

# Centrix 2.0

## The world's most modern and powerful cable test van system



- Intuitive easyGO® operation using a touch display
- System powered by Li-Ion batteries
- Highest standard of safety with SafeDischarge technology
- Remote control of important system functions
- Cable diagnosis with 50 Hz slope technology
- Breakdown phase detection for three-phase cable testing

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### DESCRIPTION

Centrix 2.0 is the world's most modern and powerful cable test van system for fast, easy and non-destructive fault location up to 33 kV.

Equipped with the latest generation of cable diagnostics in conjunction with powerful VLF testing technology, Centrix 2.0 makes it possible to perform standard-compliant cable testing with accompanying partial discharge diagnosis.

The van's unique operating concept uses automatic measurement sequences, a touch display and JogDial to simplify operation. Faults can be located quickly, even by inexperienced users.

Centrix 2.0 is available in 1-phase or 3-phase versions.

### Centrix 2.0 sets new standards regarding user friendliness and performance:

- Linux® based control system – for the highest level of stability and security for the future
- Intuitive easyGO® operation using the 21.5" touch display and JogDial
- Step-by-step operator guide for inexperienced users
- Data automatically recorded and stored in the history database
- Decay plus double impulse procedure up to 80 kV
- ARM® live burning
- Highest standard of safety with SafeDischarge technology
- Simultaneous inspection and diagnosis with new 50 Hz slope technology
- System powered by Li-ion batteries
- Remote control of important system functions – for fault location that is non-destructive to the cables

**TECHNICAL DATA\***

<b>Centrix 2.0, standard 1-phase</b>		<b>Options</b>
<b>Resistance-capacitance measurement</b>		
		1 Ω ... 2 GΩ; 0 ... 19.9 μF 6 / 500 / 1000 V
		3-phase activation via Teleflex connection cable
<b>DC voltage test</b>		
Output voltage	0 ... 40 kV, I <sub>max</sub> 580 mA	0 ... 80 kV, I <sub>max</sub> 580 mA
<b>Cable sheath testing</b>		
Output voltage	0 ... 5, 0 ... 10, 0 ... 15, 0... 20 kV, I <sub>max</sub> 580 mA	
<b>VLF-voltage testing according to DIN VDE 0276</b>		
<b>VLF TDM 45 test attachment</b> CR / 50 Hz Slope Voltage: 0 ... 40 kV <sub>rms</sub> Max. load: 5.5 μF for 36 kV <sub>rms</sub> @ 0.1 Hz Sine wave Voltage: 0 ... 32 kV <sub>rms</sub> Max. load: 0,6 μF for 32 kV <sub>rms</sub> @ 0.1 Hz 10 μF for lower voltage/frequency DAC (option) For non-destructive PD diagnosis Voltage: 0 ... 32 kV <sub>rms</sub> Max. load: 7 μF for 20 kV <sub>rms</sub>  PD diagnosis with 50 Hz slope technology (option) tandelta diagnosis and Monitored Withstand Test (option)		<b>VLF TDM 62 test attachment</b> CR / 50 Hz Slope Voltage: 0 ... 60 kV <sub>rms</sub> Max. load: 4.45 μF for 60 kV <sub>rms</sub> @ 0.1 Hz Sine wave Voltage: 0 ... 44 kV <sub>rms</sub> Max. load: 1 μF for 44 kV <sub>rms</sub> @ 0.1 Hz 10 μF for lower voltage/frequency DAC (option) For non-destructive PD diagnosis Voltage: 0 ... 44 kV <sub>rms</sub> / 60 kV <sub>peak</sub> Max. load: 10 μF for 20 kV <sub>rms</sub> 8 μF for 32 kV <sub>rms</sub>  PD diagnosis with 50 Hz slope technology (option) tandelta diagnosis and Monitored Withstand Test (option) Breakdown phase detection for 3-phase testing
<b>VLF CR 40 test attachment</b> Voltage: 0 ... 40 kV <sub>eff</sub> (for 40 kV HV source) Max. load: 21 μF for 18 kV <sub>eff</sub> @ 0,1 Hz 8 μF for 36 kV <sub>eff</sub> @ 0,1 Hz		<b>VLF CR 54 test attachment</b> Voltage: 0 ... 54 kV <sub>eff</sub> (for 80 kV HV source) Max. load: 21 μF for 18 kV <sub>eff</sub> @ 0,1 Hz 8 μF for 36 kV <sub>eff</sub> @ 0,1 Hz 5 μF for 54 kV <sub>eff</sub> @ 0,1 Hz
<b>Cable fault location – pre-location methods</b>		
Pulse reflectometry, ARM® Multishot, decay method, ICE current pulse method, IFL intermittent fault localisation		ARM® Plus and Decay Plus double impulse, ARM® Live Burning
<b>Pulse reflectometry (Teleflex)</b>		
Operating modes	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 (for v/2 = 80 m/μs), resolution 0.1 m	
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	
<b>HV prelocating methods</b>		
ARM® multishot Surge voltage	0 ... 32 kV (15 fault patterns per surge pulse)	ARM® Plus double impulse 0 ... 32 kV, additional 4 kV Functional image with 350, 1500 V
Decay method Voltage	0 ... 40 kV (0 ... 80 kV for 80 kV HV source)	Decay plus double impulse 0 ... 40 kV (0 ... 80 kV for 80 kV HV source), additional 4 kV, functional image pulse with 1500 V
ICE current pulse method Surge voltage	0 ... 32 kV	
Sheath faults		0 ... 10 kV (option MFM 10 HV measuring bridge)

<b>Centrix 2.0, standard 1-phase</b>		<b>Options</b>
<b>Fault conversion</b>		
		<b>ARM® Live Burning</b> 0 ... 8 kV <sub>DC</sub> , I <sub>max</sub> 580 mA <b>Performance burning</b> 0 ... 20 kV <sub>DC</sub> , I <sub>max</sub> 40 A 0 ... 600 V <sub>AC</sub> , I <sub>max</sub> 70 A <sub>eff</sub>
<b>Cable fault location – pinpointing methods</b>		
<b>Acoustic pinpointing</b>		
Voltage levels	0 ... 4, 0 ... 8, 0 ... 16, 0 ... 32 kV	0 ... 2 kV, 1.200 J (free from wear with thyristor switch) 0 ... 60 kV, 1.800 J
Surge energy	2,000 J for 4, 8, 16 and 32 kV	4,000 J for 4, 8, 16, 32 kV
Surge sequence	3 – 20 surges/min, individual surge, automatic, controllable	digiPHONE+ floor microphone with headphones
<b>Step voltage method</b>		
Output voltage Pulse duty factor	0 ... 5, 0 ... 10, 0 ... 15, 0 ... 20 kV, I <sub>max</sub> 580 mA 0.5:1 / 1:3 / 1:6 / 1:12 low hazard potential due to clocked direct voltage	Step voltage receiver ESG NT with earthing rods
<b>Twist field method, line tracing</b>		Audio frequency generator (mobile or fully integrated) 10 W, 50 W or 200 W 491, 982, 8,440 Hz (also simultaneous), SignalSelect® automatic impedance change Audio frequency receiver
<b>Safety and protection equipment</b>		
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	5 kVA	
<b>Connection of the measurement system</b>		
<b>HV connection</b> 1-phase cable	Economy: 50 m (manual drum)	Comfort: 50 m (motor drum) Pro: 50 m (motor drum, slip ring)
<b>LV connection</b>	Economy: 50 m mains/protective earth cable, 15 m auxiliary earth (manual drum)	Comfort: 50 m mains/protective earth cable (belt pull) Pro: 50 m mains/protective earth cable (motor drum)
<b>Teleflex connection</b>		3-phase coaxial cable 50 m (manual, belt pull, motor)
<b>External emergency stop unit</b> with key switch, emergency stop and signal lights	Economy: 15 m connection cable	50 m connection cable (manual, belt pull or motor drum)
<b>Operating system and display</b>		
Operating system	Linux®	
Processor	intel i5	
Memory	8 GB RAM, 8 GB CFAST SSD for system recovery	
Hard drive	At least 320 GB	
Display	Touch display 21.5", resolution 1920 x 1080 (16:9), Full HD	additional monitor
Database	Automatic backup of all measurements	
Data export format	PDF, Cable-book database	GeoMap software (including GPS receiver)
Data synchronisation	USB 3.0	Remote control of important system functions using smartphone (GSM)
<b>System supply and operating conditions</b>		
Input voltage	230 V, 50 Hz	Synchron generator 7 kVA
Power consumption	< 3 kVA	Travel power generator 5 kVA
Operating temperature	HV unit -25 °C ... +55 °C, control unit -5 °C ... +55 °C	Li-ion battery power including charging electronics 5 kVA
Storage temperature	-25 °C ... +70 °C	Electric heating 2000 W
		Air conditioning on car roof, 230 V
<b>Weight</b>		
Standard version	Starting from 520 kg	

**TECHNICAL DATA\***

<b>Centrix 2.0, standard 3-phase</b>		<b>Options</b>
<b>Resistance-capacitance measurement</b>		
Measurement range	1 Ω ... 2 GΩ; 0 ... 19.9 μF	
Test voltage	6 / 500 / 1000 V	3-phase activation via Teleflex connection cable
<b>DC voltage test</b>		
Output voltage	0 ... 40 kV, I <sub>max</sub> 580 mA	0 ... 80 kV, I <sub>max</sub> 580 mA
<b>Cable sheath testing</b>		
Output voltage	0 ... 5, 0 ... 10, 0 ... 15, 0... 20 kV, I <sub>max</sub> 580 mA	
<b>VLF-voltage testing according to DIN VDE 0276</b>		
<b>VLF TDM 45 test attachment</b>		<b>VLF TDM 62 test attachment</b>
<b>CR / 50 Hz Slope</b>		<b>CR / 50 Hz Slope</b>
Voltage: 0 ... 40 kV <sub>rms</sub>		Voltage: 0 ... 60 kV <sub>rms</sub>
Max. load: 5.5 μF for 36 kV <sub>rms</sub> @ 0.1 Hz		Max. load: 4.45 μF for 60 kV <sub>rms</sub> @ 0.1 Hz
<b>Sine wave</b>		<b>Sine wave</b>
Voltage: 0 ... 32 kV <sub>rms</sub>		Voltage: 0 ... 44 kV <sub>rms</sub>
Max. load: 0,6 μF for 32 kV <sub>rms</sub> @ 0.1 Hz 10 μF for lower voltage/frequency		Max. load: 1 μF for 44 kV <sub>rms</sub> @ 0.1 Hz 10 μF for lower voltage/frequency
<b>DAC (option)</b> For non-destructive PD diagnosis		<b>DAC (option)</b> For non-destructive PD diagnosis
Voltage: 0 ... 32 kV <sub>rms</sub>		Voltage: 0 ... 44 kV <sub>rms</sub> / 60 kV <sub>peak</sub>
Max. load: 7 μF for 20 kV <sub>rms</sub>		Max. load: 10 μF for 20 kV <sub>rms</sub> 8 μF for 32 kV <sub>rms</sub>
PD diagnosis with 50 Hz slope technology (option)		PD diagnosis with 50 Hz slope technology (option)
tandelta diagnosis and Monitored Withstand Test (option)		tandelta diagnosis and Monitored Withstand Test (option)
Breakdown phase detection for 3-phase testing		Breakdown phase detection for 3-phase testing
<b>VLF CR 40 test attachment</b>		<b>VLF CR 54 test attachment</b>
Voltage: 0 ... 40 kV <sub>eff</sub> (for 40 kV HV source)		Voltage: 0 ... 54 kV <sub>eff</sub> (for 80 kV HV source)
Max. load: 21 μF for 18 kV <sub>eff</sub> @ 0,1 Hz 8 μF for 36 kV <sub>eff</sub> @ 0,1 Hz		Max. load: 21 μF for 18 kV <sub>eff</sub> @ 0,1 Hz 8 μF for 36 kV <sub>eff</sub> @ 0,1 Hz 5 μF for 54 kV <sub>eff</sub> @ 0,1 Hz
<b>Cable fault location – pre-location methods</b>		
Pulse reflectometry, ARM® Multishot, decay method, ICE current pulse method, IFL intermittent fault localisation		ARM® Plus and Decay Plus double impulse, ARM® Live Burning
<b>Pulse reflectometry (Teleflex)</b>		
Operating modes	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: maximal 22 dB	
Measurement range	20 m ... 1280 km (for v/2 = 80 m/μs), resolution 0.1 m	
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	

Centrix 2.0, standard 3-phase		Options
<b>HV prelocating methods</b>		
ARM® Multishot		ARM® Plus double impulse
Surge voltage	0 ... 32 kV (15 fault patterns per surge pulse)	0 ... 32 kV, additional 4 kV Functional image with 350, 1500 V
Decay method		Decay plus double impulse
Voltage	0 ... 40 kV (0 ... 80 kV for 80 kV HV source)	0 ... 40 kV (0 ... 80 kV for 80 kV HV source), additional 4 kV, functional image pulse with 1500 V
ICE current pulse method		ICE current pulse method
1-phase		3-phase
Surge voltage	0 ... 32 kV	0 ... 32 kV
Sheath faults		0 ... 10 kV (option MFM 10 HV measuring bridge)
<b>Fault conversion</b>		
		ARM® Live Burning 0 ... 8 kV <sub>DC</sub> , I <sub>max</sub> 580 mA
		Performance burning 0 ... 20 kV <sub>DC</sub> , I <sub>max</sub> 40 A; 0 ... 600 V <sub>AC</sub> , I <sub>max</sub> 70 A <sub>eff</sub>
<b>Cable fault location – pinpointing methods</b>		
Acoustic pinpointing		
Voltage levels	0 ... 4, 0 ... 8, 0 ... 16, 0 ... 32 kV	0 ... 2 kV, 1.200 J (free from wear with thyristor switch) 0 ... 60 kV, 1.800 J
Surge energy	2000 J for 4, 8, 16 and 32 kV	4000 J
Surge sequence	3 – 20 surges/min, individual surge, automatic, controllable	digiPHONE+ floor microphone with headphones
Step voltage method		
Output voltage Pulse duty factor	0 ... 5, 0 ... 10, 0 ... 15, 0 ... 20 kV, I <sub>max</sub> 580 mA 0,5:1 / 1:3 / 1:6 / 1:12 low hazard potential due to clocked direct voltage	Step voltage receiver ESG NT with earthing rods
Twist field method, line tracing		Audio frequency generator (mobile or fully integrated) 10 W, 50 W or 200 W 491, 982, 8440 Hz (also simultaneous), SignalSelect® automatic impedance change Audio frequency receiver
<b>Safety and protection equipment</b>		
Earth monitoring	Operational earth and protective earth to sta- tion 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 protec- tion, residual current circuit breaker	
Isolating transformer	5 kVA	
<b>Connection of the measurement system</b>		
HV connection	Multi: 50 m (motor drum), 1 x 3-phase cable	3 x 1-phase cable Economy: 50 m (manual drums) Comfort: 50 m (motor drums) Pro: 50 m (motor drums, slip ring)
LV connection	Economy: 50 m mains/protective earth cable, 15 m auxiliary earth (manual drums)	Comfort: 50 m mains/protective earth cable (belt pull) Pro: 50 m mains/protective earth cable (motor drum)
Teleflex connection		3-phase coaxial cable 50 m (manual, belt pull, motor)
External emergency stop unit	Economy: 15 m connection cable	50 m connection cable (manual, belt pull or motor drum)

<b>Centrix 2.0, standard 3-phase</b>		<b>Options</b>
<b>Operating system and display</b>		
Operating system	Linux®	
Processor	intel i5	
Memory	8 GB RAM, 8 GB CFAST SSD for system recovery	
Hard drive	At least 320 GB	
Display	Touch display 21.5", resolution 1,920 x 1,080 (16:9), Full HD additional	Additional monitor
Database	Automatic backup of all measurements	
Data export format	PDF, MeggerBook cable database	GeoMap software (including GPS receiver)
Data synchronisation	USB 3.0	Remote control of important system functions using smartphone (GSM)
<b>System supply and operating conditions</b>		
Input voltage	230 V, 50 Hz	Synchronous generator 7 kVA
Power consumption	< 3 kVA	Travel power generator 5 kVA
Operating temperature	HV unit - 25° C ... + 55° C, Control unit - 5° C ... + 55° C	Li-ion battery power including charging electronics 5 kVA
Storage temperature	- 25° C ... + 70° C	Electric heating 2000 W
		Air conditioning on car roof, 230 V
<b>Weight</b>		
Standard version	Starting from 750 kg	

\* We reserve the right to make technical changes.

#### SALES OFFICES

Megger GmbH  
Obere Zeil 2  
D-61440 Oberursel  
Germany  
T 0049 6171 92987-0  
E info@megger.de

Seba Dynatronic  
Mess- und Ortungstechnik GmbH  
Dr.-Herbert-Iann-Str. 6  
96148 Baunach  
Germany  
T 0049 9544 68-0  
E team.international@megger.de

#### CENTRIX\_DS\_EN\_V02

www.megger.com  
ISO 9001

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