

R 30

The fault location system for applications in the low voltage up to transmission feeder cable network



- **Fault Prelocation up to 400 kV**
- **DC Testing up to 400 kV**
- **VLF testing up to 70 kV**
- **ARM® up to 50 kV**
- **Surging for Pinpointing up to 100 kV**
- **PD and TD testing and diagnoses**
- **High discharge capability for long hv cable feeders**
- **Battery Power Supply 5 kVA**

DESCRIPTION

The System R 30 is the largest most powerful test van system within the Megger product range. All functions and voltage ranges are full integrated and three phased. Single phase or two phase version are available on request. 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 or even 150 kV Option in the standard version (400 kV optional extension of the setup e.g assembled in a trailer), 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 DC test voltage levels up to $6 \times U_0$. The combination with Meggers VLF tester series makes the System R 30 to a suitable solution for cable fault location and cable diagnoses for the cable networks up to 30 kV cable rating.

A digital 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 Megger safety standards for men and equipment.

Functions

The three phased standard connection offers a comfortable and safe switching of the phases by the internal high voltage switch.

The Control Unit is an integrated central operator interface which follows Meggers User Interface-Platform concept well known from the Teleflex and Centrix series. 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 integrated highend Teleflex VX – our state-of-the-art reflectometer, with high dynamic range, sampling frequency up to 400 MHz and selectable pulse width – the System R 30 provides excellent resolutions even at far distances. This is equally valid for reflectometer tests 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 up to 3200 Joules is the base for an efficient and fast localisation of cable faults.

An effective and safe testing of PE, XLPE and paper oil insulated cables is provided for use of the patented Megger VLF 0.1 Hz 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 (optional 400 kV) for testing, and a high standard current of up to 300 mA to handle high loads.

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

- ARM® Multishot
- Decay method
- Impulse current decoupling ICE

in combination with according high voltage and power features.

The extensive and approved safety concept of Megger fulfills the highest safety standards by extensive use of safety interlocks, indications at the digital control unit, detection of errors, as well as use of a separation transformer and thus generates the maximum protection for men and equipment.

In general:

System concept R 30 is also useful for special requirements in on- and offshore feeder networks. In combination with the internal HV DC Source there are two different high energy discharge modules available:

Module 1: testvan mounted modul discharge capability 220kJoule @150 kV DC (-)

Module 2: trailer mounted external modul discharge capability 844kJoule @150 kV DC (-)

TECHNICAL DATA

R 30	Standard	Options
Insulation Testing		
	Individual insulation tester through external connector	integrated iso module up to 1000 V
HV testing		
DC testing	0 - 110 kV, IN 5 mA at 110 kV, I_{max} 290 mA Automatic shut off at breakdown	0 - 400 kV IN 3.5 mA at 400 kV Voltage 0 ... 150 kV (internal HV DC Supply unit) Voltage 0 ... 400 kV (external HV DC Supply unit) I_{max} 290 mA External HV extension controlled via the system VLF 0-54 kV or 0-70 kV 0.1Hz Cosine-rectangular wave, maximum capacity 5 μ F
VLF testing		VLF 80** VLF 60HP** TDM 45 system family** Surging for pinpointing 80 kV, 3200J Surging for pinpointing 100 kV, 2000J Battery Power Supply 5kVA
Prelocation		
ARM® Multishot	Surge voltage 0 ... 50 kV (15 fault patterns per surge pulse)	
ICE current pulse method	Surge voltage 0 ... 50 kV	
Decay method	DC ignition voltage 0 ... 110 kV	Decay method Voltage 0 ... 400 kV Voltage 0 ... 150 kV (internal HV DC Supply unit)* Voltage 0 ... 400 kV (external HV DC Supply unit)*
Display	1024 x 768 15" VGA color touch 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 MeggerBook Cable software	

** operation via central system control

TECHNICAL DATA

R 30

Standard

Options

HV methods

ARM®	3 / 6 / 12 / 50 kV
Decay	0 - 110 kV, travelling wave location
Impulse current	3 / 6 / 12 / 25 / 50 kV, surge impulse decoupling
Burning	290 mA, 0 - 110 kV (rated output current)

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
Audio frequency	FLG 200 Output power: 200 W Frequencies: 480 Hz, 1.09 kHz, 9.8 kHz Impedance: 0.5 Ohm to 2 kOhm with automatic and manual impedance matching
DC sheath fault pinpointing with step-voltage	

AC sheath fault pinpointing with Pearson-Method

FLG 200, Frequencies: 480 Hz, 1.09 kHz, 9.8 kHz
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Connections

HV connection	3 x 1 phase with 50 m 110 kV HV cable on manual cable drum
LV connection	50 m Mains cable 2 x 4 mm ² on cable drum 50 m Earth cable 16 mm ² cable drum 10 m FU cable
Teleflex-direct-connection	

Operation temperature

HV part: -25 °C...+55 °C
Teleflex VX: -10 °C...+50 °C

Storage temperature

-25 °C...+60 °C

Weight

1050 kg depending on selected option and outfit

Mains supply

Mains voltage	230 V, 50 Hz (16 A connection)
Power consumption	5 kVA maximum input via separation transformer

0 - 15 kV, I_{max} 300 mA, pulse-pause ratio 1:2 with burn unit T 22/13 earth fault locator for exact pinpointing
Optional: MFM10 with sheath fault prelocation

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-slipring cable drum

Teleflex cable drum 50 m, 3 phased coaxial cable 50 Ω

120 V, 60 Hz (other voltages on request)
Battery powered with 4,5 kVA battery power supply
Operating time > 4 Hours
Generator 5,5 kVA or travelpower 3,5 kVA
Wireless remote control

We reserve the right to make technical changes.

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