

## System R-30

The most powerful cable fault location system

### Features

- ▶ Fault Prelocation up to 400 kV
- ▶ Testing up to 400 kV
- ▶ VLF with 70 kV
- ▶ ARM up to 50 kV

### Description

The System R 30 is the largest most powerful Test Van System within the Seba KMT product range. All functions and voltage ranges are full integrated and three phased. Recently extended and improved, this already powerful System's capabilities are increased.

DC test voltage levels, including the well known Decay travelling wave prelocation method are available up to 110 kV in the standard version (400 kV optional), thus keeping and extending the world-wide standards set by System R 30

The widely approved and well-known Arc Reflection Method up to 50 kV gives this system the capacity to locate faults in cables above the 30 kV range. The standard High voltage supply provides test voltage levels up to  $6 \times U_0$ .

A PLC operated central Control Unit monitors the safety and all vital functions of the system. The integrated safety system concept and the separation transformer for defined potentials, guarantees the high Seba KMT safety standards for men and equipment.

### Functions

The three phased connection offers a comfortable and safe switching of the phases by the internal SF<sub>6</sub> high voltage switch

The Control Unit is an integrated central operator interface for all operational modes and provides the monitoring of the system and the integrated safety facilities. It enables an easy and quick operation of the system (many local languages available), prevents operational errors and reduces the fault location time considerably.

Equipped with the new integrated **Teleflex M** - our state-of-the-art reflectometer, with high dynamic range, sampling frequency up to 100 MHz and selectable pulse width, the R 30 System provides excellent resolutions even at far distances. This is equally valid for reflectometer tests (LV pulse echo) and in combination with the various high voltage applications.



The modular concept offers optimised solutions suited to individual requirements. With a wide range of different possibilities, this system leaves almost no wishes unfulfilled.

The high surge power of 2500 Joules is the base for an efficient and fast localisation of cable faults.

An effective and safe testing of PE, XPLE and Paper Oil Insulated cables is provided for by use of the patented Seba KMT **VLF 0.1Hz Cosine Square Wave method**.

The very powerful high voltage source in high frequency converter technology provides the system with the required voltage level of 110 kV for testing, and with a standard current of up to 300 mA to handle high loads.

The system provides all known and proven Seba KMT high voltage prelocation methods as:

- ▶ ARM Arc Reflection Method
- ▶ Decay method
- ▶ Impulse current decoupling ICE

in combination with according high voltage and power features.

The extensive and approved safety concept of Seba KMT fulfils the highest safety standards by extensive use of safety interlocks, indications at the Control Unit, detection of errors, as well as use of a separation transformer and thus generates the maximum protection for men and equipment.

Technical Data		
Methods	Standard	Options
Insulation Testing		
	Megger BM 222 or similar up to 1000 V through external connector	
HV-Testing		
DC-Testing	0 - 110 kV, I <sub>N</sub> 5 mA at 110 kV, I <sub>max</sub> 290 mA Automatic Shut off at breakdown	0 – 400 kV I <sub>N</sub> 3.5 mA at 400 kV I <sub>max</sub> 290 mA External HV extension controlled via the system
VLF-Testing		VLF 0-52 kV or 0 – 70 kV 0.1 Hz Cosine-Rectangular Wave, maximum capacity 5 µF.
Prelocation		
Impulse Reflection Measurement	Mode: 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, auto end detection.	Data Base Software Winkis
Sampling Rate	1 MHz to 100 MHz	
Pulse width	0.05/ 0.1 / 0.2 / 0.5 / 1 / 2 / 5 µs	
Range	80 m ... 160 km at v/2 = 80 m/µs	
Pulse amplitude	max. 60 V / 1,5 kV for ARM and Decay Plus HV methods	
V/2	10 ...150 m/µs, ft or NVP	
Dynamic range	84 dB	
Compensation	25 Ohms ... 1.6 kOhms	
Accuracy	0.2 % of measuring range	
Resolution	0.1 m	
Display	1024 x 768 15" VGA Colour TFT	
Interface	USB, Printer and data interface	
Storage and Protocolling	Automatic Storage of all measurements Protocol Printout, also as PDF file or for Transfer to the Winkis Software	
HV-Methods		
ARM	3 / 6 / 12 / 25 / 50 kV	
Decay	0 -110 kV, travelling wave location	0 -400 kV, travelling wave location
Impulse Current	3 / 6 / 12 / 25 / 50 kV, surge impulse decoupling	
Burning	290 mA, 0-110 kV (rated output current)	25A DC, 0 - 15 kV,
Pinpointing		
Acoustical Distance Method with Surge Unit	0 - 3 / 6 / 12 kV 1,000 J in each range 25 / 50 kV 2500 J in each range Adjustable surge sequence 3 - 30 s, DC, single shot	0 - 3 / 6 / 12 kV 2,000 J in each range

<b>Audio frequency</b>	FLG 200 Output power: 200 W Frequencies: 480 Hz, 1.09 kHz, 9.8 k Hz Impedance: 0,5 Ohm to 2 kOhm with automatic and manual impedance matching	Other frequencies on request
<b>DC-Sheath Fault pinpointing with Step-voltage</b>		0 – 15 kV, $I_{max}$ 300mA, Pulse-pause ratio 1:2 with burn unit T 22/13 Earth fault locator for exact pinpointing
<b>AC-Sheath Fault pinpointing with Pearson Method</b>	FLG 200, Frequencies: 480 Hz, 1.09 kHz, 9.8 kHz	Digiloc P for exact pinpointing
<b>Connections</b>		
<b>HV- Connection</b>	3 x 1 phase with 50 m 110 kV HV cable on each cable drum	3 x 1 phase with 50 m 110 kV HV cable on motor driven cable drum 3 x 1 phase with 50 m 110 kV HV cable on motor driven HV-slipping cable drum
<b>LV-Connection</b>	50m Mains cable 2 x 4 mm <sup>2</sup> on slipping cable drum 50 m Earth cable 16 mm <sup>2</sup> cable drum 15 m FU cable	
<b>Teleflex-direct-connection</b>		<b>Teleflex Cable Drum</b> 50 m, 3 phased coaxial cable 50 $\Omega$
<b>Operation conditions</b>		
<b>Operation Temperature</b>	HV-Part: -25°C...+55°C Teleflex M: + 0°C...+45°C	Teleflex M: -25°C...+45°C Extended Temperature Range
<b>Storage Temperature</b>	-25°C...+70°C	-40°C...+70°C
<b>Dimensions</b>		
<b>Weight</b>	1050 kg depending on selected option and outfit	
<b>Size</b>		
<b>Mains supply</b>		
<b>Mains voltage</b>	230 V, 50 Hz (16 A connection)	120 V, 60 Hz (other voltages on request)
<b>Power consumption</b>	3 kVA maximum input via separation transformer 5 kVA for extended supply (Air condition, heater, tools etc.)	Battery powered with 4,5 kVA battery power supply. Operating time > 4 Hours Generator 5,5 kVA or Travelpower 3,5 kVA Wireless remote switch off via Mobile phone (GSM)