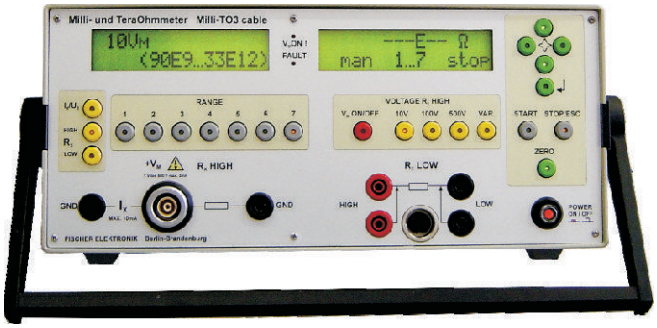
Ohm and Current Meter

Milli-TO 3 cable

for measurement of volume, surface, bleeder resistance, small currents and cable resistance especially at grounded specimens



- resistance range from 1 x 10^{-5} Ohm resolution to 1.6 x 10^{15} Ohm
- current range from 0.01 pA resolution to 1.1 mA
- autoranging or manual ranging
- measurements at one-sided grounded specimens possible
- easy handling by predefined buttons
- variable test voltage from 1 to 500 V
- limit indication by relay and beeper
- compensation of thermo voltage in low ohm range
- automatic zero control
- variable timer from 10 to 300 seconds
- RS 232 interface
- measurement rate: approx. 1 per sec
- 2 LCD displays
- size in mm: 340 x 150 x 300 W/H/L
- weight: 5,7 kg

Accessories:
wide range of electrodes
measurement cables
resistors for calibration

The high-precision instrument Milli-TO 3 cable is a refinement of the Milli-TO 2, which was manufactured and sold with great success for over 20 years.

Milli-TO 3 cable is especially applicable to test grounded specimen like cables for applications in the cable industry or laid floorings.

The Milli-TO 3 cable identifies resistance values from 10 µOhm resolution up to 1.6 PetaOhm full scale easily and reliable.

To handle the instrument you can choose between an internal menu or a PC-GUI. The Milli-TO 3 provides a programmable and remote-controlled interface which also allows processing all measured data.

The measured values are displayed in scientific form with 2½ to 4½ digits.

You can choose between 3 predefined test voltages of 10 V, 100 V or 500 V or a variable voltage range, programmable from 1 V to 500 V in 1 V steps.

The test voltage source has a low capacitance and the max. test current is < 3 mA.

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Technical Specifications

High-Ohm (High Resistance Measurement)

Measuring range:	
- at measurement voltage	
1 V:	0.9 x 10^3 to 3.3 x 10^{12} Ω
10 V:	9 x 10^3 to 33 x 10^{12} Ω
100 V:	90 x 10^3 to 0.33 x 10^{15} Ω
500 V:	450 x10^3 to 1.6 x 10^{15} Ω
	up to 2 x 10^{15}detectable
	(through current measurement)
Ranges:	7; full auto ranging or manual ranging
Accuracy at 23 °C +/- 1 K within 12 months:	
range 1 to 5:	+/- 0.3 % +2 digits
range 6:	+/- 0.5 % +2 digits
range 7:	+/- 1 % +2 digits
Temperature coefficient:	15 °C to 35 °C: +/-0.1 % / K
Test voltage:	10 V, 100 V, 500 V or variable 1 V bis 500 V in 1 V steps
Accuracy of Test Voltage:	at 23 °C: +/- 0.2 %
Temperature coefficient of Test Voltage:	+/- 0.01 % / K
Test Current:	max. 3 mA at 10 kΩ load resistance
Test Voltage Source:	continious short-circuit allowed
Overvoltage protection at:	
V_M 10 V:	20 VDC
V_M 100 V:	200 VDC
V_M 500 V:	750 VDC
var. V_M 1 V to 500 V:	2 x V_M, max. 750 VDC
Test Voltage V_M OFF:	VM-shield in the triax-socket unloads over a 10 kΩ resistor to GND
Overvoltage at V_M OFF:	+/- 100 VDC
R_X / I_X connectors:	triax jack
V_M / GND:	panel jack 4 mm

Low-Ohm (Low Resistance Measurement)

Measuring Range:	180 mΩ to 180 kΩ
Resolution at 4½-digit Display:	
range 1:	10 µΩ
range 2:	100 µΩ
range 3:	1 mΩ
range 4:	10 mΩ
range 5:	100 mΩ
range 6:	1 Ω
range 7:	10 Ω
Test current:	
range 1:	1.0 A
range 2:	100 mA
range 3:	10 mA
range 4:	1 mA
range 5:	100 µA
range 6:	10 µA
range 7:	1.0 µA
Display:	2½-digit, 3½-digit, 4½-digit programmable
Method of measuring:	2- or 4-terminal method (Kelvin method) decade constant current
Compensation and controlling of thermo-voltage:	0 to +/- 20 mV allowed
Accuracy at 23 °C +/- 1K:	+/- 0.2 % of input +/- 2 digit (typically 0.1 %)
Temperature coefficient (15 to 30 °C):	+/- 0.1 % / K
Max. voltage over EUT:	< 4 VDC
Max. external voltage between source clamps:	-24 VDC and +3 VDC
Max. external voltage between sense clamps:	+/- 48 VDC
R_X connectors:	4 x 4 mm jack or 5-pol DIN connector
Fuse in the low-ohm circuit:	1.6 A MT at the rear side

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