

Variant

Modular system for fault location, testing and diagnosis



- **Expandable modular design**
- **High reliability thanks to redundant system architecture**
- **easyGO® user interface**
- **ARM® multi-shot pre-location**
- **Powerful 0.1 Hz VLF test up to 18 uF**
- **Autonomous operation with Li-Ion battery power**

DESCRIPTION

With the new Variant series, Megger provides a fully equipped measuring station for all VDE-compliant cable testing and fault location on PVC, PE, VPE and paper-insulated cables in the voltage range up to 33 kV.

During the development of the Variant system, special attention was paid to reliability and availability:

- A fail-safe, modular system
- easyGO® and expert operating mode
- Emergency operation in case of system control failure

The system also has the advantage of being simple to service.

Heavy extension reels come installed so they can be easily extended. Electronic components are in place so that testing and calibration can be easily performed from the control room.

System components:

- System control with operating mode switch, phase switch and safety system
- Teleflex VX with ARM® multi-shot technology
- Surge generator up to 3500 J
- HV operating unit BPS
- ARM® filter ARM 300
- MFM 10 sheath fault location system
- FLG 200 audio frequency generator
- Ergonomic work station with desk and drawer cabinet

TECHNICAL DATA*

Variant cable fault location system	
Standard – base module	Options
Operation	
Manual switching system NSF, air insulated HV switch with integrated safety system, 5.7" color TFT, connectors for external insulation tester (1000 V max.)	1-phased or 3-phased
Resistance-capacitance measurement	
Integrated Iso module; measurement via HV lead Measurement range 1 Ω ... 2 GΩ; 0 ... 19.9 μF Test voltage 6 / 500 / 1000 V	3-phase activation via Teleflex connection cable
DC voltage test	
Variant 80 kV Output voltage/current 0 ... 80 kV, I _N 11 mA, I _{max} 50 mA	Variant 110 kV 0 ... 110 kV, I _N 7 mA, I _{max} 50 mA
Cable sheath testing	
	BPS 5000 Output voltage 0 ... 10 kV Output current 800 mA MFM 10 Output voltage 0 ... ±10 kV Integrated pre-location method 0 ... ±10 kV Output current 750 mA (optional with integrated audio frequency module 8.44 kHz)
VLF voltage testing according to DIN VDE 0276	
	VLF CR 54 test attachment Voltage 0 ... 54kV _{eff} Max. load 21 μF @ 18 kV _{eff} @ 0.1 Hz 8 μF @ 36 kV _{eff} @ 0.1 Hz 5 μF @ 54 kV _{eff} @ 0.1 Hz VLF Sin 54 test attachment Voltage 0 ... 54kV Max. load 5 μF @ 36 kV _{eff} @ 0.01 Hz 1 μF @ 36 kV _{eff} @ 0.1 Hz PD diagnosis in combination with VLF Sin 54 tan δ measurement in combination with VLF Sin 54
Cable fault location – pre-location methods	
Pulse reflectometry, ARM® Multishot, Decay method, ICE current pulse method, IFL intermittent fault localisation, ARM® Burning	
Pulse reflectometry (Teleflex)	
Operating mode	Symmetric/asymmetric reflection measurement, differential and comparative measurement, IFL (for intermittent faults)
Automatic functions	Determination of cable length and fault distance, amplification, measurement range
Amplification	Default: - 37 ... + 37 dB, ProRange: max. 22 dB
Measurement range	20 m ... 1280 km (@ v/2 = 80 m/μs)
Runtime factor v/2	10 ... 149.9 m/μs
Precision	0.1 % of measurement range
Sampling rate	400 MHz
Output impedance	10 ... 2000 Ω
Pulse width	20 ns ... 10 μs
Pulse voltage	30 ... 160 V

Variant cable fault location system					
Standard – base module			Options		
HV prelocating methods					
ARM® Multishot	Surge voltage 0 ... 32 kV (15 fault patterns per surge pulse)	Surge module SZG 60 (only for 110 kV version) Surge voltage 0 ... 60 kV			
		ARM® Multishot (only for 110 kV version with option SZG 60) Surge voltage 0 ... 60 kV			
ICE current pulse method 1-phase	Surge voltage 0 ... 32 kV	ICE current pulse method 3-phased Surge voltage 0 ... 32 kV			
		ICE current pulse method 3-phased (only for 110kV version with option SZG 60) Surge voltage 0 ... 60 kV			
Decay method	Surge voltage 0 ... 80 kV	Decay method Voltage 0 ... 110 kV			
		ARM® burning Output voltage 0 ... 15 kV Output current 6 A			
Fault conversion					
		BPS burning voltage / current			
		0 ... 1.2 kV _{DC} 6.0 A 4 kV _{DC} 1.5 A 8 kV _{DC} 0.8 A 15 kV _{DC} 0.5 A 0 ... 60 V _{AC} 110 A 0 ... 240 V _{AC} 28 A			
Cable fault location – pinpointing methods					
Acoustic pinpointing Voltage levels	0 ... 8, 0 ... 16, 0 ... 32 kV	Surge module C4 0 ... 2/4 kV	Surge module CD 0 ... 8/16/32 kV	Surge module 60 kV 0 ... 60 kV	SWG 2000 8/16/32 kV
Surge energy	1750 J @ 8, 16 and 32 kV	1150 J	3500 J	1800 J	2000 J
Surge sequence	individual surge, 6 – 20 surges/min				
Step voltage method	low hazard potential due to clocked DC voltage	BPS 5000 Output voltage 0 ... 10kV Output current 800 mA			
		MFM 10 0 ... 10 kV max. 750 mA (optional with integrated audio frequency module 8.44 kHz)			
Surge wave receiver	digiPHONE+				
Step voltage receiver	ESG NT				
Surge wave and step voltage receiver in one device	digiPHONE+ NT				
Twisted field method, line tracing	Audio frequency generator (mobile or fully integrated) 10 W, 50 W oder 200 W 491, 982, 8440 Hz (also simultaneous) SignalSelect®, automatic impedance change				
	Audio frequency receiver				
	Sheath fault pinpointing with AC audio frequency direct or capacitive				

Variant cable fault location system		
Standard – base module		Options
Safety and protection equipment		
Earth monitoring	Operational earth and protective earth to station earth	
Step voltage	Auxiliary earth to vehicle chassis	
Discharge system	SafeDischarge technology	
Monitoring	Key switch, rear door switch, emergency stop switch (int./ext.) EN 50191	
Supply voltage	Overvoltage protection, undervoltage protection, residual current circuit breaker	
Isolating transformer	2 kVA (for LV part of the system)	9 kVA (for whole system)
Connection of the measurement system		
HV connection	1 x 3-phase cable Multi: 50 m (motor drums)	3 x 1-phase cable Economy: 50 m (manual drums) Comfort: 50 m (motor drums) Pro: 50 m (slip ring motor drums)
LV connection	Economy: 50 m mains/protective earth cable, 10 m auxiliary earth (manual drums)	Comfort: 50 m mains/protective earth cable (belt pull) Pro: 50 m mains/protective earth cable (motor drums)
Teleflex connection		3-phase coaxial cable 50 m (manual, belt pull or motor)
External emergency safety unit	Economy: 15 m connection cable	50 m connection cable (manual, belt pull or motor)
System supply and operating conditions		
Input voltage	230 V, 50 Hz	120 V, 60 Hz
		Synchronous generator 7 kVA (with power take-off)
		Travel power generator 5 / 8 kVA (electronic regulation/ without power take-off)
		Li-ion battery power including charging electronics 5 kVA
Input voltage	5 / 7 kVA (depending on options)	Electric heating 2000 W
Operating temperature	HV unit: -20° C ... +55° C, control unit: -10° C ... +55° C	Air conditioning on car roof
Storage temperature	-25° C ... +60° C	
Weight		
Standard Version	Starting from 650 kg	Depending on options up to 1250 kg

* We reserve the right to make technical changes .

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