

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**
- **SebaKMT's easyGo principle**

DESCRIPTION

SebaKMT'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 mm². 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.

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 testing

Healthy sheath insulation is of paramount importance for the safe operation of cables. Sheath faults allow water to ingress into the cable, cause insulation deterioration, joint faults and other corrosion-based damages, and reduce the life expectancy of power cables and the transmission quality of communication cables.

The HVB10 performs sheath testing based on the DC voltage method. The value of the applied DC depends on the cable type and the material of the outer cable sheath.

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:

- TDR reflection based technologies have very large reflections on crossbonded cables, which prevent longer ranges
- by means of a 3 or 4.8 Hz signal and an 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

Output voltage	0 ... 10 kV DC, bi-polar
Output current	200 mA @ 0.5 ... 1.5 kV, 60 mA @ 5 kV, 30 mA @ 10 kV
Max. test object capacity	25 µF
Test voltage	0 ... -10 kV
Prelocation Method Accuracy	Voltage drop method (automatic.) ±0,1%
Pinpointing Voltage Pulse rate	0 ... -10 kV DC, pulsed 0,5:1 / 1:2 / 1,5:0,5 / 1,5:3,5 3 and 4,8 Hz for A-frame
Option AF	8,44 kHz, U _o = 100 Vrms, P = 7 W _{peak} (500 Ω)
Supply voltage	88 ... 264 V, 50/60 Hz
DC Supply (charge only)	12/24 V DC
Battery	Int. NiMH battery (340 Wh)
Battery operating time	approx. 2 hours
Power consumption	max. 500 VA
Display	320 x 240 pixel LCD, LED rear light
Interfaces	USB port
Storage	2 GB Flash memory for System and data
Data logging	by USB-Stick
Operating temperature	-25 ... +55° C / max. 93 % rel. humidity
Storage temperature	-40 ... +70° C
Dimensions (W x H x D)	500 x 457 x 305 mm
Weight	25 kg
Protection class acc. IEC 61140	I (Protective earthing)
Protection class acc. IEC 60529	IP53 (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 ²	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 ²	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.	Item	Cat. No.
HV Measuring Bridge System HVB10	1004037	Options	
HV Measuring Bridge System with option Audio Frequency HVB 10-AF	1004038	Connection set for HV Armatures	1003344
Consisting of:		Consisting of:	82940
HVB 10, High Voltage Measuring Bridge 10 kV	138316262	HKZ HVB-1	
USB-Drive with Software EasyProt	890017185	Connection Clamp (Black)	
Set of cables for HVB 10	820008838	4 ea	1003332
Consisting of:		HKZ HVB-2	
HSK 40		Connection Clamp (Red)	
HV Test lead, HVB 10		2 ea	1003333
1 ea	138316121	Klettbander	
EK 11		Cable binder, velcro, (black)	
Earth lead 5 m (green/yellow)		8 ea	820020537
1 ea	820024352	Manual for connection Set HVB10	2003767
AK 49-B			
Clip (green/yellow)			
1 ea	810003846		
MK 053-B			
Test lead (Blue)			
2 ea	810003176		
AK 43-B			
Clip (blau)			
4 ea	810003848		
LK 13			
Vehicle charging adapter 3,5 m			
1 ea	810000006		
NKG 1Power cord 2,5 m, 3x1 mm grey			
1 ea	810000024		
Power cord 2,5 m, 3x1 mm grey (UK-Version)			
1 ea	118307335		
Power cord (US-Version) JEC 2 m			
1 ea	502025220		
HVB10, Manual de	83230		
HVB10, Manual en	83041		