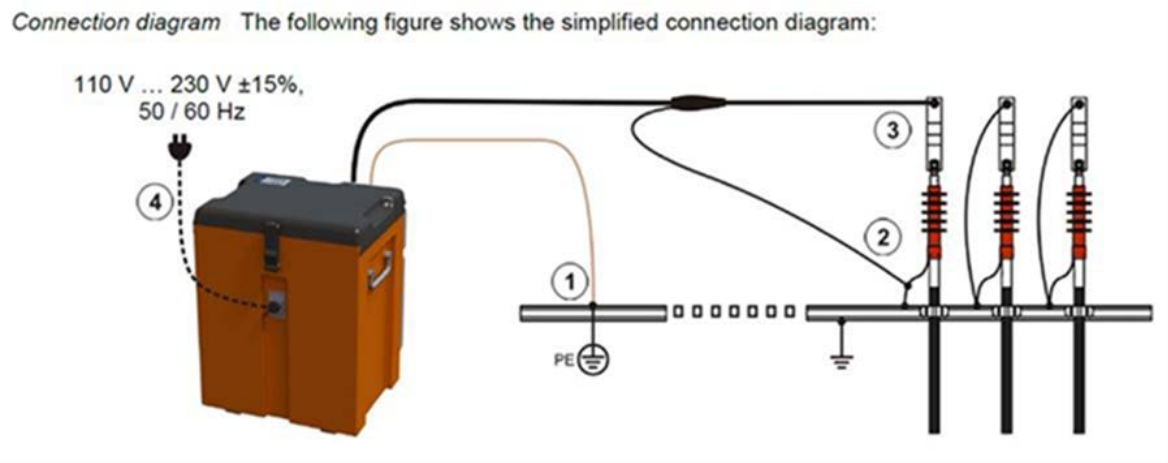
IMPORTANT ADVISORY NOTICE

It has recently come to our attention that some users are not connecting the EZ Thump correctly. Safety is paramount and Megger is acting upon this information as a responsible supplier to ensure that it conveys the importance of using this equipment within the guidelines.

The EZ Thump MUST be connected as explicitly stated in the User Guide that accompanies the instrument. If the user fails to follow these instructions, a hazard may arise exposing a risk to the user, with subsequent damage to the equipment.

The diagram below is an extract from the User Guide:

The EZ thump has one High Voltage output lead (labelled 3) and two earth return leads. The HV earth return lead (labelled 2) is the measurement lead and must be connected to the test piece and to earth (ground) for safety. The safety earth (labelled 1) is an additional earth return path that must also be connected to ground, close to the user, so that if the HV return is accidentally disconnected this additional safety earth redirects the output current safely through the unit.



To ensure correct earth connection between return earth (2) and additional safety earth (1), a measurement must be made using an appropriate ohmmeter. The user can then confirm the resistance between earth connections 1 and 2 is no more than 5 ohms. This information is specified in the User Guide.

In Version 1 EZ Thumps it is also advised to check the safety earth, before connection to the test piece. This is done by measuring between the HV earth return and safety earth return leads (labelled 1 and 2 in the diagram). This value should be 100 ohms +/- 10 ohms. If the measurement is not 100 ohms +/- 10 ohms, please return the unit to your local Megger Authorised Service centre for investigation.

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V1 EZ Thumps can be identified by the serial number sticker on the operator plate. Another means of identifying V1 units have their associated leads stored in the back of the unit.

Version 2 EZ Thumps have an additional earth measurement functionality (F-Ohm). This continuously monitors the earth return and automatically disables the test if a reading between measurement and safety earth exceeds 5 ohms. Consequently, the advisory comment above regarding the 100 ohm check does not apply.

V2 units can be identified by the serial number sticker on the operator plate. Another means of identifying V2 units is that the leads are stored in a fabric case on top of the lid, as well as an IEC socket on the front of the unit. V2 units are always grey in colour.

All users must be aware that this instrument outputs high voltage and must only be used by competent, trained engineers. Full operational details are in the user guide which shall always accompany the unit. All safety warnings in the user guide must be adhered to. Megger can provide training on the EZ thump and any other Megger products if required.

If you have any queries on the above, please contact Megger.

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WHY BUY
WHEN YOU CAN HIRE

EZ-THUMP™ Series

Portable Fault Location Systems

- **Compact, lightweight and rugged field instruments**
- **Battery and AC line operation**
- **Automatic end-of-cable and fault locating**
- **4-kV or 12-kV output versions available**
- **Transflective color display**
- **ARM® Prelocation**
- **Fault Pinpointing (Thumping)**
- **Optional Sectionalizing Software***
- **4 or 12 kV DC testing**

DESCRIPTION

The EZ-THUMP4 and EZ-THUMP12 are compact and lightweight, battery and AC line operated, portable cable fault location systems. They are designed for quick, effective, accurate and safe fault locating operations to greatly reduce system customer outage minutes.

Due to their rugged yet portable enclosure, they are ideally suited either for use in a "satellite" fault locating concept for remote areas that may have less frequent faults, when ease of operation, light weight and economics are important, or for hard to access inner city locations.

The units require no adjustments and are operated via a rotary control knob.

The EZT4/12 series offers:

- Arc Reflection Method (ARM®) cable fault prelocation
- 500 Joule pinpoint surge generator
- DC testing for breakdown detection
- Insulation resistance measurement and sheath testing
- A 4-kV or 12-kV version

APPLICATIONS

HV Testing (proof/insulation testing)

Used to test the dielectric strength of a cable and, if the test fails, to determine the breakdown voltage. For this purpose a test voltage up to 4 kV or 12 kV (model dependent) is applied to the cable under test indicating the resistance value.

Sheath Test and Sheath Fault Location / Unshielded Low Voltage Power Cable Fault Locating

An intact jacket and sheath of a solid dielectric insulated cable is required to avoid ingress of water and subsequent cable faults. With this test, the dielectric strength of the cable jacket is tested by applying a DC voltage of up to 10 kV to the cable sheath (concentric neutral).

Sheath fault location requires the additional item ESG NT Digital ground/ earth fault locator with optional "A" frame. Accurate location of sheath faults is achieved using the step-voltage method: as the fault approaches, the step voltage potential increases, decreasing with reversed polarity after it passes the fault. The change in polarity allows the fault to be located precisely. The identical method with the same equipment can also be used for secondary fault locating on unshielded low voltage power cables.

Fault pre-location

After identifying the type of fault, prelocation of the fault position is determined using ARM. The fault is stabilized by creating a temporary "bridge" to ground/earth. During this condition, a standard TDR measurement is made into what is basically a short circuit fault.

Sectionalizing (Optional)

The sectionalizing mode is used to identify and indicate the location of transformers in a loop or radial system, locating the fault between its 2 closest transformers, which identifies the faulted span.

Pinpoint fault location

Accurate pinpoint fault location is achieved using the "Thunder & Lightning" method whereby the 500 Joule surge generator (thumper) and an acoustic/electromagnetic receiver is used.

FEATURES AND BENEFITS

The EZ-THUMP 4/12 series of portable fault locators combine the following features and benefits in a single device.

- Quick-step and expert modes, especially convenient where operators may not be called upon to use the equipment on a regular basis
- Automatic fault locating procedure
- Operating of unit via rotary control knob
- Automatic end-of-cable and fault detection
- DC testing up to 4 kV or 12 kV (dependent on model) with automatic breakdown detection

- Key switch interlock
- Operation from internal battery or from an ac source
- Rugged, lightweight, high impact resistant IP54 designed enclosure

SPECIFICATIONS

Testing
Output: 0 – 4 kV, 35 mA DC (EZ-THUMP4)
0 – 12 kV, 12 mA DC (EZ-THUMP12)

Prelocation
TDR: Range: 25,000 ft (7.6 km)
Sampling Rate: 100 Mhz
Resolution: 2.5 ft @ 250 ft/*f*s
0.8 m @ 80 m/*f*s
Arc Reflection: 0 – 4 kV or 0 – 12 kV (model dependent)

Pinpoint Fault Location
Surge: 0 - 4 kV @ 500 J (EZT4)
0 – 12 kV @ 500 J (EZT12)
Impulse Sequence: 10 seconds
Single shot

Display
5.7 in. (14.48 cm)
Transflective TFT Color LCD
640 x 480 pixel

Memory
1000 traces

Interface
USB Port

Cables/Terminations
15 ft (4.6 m) HV flexible shielded cable with MC connector and hotline clamp
HV return with hotline clamp
15 ft (4.6 m) ground/earth cable with hotline clamp
6 ft (1.8 m) mains supply lead set (US/SCHUKO/UK)

Supply
Battery: Internal 24 V NiMH Battery 5 AH Approx. 30 mins of surge/thumping Approx. 3 hours recharge time 100-240 VAC – 24 VDC charger with connection lead set (US/SCHUKO/UK)
AC Line: 100 – 230 VAC ±50/60 Hz

Safety
Emergency stop
Key-switch Interlock
Auto "time out"

Environmental
Operating Temperature: -4 ° to 122 °F (-20 ° to +50 °C)
Storage Temperature: -12 ° to 160 °F) (-25 ° to +70 °C)

IP Rating
IP54 (with top open)

Weight
71 lbs (32 kgs)

Dimensions
14 x 11 x 21 in. (35.5 x 28 x 53.3 cm)

ORDERING INFORMATION

Order an EZ-Thump configured to your specific needs. To determine the catalog number, fill in the alpha characters with the corresponding numbers from the detailed options. Example: to order a 4-kV EZ-Thump with 15 ft output and ground cables, 14 mm male MC with vise grip cable termination, hand cart and sheath, request catalog number EZT4 - 15 T2 C H

Item	CAT No.
4-kV Portable Fault Location System	EZT4-yyzzSCHM
12-kV Portable Fault Location System	EZT12-yyzzSCHM
Options (must be defined when ordering):	
Cable length designator (yy):	
15 ft (4.6 m) HV output and ground cables	yy = 15
50 ft (15 m) HV output and ground cables	yy = 50
Cable termination designator (zz):	
14 mm male MC with hotline clamp	zz = T1
14 mm male MC with vise grip	zz = T2
Hardwired to battery clamps on HV and "G" clamp to ground (no MC connectors)	zz = T3
10 mm Female MC with battery clamps	zz = T4
Optional designators (omit when not ordered)	
Sectionalizing software	S
*Hand cart prep	C
**Sheath	H
Voltage selection manual	M

Included Accessories	
6 ft (1.8 m) mains supply lead set (US/SCHUKO/UK)	1002-889
Universal battery charger kit (US/SCHUKO/UK)	1002-890
Instruction manual	AVTMEZT4/12
Optional Accessories	
Hand cart for EZT4/12	895000180110000
15-kV elbow 14 mm female MC connector	865000100100000
25-kV elbow 14 mm female MC connector	865000200100000
35-kV Elbow 14 mm female MC connector	865000300100000
Digiphone Plus surge wave receiver	871500500100000
ESG NT digital earth fault locator	871500200200000

*Not available with 50 ft cables
**Sheath fault testing/secondary fault locating

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ISO STATEMENT
Registered to ISO 9001:2008 Cert. no. 110006.01

EZT4/12_DS_EN_V10
www.megger.com

The System

The **digiPHONE+** System consists of:

the Receiver

the Sensor

and the Headset

Silence

Careful handling, night work and filtering was yesterday

Today we have a new definition of silence
The innovation in fault pinpointing
Several new, innovative methods of the **digiPHONE+** will ensure the silence

The technology that lets you hear the fault – only the fault!

No traffic!
No high heels!
No talking!
No noise!

You hear only what you want to hear,

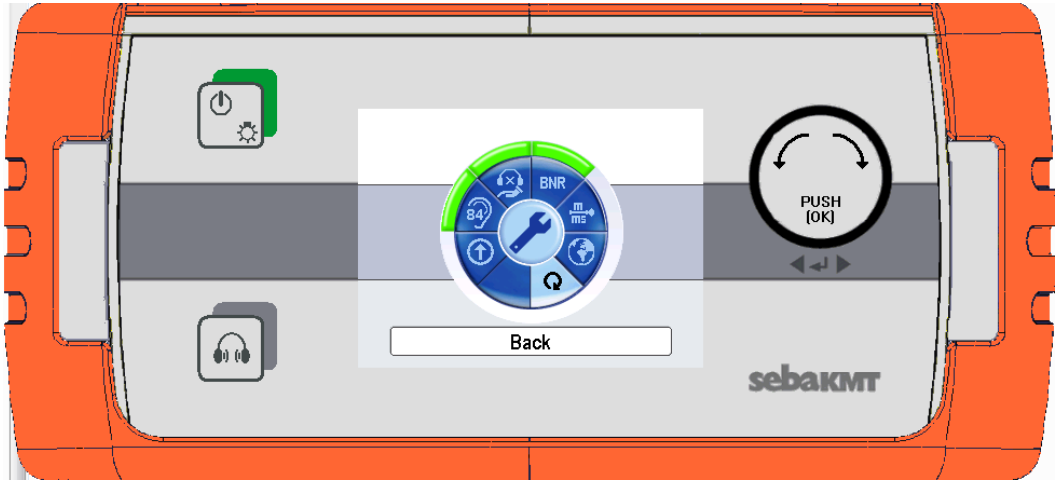
- **- "THE" Fault! Nothing else! Your ears will like it!**

Features

- Highest acoustic quality and external noise immunity
- Automatic Volume Mute with „Bang protection“
- Bright, sun capable display
- Easiest Operation
- Ergonomical, adjustable telescopic handle
- Distance measurement in Milli seconds or meters
- Selectable volume limitation to 84 dB(A)
- Easy tracing with left – right indication
- Fault direction indication
- Automatic adjustment for magnetic and acoustic channel
- Weather proof IP65 Sensor, better IP54 receiver
- High ground stability of the sensor up to 45°
- And…New, high performance connectors!

Operation

Like most new Sebakmt systems, the new **digiPHONE+** is operated by the in the centrix approved jogdial philosopy.
The required possible adjustments are limited to the minimum and need in most cases only once to be adjusted.
But even, if the adjustments need to be changed more frequently, the very Straight forward menue stucture supports an easy navigation



Noise and Ear protection

The **digiPHONE+** is a pinpointing device, which is generally based on the detection and evaluation of the noises, that result for the flashover at the fault position.
Resulting several new technologies for sound resp. for the reduction of of sound or noise were used.

BNR – Background Noise Reduction
APM – Auto Proximity Mute
A noise reducing construction of the microphone housing
Adjustable filters
84 dB limiter (according to noise and vibration protection laws)
A completely new, soft suspended sound pickup
An easy detachable handle

Explanations will follow!

Noise reduction

With the new **digiPHONE+**, a new noise reduction technology, the BNR (Background Noise Reduction) was developed
This technology reduces by a specific averageing process the flashover noise to its primary contents.
Disturbing noises disappear and leave an astonishingly clear sound.

The housing itself reduces the body sound significantly by a combination of different composite materials and a free suspension of the microphone

It at all, the noise will come through only very weak

Bang protection, Automatic Mute

One of the most annoying problems with all ground microphones is the extereme noise during pickup or setting down of the microphone (Bang).

Automatic Proximity Mute - APM.

The second silent technology of the new Digiphone+.

Get close to the handle and it turns the volume off. No crack or bang.
Just off, before the hand even reaches the handle.
After removing the hand, a short time delay ensures that
The Sensor has really settled itself into the new position,
and any mechanical oscillations have disappeared,
before the sound comes back on.

For uses, that want to control this still by themselves, there is still the alternative Mute key on the front panel **(in the competitive evaluation, the only key beside the power key!)**

Working Safety

Resarch with the previous Digiphone, but also competitive units showed,

That in some cases, due to specific exposure to noise, the risk of a hearing loss exists.

The permitted noise exposure is regulated by different local laws or regulations,

for example the „ Occupational Safety and Health Standards” in the USA

1910.95(c)(1) The employer shall administer a continuing, effective hearing conservation program, as described in paragraphs (c) through (o) of this section, whenever employee noise exposures equal or exceed an 8-hour time-weighted average sound level (TWA) of 85 decibels measured on the A scale (slow response) or, equivalently, a dose of fifty percent. For purposes of the hearing conservation program, employee noise exposures shall be computed in accordance with appendix A and Table G-16a, and without regard to any attenuation provided by the use of personal protective equipment.

When exceeding the permitted 85 db(A) the weekly permitted exposition duration,

at least in compliance with the German noise and vibration protection laws,

is in the range of only a few minutes!

Working safety

By a selectable limitation of the maximum permittable noise level to 84 db(A), the use can now safely comply With the according limiting regulations

But here it should also be clear, that a permanent wearing of the headset is not essentially required.

In many cases it is absolutely sufficient, to trust the display and to check occasionally or only during the final pinpointing the acoustic response of the fault.

Filter

The audial reception of each uses is subjective and also habitually oriented. The various filter adjustment are also a help to find the setting which suit the specific personal audial reception.

Additionally the selectable filter setting are also comparable with existing sound images as the are typical for specific ground microphones as for example The T 16/841, but also for competitive unists.

Whatever decides the setting of the filters,

- the **digiPHONE+** will guide the user reliably to the fault!



Sensor

Adjustable handle

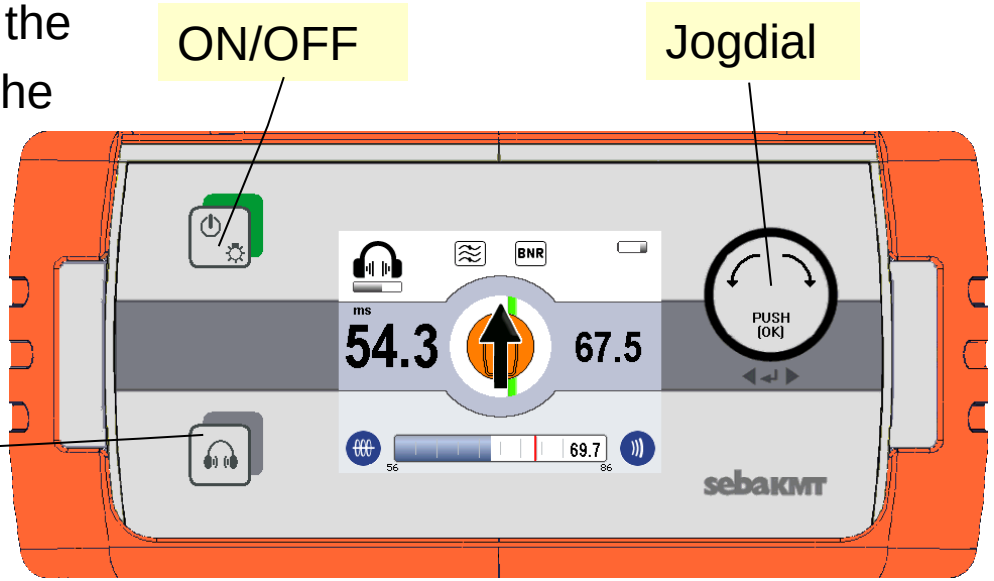
Exchangeable tips

Active Elektronic – the evaluation happens completely in the sensor!

Housing:	Dual shell die casting with telescopic handle	
	Soft rubber rims for acoustic shielding	
Dimensions:	Diameter 230mm (at the outer lip)	
Height:	140mm	
Handle length:	450 … 750mm	
Weight:	Sensor mit Teleskopstab ca. 2 kg	
Dynamic range:	acoustic channel >110dB	
Dynamic range:	magnetic channel >110dB	
Frequency range:	100 ... 1500Hz	
4 Filter settings:	OFF	100 … 1500Hz
	Low pass	100 … 400Hz
	Band pass	300 … 500Hz
	High pass	700 … 1500Hz

Receiver

The receiver is only for the display of the data generated from the sensor and the signal processing of the signals for the head set.



Dimensions (with rubber frame): 65 mm x 225 mm x 100mm (H x W x D)

Weight:	app. 1kg (incl. Batteries)
Supply:	6 pieces Mignon cellsTyp IEC R6 (Alkali-Mangan)
Operation time:	@ Mignon cells with 2500 mAh capacity: > 10 Std.
Display:	Color TFT - 320x240Pixel
Adjustment	Selectable limitation to 84 dB(A), Volume
Akustic Gain:	>120dB

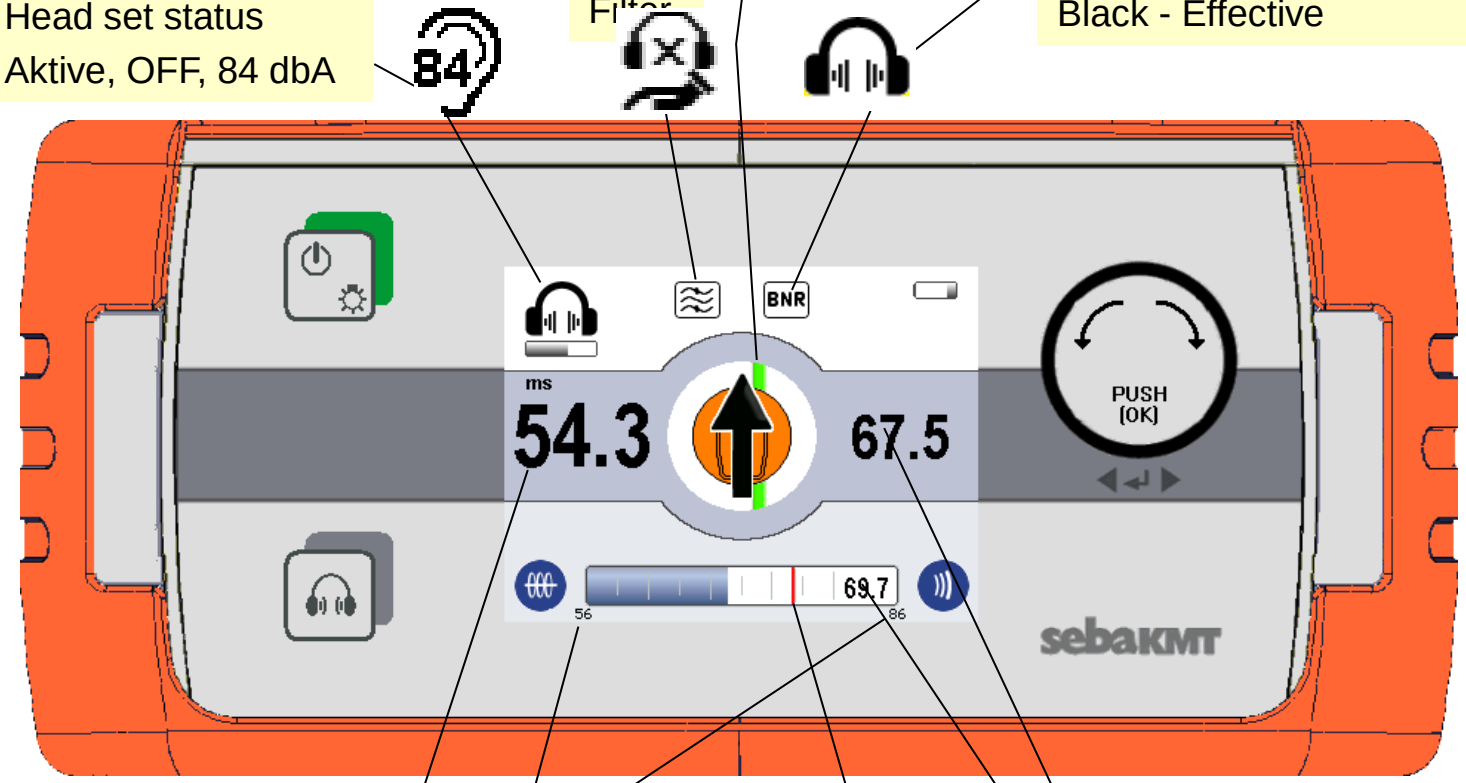
Display elements

Cable position
below Sensor

Background Noise Reduction
Grey - Aktive, but not effective
Black - Effective

Head set status
Aktive, OFF, 84 dbA

Filter



Aktual Difference value

Last difference value

Level magnetic channel

Bargraph autoscale

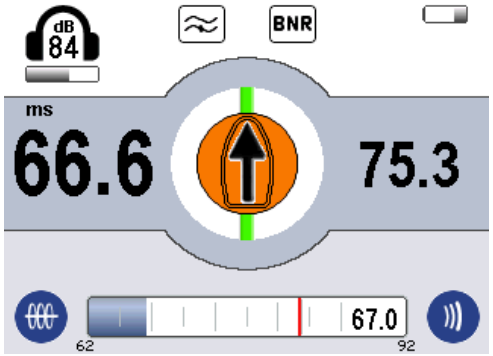
Peak hold magnetic channel

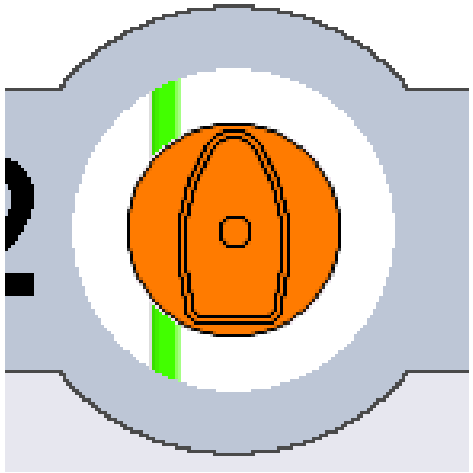
Tracing

A green cable symbol beneath the sensor symbol in the center of the **digiPHONE+** display shows the side position of the sensor in relation to the cable trace.

This ensures automatically, that the user remains with the sensor directly on top of the cable, which makes the fault location more accurate but also easier. Weak fault are much faster detected and located.

A cross measurement is not required, since the system is positioned automatically in theY-axis on top of the cable



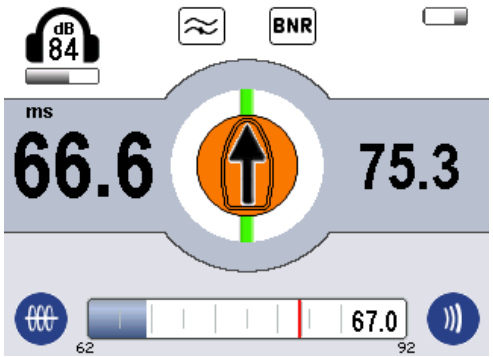


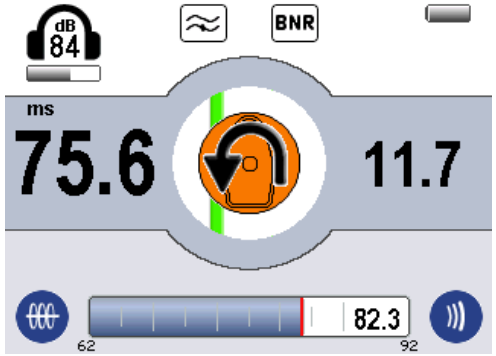
The Compass

The „Compass“ function of the **digiPHONE+** recognises from the data, especially from the difference time measurement, if the user is moving towards the fault. This is indicated by the arrow in the display. The user follows the arrow and ppoaches automatically the fault position

If the **digiPHONE+** detects an increase of the difference time, it means, that the user has passed the fault already. In this case a bent arrow indicates this and requests the user to move backward.

Before the fault:
The new value is lower than the old difference value





After the fault:
The new value is higher than the old difference value

Competiton

The Digiphone (released 1993), as well as its predecessor T 16/8B were the benchmark and handicap for ALL competitors.

Resulting we oriented ourself on these data, but lifted the benchmark in respect to functionality, acoustic, quality and appearance to a new level!
The **digiPHONE+** is again the trend setter for the pinpointing which sets And defines clear limits
… The technical data reflect this only limited.

Test it ! Let you customer experience and hear the new **digiPHONE+**

The plain data as in the following comparison table mean very little!

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Honest advice, just a phone call away.

If we don't have a particular item, rather than hiring you something that won't do the job, we would rather direct you to an alternative supplier. You will always be provided with full instructions and if you still need help, call our technical team on Nationwide Low Call 0333 6000 600. Our aim is to save you time, frustration and money.

Top quality equipment from major manufacturers.

With Inlec you'll get the most accurate, reliable and well-maintained equipment available. Prices are regularly reviewed to ensure you always enjoy the best value for money. We have made a significant investment in test equipment so we ensure that it's well packed to minimise damage and delay.

We really do listen to you.

You won't waste your time contacting Inlec. Every request for equipment is logged and carefully considered. Listening to our customers helps keep our product range up to date and relevant. If you are unhappy about any aspect of our service please let us know so we can put it right.

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❶ GUARANTEE SAME DAY DESPATCH

We understand why prompt delivery is important to you. So, if we confirm your order before 3pm, you are guaranteed same day despatch.

❷ OUR PRICE GUARANTEE

Inlec guarantee you real value for money. Our price match policy is simple - if you can hire the same product for less elsewhere, we guarantee to match that price and reduce it by a further 10% of the difference - and still deliver our industry leading technical and customer support.

For full details check our price-match guarantee online

❸ TOP QUALITY GUARANTEED

All equipment is thoroughly checked prior to dispatch to ensure you receive it in full, safe working order. Your shipment will be securely packed and include manufacturer's instructions, accessories or consumables and a valid calibration certificate where appropriate. In addition, Inlec offer a 24 hour replacement service if you decide the equipment is not suitable for your application*.

❹ FRIENDLY, KNOWLEDGEABLE ADVICE GUARANTEED

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