



HIGHLIGHTS

- **Six different calibration functions**
- **1 TΩ and 10 kVdc limits**
- **Test voltage and current indication**
- **Easy recalibration using front panel keypad**
- **High voltage resistors and capacitors**

DESCRIPTION

M191 calibrator is based on 1 TΩ programmable high resistance decade with 10 kV DC compliance and additional electronic modules allowing calibration of not only insulation resistance, but also polarization index (PI), dielectric absorption ratio (DAR) and polarization ratio (PR) as well as test voltage and short current verification.

M191 is designed for thorough calibration of insulation testers, megaohmmeters, HIPOT testers or any other DC high resistance meters and safety testers with test voltage up to 10 kV. With M191's palette of functions you'll no longer need multiple instruments and complex setups for high voltage calibrations.

RS-232 and GPIB interface allow for remote control of the calibrator and time saving automated calibrations using SW package CALIBER/WinQbase.

SPECIFICATION

Specifications below describe 1-year absolute accuracy of this product including long-term stability, linearity, load and line regulation and reference standard measurement uncertainty as well as ambient conditions within specified limits.

High voltage resistance

Resistance range	10.00 k Ω to 1000.0 G Ω
Hot-switching limit	3 kVDC
Test voltage indication	50 – 10500 VDC, acc. 0.5 % + 10 V
Test current indication	calculated from voltage, 4 digit res.

Ranges, resolution, 1 year accuracy

Range	Accuracy (grounded L terminal)	Accuracy (floating L terminal ¹⁾)	Maximum test voltage
10.00 k Ω – 99.99 k Ω	0.2 %	0.2 %	68 VDC
100.0 k Ω – 999.9 k Ω	0.1 %	0.1 %	330 VDC
1.000 M Ω – 9.999 M Ω	0.1 %	0.1 %	1 310 VDC
10.00 M Ω – 99.99 M Ω	0.1 %	0.1 %	5250 VDC
100.0 M Ω – 999.9 M Ω	0.2 %	0.2 %	10 500 VDC
1.000 G Ω – 9.999 G Ω	0.5 %	0.5 %	10 500 VDC
10.00 G Ω – 19.99 G Ω	1 %	1 %	10 500 VDC
20.00 G Ω – 99.99 G Ω	1 %	2 %	10 500 VDC
100.0 G Ω – 299.9 G Ω	2 %	3 %	10 500 VDC
300.0 G Ω – 1.000 T Ω ²	5 %	6 %	10 500 VDC

¹ 15 VDC maximum floating voltage.

² Voltmeter is disabled in 300 - 1000 G Ω range.

High voltage capacitance

Capacitor nominals	10, 50, 100 nF, +-10 %
Calibration uncertainty	0.3 % + 200 pF
Max. test voltage	5250 VDC
Test voltage indication	50 – 5250 VDC, acc. 0.5 % + 10 V

SHORT function for Short test current verification

Current range	0.0000 – 5.0000 mADC
Current measurement accuracy	0.2 % + 5 μ A
Nominal resistance	2.9 k Ω

Timed test verification

Time range	5 – 9 999 s
Time accuracy	0.01 % + 0.3 s
Trigger voltage	< 100 VDC
Nominal resistance	100 M Ω

Dielectric polarization parameters

Functions	DAR, PI, PR, custom polarization
Resistance range	10.00 M Ω – 100.0 G Ω
Max. test voltage	3000 VDC
Time range	1 – 9 999 s

GENERAL DATA

Warm-up time	15 minutes
Reference temperature	+21 °C – +25 °C
Operating temperature	+13 °C – +33 °C
Storage temperature	-10 °C – +55 °C
Temperature coefficient	10 % of accuracy / °C outside Tref
Reference humidity	50 % RH maximum
Humidity coefficient (for RH 50 % – 70 %)	10 kΩ – 100 MΩ: 2 % of accuracy / % RH 100 MΩ – 10 GΩ: 5 % of accuracy / % RH 10 GΩ – 1 TΩ: 15 % of accuracy / % RH
Voltage coefficient	10 kΩ – 1 GΩ: 50 ppm / kV 1 GΩ – 20 GΩ: 150 ppm / kV 20 GΩ – 1 TΩ: 200 ppm / kV
Power supply	115 / 230 VAC, 50 / 60 Hz, 40 VA max
Dimensions (W x H x D)	450 x 150 x 430 mm
Weight	12 kg
Interfaces	RS232, IEEE488