The **new Variant:**
cable fault location, testing, and **diagnosis**
with one **modular system**

Variant

- Modular setup
- Integrated user guidance
- Ergonomic design
- Highest safety standards

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Variant 1 - 80 Cable fault location system, 1-phased

Method	Base Module	Options
Operation		
	Single phased, manual switching system NSF 8, air insulated HV switch with integrated FU/EP safety system, 5.7" color TFT, connectors for external insulation tester (1000 V max.)	
Insulation testing		
500 and 1000 V		Integrated automatic or manual insulation, resistance and capacitance measurement, trend measurement (DAR and PI) of resistance up to 10 min., automatic memory, comparison of measurements ph–ph and ph–N, 6 measurements for resistance ph-ph, 3 measurements for cable capacitance Riso: 1 Ω … 2 GΩ Riso: 1 kΩ … 2 GΩ
Capacity		C: 0,0 µF … 19,9 µF
< 24 V		R: 0,1 Ω … 1 kΩ
HV testing		
DC	0 … 80 kV, IN 14 mA, I_{max} 50 mA	0 … 50 kV, I_N 14 mA, I_{max} 50 mA
		0 … 100 kV, I_N 15 mA, I_{max} 50 mA
AC		0 … 58 kV AC, IN 14 mA, I_{max} 50 mA Not possible via the HV cable drum!
VLF Testing		VLF 54 kVrms 0,1 Hz Cosine Rectangular Voltage, max. cable capacity 5 µF@54 kV, 8 µF@36 kV 21 µF@18 kV
		VLF sin 54 kV, max. cable capacity 5 µF@38 kV_{rms} / 0,01 Hz; 1 µF@38 kV_{rms} / 0,1 Hz
Diagnosis		OWTS Partial discharge measuring system with oscillating voltage close to power frequency
		Tan δ Measurement in connection with VLF sin
Sheath testing	0 … 5, 10 kV, 800 mA, (with BPS 5000)	0 … -10 kV, 750 mA (option MFM 10)
Prelocation		
Impulse Reflection Measurement modes	Direct, Difference, Comparison, Average, Intermittent Fault location IFL, Simultaneous display of six phases or memory contents in selectable colours. Automatic adjustment of gain, range and pulse width. ARMslide technology with 15 Measurements in one ARM surge, Pro Range function with distance depending attenuation correction	
Sample Rate	max. 400 MHz	
Pulse width	20 ns … 10 µs	
Range	20 m … 1280 km bei v/2 = 80 m/µs	
Pulse amplitude	30 … 160 V	
Propagation Velocity V/2:	10 …149,9 m/µs, ft/µs or NVP	
Dynamic range	> 80 dB	
Output impedance	50 Ω	
Accuracy	Better than 0.1 % of range	
Resolution	0,1 m @ 80m/µs, 1,0 cm @ V/2 < 40 m/µs	
Interface	LAN, USB, DVI, LON, CAN	
Display	15" Colour SXGA, CCFL-Backlight, 300cd/m²	
Data Storage	2 GB each for Program, Data and recovery	
Gain	-37 … +37 db + 0 … 22dB for ProRange	
Data and reporting	Automatic storage of all measurements, report printing, also as PDF export or to Winkis software	
HV prelocation		
ARM	0 … 8 / 16 / 32 kV passive with LSG 300	0 … 8 / 16 / 32 kV active with LSG 3-E, 2 kV, 640 J
		0 … 2 / 4 kV additional surge stages
Decay	0 … U_{max} (max. DC test voltage)	
Current decoupling	0 … 8 / 16 / 32 kV, 1-phased	0 … 8 / 16 / 32 kV, 3-phased
ARM burning		0 … 15 kV, 20/25 A and M 212 ETF
Sheath fault location		0 … ±10 kV, max. 750 mA (see MFM 10)

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Method	Base Module	Options
Burning		
DC		0 … 1,2 kV, 6 A; 4 kV, 1,5 A; 8 kV, 0,8 A; 15 kV, 0,5 A
AC		0 … 60 V, 110 A; 0 … 220 V, 30 A
Resonance burning		0 ... 15 kV, 20 A with T 22/13
Pinpointing		
Acoustically by surge module	0 … 8 / 16 kV / 32 kV, 1750 J 2,5 … 10 s	0 … 2 / 4 kV, 1150 J
Surge rate		0 … 8 / 16 / 32 kV, 3500 J
Surge wave receiver		digiPHONE+
Sheath faults with DC STep voltage		0 … 10 kV, max. 750 mA (MFM 10)
		0 … 5 kV, 0,8 A 0 … 10 kV, 0,5 A (with BPS HV)
Step voltage receiver		ESG NT
Audio Frequency		
Output power		200 W
Frequencies		491 Hz, 982 Hz, 8.44 kHz also with SignalSelect, Supermaximum
Impedance		0,5 Ω ... 1 kΩ automatic impedance matching
Sheath fault pinpointing with AC audio frequency		Step voltage probe, direct or capacitive
HV connections		
1-phased	**ECONOMY**: 50 m (manual cable drum)	**COMFORT**: 50 m (motorised cable drum)
		PRO: 50 m (motorised slip-ring cable drum)
LV connections, power supply		
	Earth potential monitoring, 10 m (manual cable drum) Integrated safety system with FU/EP. Separation transformer Monitoring of: Voltage difference to protective earth Rise time of potential to protective earth Loop of protective earth to aux. earth Loop of cable shield to aux. earth	**ECONOMY**: Mains cable 50 m (manual slip-ring cable drum), Protective earth cable 50 m (manual cable drum)
		COMFORT: Mains cable 50 m (recoiling belt slip-ring cable drum), protective earth 50 m (recoiling belt cable drum)
		PRO: Mains cable 50 m (motorised slip-ring cable drum), Protective earth 50 m (motorised cable drum)
Teleflex connection		3-phase coax cable, 50 m (manual, recoiling band or motorised drum)
Safety cable drum		Safety cable drum 50 m (manual, recoiling band or motorised) with emergency-OFF, key interlock and status indicating lights
Operating conditions		
Operating temperature	-20 °C ... +55 °C	
Storage temperature	-25 °C ... +60 °C	
Weight		
	depending on options 700 ... 1200 kg	
Mains supply		
Mains voltage	230 V, 50 Hz (16 A connection)	120 V, 60 Hz
		Generator operation from vehicle engine
		Battery operation up to 4 hours
Power consumption	Separation transformer max. 2 kVA	Separation transformer 5 kVA with CEE-connector for extended requirements such as ARM Burning, air condition etc.

Variant 3 - 80 Cable fault location system, 3-phased

Method	Base Module	Options
Operation		
	3-phased, manual switching system NSF 8, air insulated HV switch with integrated FU/EP safety system, 5.7" color TFT, connectors for external insulation tester (1000 V max.)	
Insulation testing		
500 and 1000 V		Integrated automatic or manual insulation, resistance and capacitance measurement, trend measurement (DAR and PI) of resistance up to 10 min., automatic memory, comparison of measurements ph–ph and ph–N, 6 measurements for resistance ph-ph, 3 measurements for cable capacitance Riso: 1 Ω … 2 GΩ Riso: 1 kΩ … 2 GΩ
Capacity		C: 0,0 µF … 19,9 µF
< 24 V		R: 0,1 Ω … 1 kΩ
HV testing		
DC	0 … 80 kV, IN 14 mA, I_{max} 50 mA	0 … 50 kV, I_N 14 mA, I_{max} 50 mA
		0 … 100 kV, I_N 15 mA, I_{max} 50 mA
AC		0 … 58 kV AC, IN 14 mA, I_{max} 50 mA Not possible via the HV cable drum!
VLF Testing		VLF 54 kVrms 0,1 Hz Cosine Rectangular Voltage, max. cable capacity 5 µF@54 kV, 8 µF@36 kV 21 µF@18 kV
		VLF sin 54 kV, max. cable capacity 5 µF@38 kV_{rms} / 0,01 Hz; 1 µF@38 kV_{rms} / 0,1 Hz
Diagnosis		OWTS Partial discharge measuring system with oscillating voltage close to power frequency
		Tan δ Measurement in connection with VLF sin
Sheath testing	0 … 5, 10 kV, 800 mA, (with BPS 5000)	0 … -10 kV, 750 mA (option MFM 10)
Prelocation		
Impulse Reflection Measurement modes	Direct, Difference, Comparison, Average, Intermittent Fault location IFL, Simultaneous display of six phases or memory contents in selectable colours. Automatic adjustment of gain, range and pulse width. ARMslide technology with 15 Measurements in one ARM surge, Pro Range function with distance depending attenuation correction	
Sample Rate	max. 400 MHz	
Pulse width	20 ns … 10 µs	
Range	20 m … 1280 km bei v/2 = 80 m/µs	
Pulse amplitude	30 … 160 V	
Propagation Velocity V/2:	10 ...149,9 m/µs, ft/µs or NVP	
Dynamic range	> 80 dB	
Output impedance	50 Ω	
Accuracy	Better than 0.1 % of range	
Resolution	0,1 m @ 80m/µs, 1,0 cm @ V/2 < 40 m/µs	
Interface	LAN, USB, DVI, LON, CAN	
Display	15" Colour SXGA, CCFL-Backlight, 300cd/m²	
Data Storage	2 GB each for Program, Data and recovery	
Gain	-37 … +37 db + 0 … 22dB for ProRange	
Data and reporting	Automatic storage of all measurements, report printing, also as PDF export or to Winkis software	
HV prelocation		
ARM	0 … 8 / 16 / 32 kV passive with LSG 300	0 … 8 / 16 / 32 kV active with LSG 3-E, 2 kV, 640 J
		0 … 2 / 4 kV additional surge stages
Decay	0 … U_{max} (max. DC test voltage)	
Current decoupling	0 … 8 / 16 / 32 kV, 1-phased	0 … 8 / 16 / 32 kV, 3-phased
ARM burning		0 … 15 kV, 20/25 A and M 212 ETF
Sheath fault location		0 … ±10 kV, max. 750 mA (see MFM 10)

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Method	Base Module	Options
Burning		
DC		0 … 1,2 kV, 6 A; 4 kV, 1,5 A; 8 kV, 0,8 A; 15 kV, 0,5 A
AC		0 … 60 V, 110 A; 0 … 220 V, 30 A
Resonance burning		0 ... 15 kV, 20 A with T 22/13
Pinpointing		
Acoustically by surge module	0 … 8 / 16 kV / 32 kV, 1750 J 2,5 … 10 s	0 … 2 / 4 kV, 1150 J
Surge rate		0 … 8 / 16 / 32 kV, 3500 J
Surge wave receiver		digiPHONE+
Sheath faults with DC STep voltage		0 … 10 kV, max. 750 mA (MFM 10)
		0 … 5 kV, 0,8 A 0 … 10 kV, 0,5 A (with BPS HV)
Step voltage receiver		ESG NT
Audio Frequency		
Output power		200 W
Frequencies		491 Hz, 982 Hz, 8.44 kHz also with SignalSelect, Supermaximum
Impedance		0,5 Ω ... 1 kΩ automatic impedance matching
Sheath fault pinpointing with AC audio frequency		Step voltage probe, direct or capacitive
HV connections		
3 x 1 Phase		**ECONOMY**: 50 m (manual cable drum)
		COMFORT: 50 m (motorised cable drum)
		PRO: 50 m (motorised slip-ring cable drum)
1 x 3 Phase	**Multi**: 50 m (motorised cable drum 3phase)	
LV connections, power supply		
	Earth potential monitoring, 10 m (manual cable drum) Integrated safety system with FU/EP. Separation transformer Monitoring of: Voltage difference to protective earth Rise time of potential to protective earth Loop of protective earth to aux. earth Loop of cable shield to aux. earth	**ECONOMY**: Mains cable 50 m (manual slip-ring cable drum), Protective earth cable 50 m (manual cable drum)
		COMFORT: Mains cable 50 m (recoiling belt slip-ring cable drum), protective earth 50 m (recoiling belt cable drum)
		PRO: Mains cable 50 m (motorised slip-ring cable drum), Protective earth 50 m (motorised cable drum)
Teleflex connection		3-phase coax cable, 50 m (manual, recoiling band or motorised drum)
Safety cable drum		Safety cable drum 50 m (manual, recoiling band or motorised) with emergency-OFF, key interlock and status indicating lights
Operating conditions		
Operating temperature	-20 °C ... +55 °C	
Storage temperature	-25 °C ... +60 °C	
Weight		
	depending on options 800 ... 1300 kg	
Mains supply		
Mains voltage	230 V, 50 Hz (16 A connection)	120 V, 60 Hz
		Generator operation from vehicle engine
		Battery operation up to 4 hours
Power consumption	Separation transformer max. 2 kVA	Separation transformer 5 kVA with CEE-connector for extended requirements such as ARM Burning, air condition etc.

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