

## HVB10 High-voltage bridge



- Top measurement and accuracy
- Automatic test sequence
- Bi-polar prelocation for the elimination of external influences
- Detection and indication of wrong connections
- Only one HV connection cable
- Completely independent of the parameters of auxiliary lines
- Megger's easyGo principle

### DESCRIPTION

Megger's HVB10 is a highly accurate high-voltage bridge designed to locate cable and sheath faults, perform sheath testing, and pinpoint sheath faults, especially suited also for long HV cables.

With its top resolution, intermittent fault detection function, and load adaptation for faster cable charging, the HVB10 is an indispensable tool for all utilities that want to reduce downtime and facilitate repair of power and for example pilot and communication cables.

The HVB10 has two different methods for fault location:

- the **standard mode**, which provides good results for typical sheath faults with fault resistances of up to some hundreds of kilo Ohms and shield cross sections in the range of 25 to 50 mm<sup>2</sup>. This measurement is typically done in app 30 seconds
- the high **accuracy mode**, which takes approximately 1 minute for the algorithm to complete, but will utilize the full potential of the measuring and control circuits of the instrument. Thus, it is ideally suited for prelocating difficult, high-resistive faults (e.g. in the inner insulation of PILC cables). An intermittent fault detection algorithm is applied to gain a result under even worse conditions with sparking faults.

### Why HVB10?

Why do you need an HV bridge when you have ARM based prelocation?

Because it locates faults where the otherwise perfect reflection based technologies have limits, for example on long cables as subsea cables.

- TDR reflection based technologies have very large reflections on crossbonded cables, which prevent longer ranges
- Reflection measurements are based on an impedance measurement, while the HVB10 measures resistance. Resistance- and impedance values can be completely different while having the same cause.

The HVB10 prelocation measurement and the common prelocation by reflection measurement or ARM Arc Reflection Measurement provide complementary information, which is very helpful in case of difficult faults, where critical decisions have to be done on a reliable base.

## HVB10 High-voltage bridge

### Cable fault location

The HVB10 accurately prelocates cable interruptions and short-circuit faults, and detects high-resistance conductor faults that cannot be prelocated with impulse reflection based methods.

The HV bridge is equipped with a strong discharge unit which allows the safe discharge of cables with a capacity of up to 25 µF. Prior to each test, a capacity measurement ensures that the expected discharge energy does not exceed these parameters and damage the HVB10. This makes it very suitable for very long cables and their parameters.

### Sheath fault prelocation

The prelocation of sheath faults takes place automatically. The only parameters that need to be entered are the peak test voltage and the cable length. If the cable length is not available, the fault distance is displayed as a percentage of the length.

The HVB10 evaluates all measurements automatically, providing the user with a report of the test results and a statement about the sheath condition.

### Sheath fault pinpointing

The HVB10 provides two possibilities for sheath fault pinpointing:

- By means of the standard pulsed DC and the step voltage method (in combination with an earth fault probe such as our ESG NT)
- by means of 3 or 4.8 Hz signal and A-frame

Optionally, the HVB10 can be equipped with an audio frequency module. In addition to the step voltage, this module generates an audio frequency signal of 8.44 kHz for simultaneous tracing and fault pinpointing.

The power can be supplied either from the mains, via the wide range AC input from 88 V to 264 V, or by using the integrated rechargeable battery for minimum of 2 hours operation. This battery can also be charged by a 12/24 DC input.

### TECHNICAL DATA\*

|  |  |
|--|--|
| <b>Output voltage</b>                  | 0 ... 10 kV DC, bi-polar                                   |
| <b>Output current</b>                  | 200 mA @ 0.5 ... 1.5 kV,<br>60 mA @ 5 kV,<br>30 mA @ 10 kV |
| <b>Max. test object capacity</b>       | 25 µF  |
| <b>Test voltage</b>                    | 0 ... - 10 kV  |
| <b>Prelocation</b>                     |  |
| <b>Method</b>                          | Voltage drop method (automatic.)                           |
| <b>Accuracy</b>                        | ± 0,1 %  |
| <b>Pinpointing</b>                     | 0 ... - 10 kV DC, pulsed                                   |
| <b>Voltage</b>                         | 0.5:1 / 1:2 / 1.5:0.5 / 1.5:3.5                            |
| <b>Pulse rate</b>                      | 3 and 4.8 Hz for A-frame                                   |
| <b>Option AF</b>                       | 8.44 kHz, $U_0 = 100 V_{rms}$ , $P = 7 W_{peak}$ (500 Ω)   |
| <b>Supply voltage</b>                  | 88 V ... 264 V, 50/60 Hz                                   |
| <b>DC Supply (charge only)</b>         | 12/24 V DC   |
| <b>Battery</b>                         | Int. NiMH battery (340 Wh)                                 |
| <b>Battery operating time</b>          | approx. 2 hours  |
| <b>Power consumption</b>               | max. 500 VA  |
| <b>Display</b>                         | 320 x 240 pixel LCD, LED rear light                        |
| <b>Interfaces</b>                      | USB port   |
| <b>Storage</b>                         | 2 GB Flash memory for System and data                      |
| <b>Data logging</b>                    | by USB stick   |
| <b>Operating temperature</b>           | - 25° C ... + 55° C<br>max. 93 % rel. humidity             |
| <b>Storage temperature</b>             | - 40° C ... + 70° C  |
| <b>Dimensions (W x H x D)</b>          | 500 x 457 x 305 mm   |
| <b>Weight</b>                          | 25 kg  |
| <b>Protection class acc. IEC 61140</b> | I (Protective earthing)                                    |
| <b>Protection class acc. IEC 60529</b> | IP 53 (with closed lid)                                    |

### Options

Connection set for HV armatures



|  |                   |        |        |        |       |       |       |
|--|-------------------|--------|--------|--------|-------|-------|-------|
| Max. fault resistance @ 10 kV with a 1 km cable with defined cross section. Fault position @ 50% of cable length | Ø mm <sup>2</sup> | 25     | 150    | 240    | 300   | 630   | 1200  |
|  | CU conductor      | 670 MΩ | 110 MΩ | 69 MΩ  | 55 MΩ | 26 MΩ | 13 MΩ |
|  | AL conductor      | 1 GΩ   | 176 MΩ | 110 MΩ | 88 MΩ | 42 MΩ | 22 MΩ |

|  |                   |        |       |       |       |        |        |
|--|-------------------|--------|-------|-------|-------|--------|--------|
| Max. fault resistance @ 10 kV with a 1 km cable with defined cross section. Fault position between 10% and 90% of cable length | Ø mm <sup>2</sup> | 25     | 150   | 240   | 300   | 630    | 1200   |
|  | CU conductor      | 132 MΩ | 22 MΩ | 13 MΩ | 11 MΩ | 5,2 MΩ | 2,7 MΩ |
|  | AL conductor      | 209 MΩ | 34 MΩ | 21 MΩ | 17 MΩ | 8,3 MΩ | 4,3 MΩ |

## ORDERING INFORMATION

| Item   | Cat. No.             |
|--|----------------------|
| HV Measuring Bridge System HVB10-1                                 | 101 2574             |
| HV Measuring Bridge System with option Audio Frequency HVB 10-1-AF | 101 2575             |
| <b>Consisting of:</b>  |                      |
| HVB 10-1   | 100 4820             |
| HVB 10-1-AF  | 100 4821             |
| USB-Drive with Software MeggerBook RE                              | 89 001 7185          |
| Set of cables for HVB 10 in accessory bag                          | 100 4032             |
| <b>Consisting of:</b>  |                      |
| HSK 40-6 HV Test lead, HVB 10-1 6m                                 | 1 piece 20 0842 2001 |
| EK 11 Earth lead 5 m (green/yellow)                                | 1 piece 82 002 4352  |
| AK 49-B Clip (green/yellow)  | 1 piece 81 000 3846  |
| MK 053-B Test lead (Blue)  | 2 pieces 81 000 3176 |
| AK 43-B Clip (blau)  | 4 pieces 81 000 3848 |
| LK 13 Vehicle charging adapter 3,5 m                               | 1 piece 81 000 0006  |
| NKG 1Power cord 2,5 m, 3x1 mm <sup>2</sup> grey                    | 1 piece 81 000 0024  |
| Power cord 2,5 m, 3x1 mm grey (UK-Version)                         | 1 piece 11 830 7335  |
| Power cord (US-Version) JEC 2 m                                    | 1 piece 50 202 5220  |
| HVB10, Manual de   | 83230                |
| HVB10, Manual en   | 83041                |
| <b>Options:</b>  |                      |
| Connection set for HV Armatures                                    | 100 3344             |
| <b>Consisting of:</b>  |                      |
| HKZ HVB-1 Connection Clamp (Black)                                 | 4 pieces 100 3332    |
| HKZ HVB-2 Connection Clamp (Red)                                   | 2 pieces 100 3333    |
| Cable binder, velcro, (black)                                      | 8 pieces 82 002 0537 |
| Manual for connection Set HVB10                                    | 200 3767             |

### SALES OFFICES

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### HVB10\_DS\_EN\_V02

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ISO 9001

# Megger<sup>®</sup>

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