MR300C-A

For objects with an extremely low resistance

High Precision Resistance Meters

Micro-ohmmeters

The MR300C-A micro-ohmmeter enables you to perform highly accurate resistance measurements at objects with an extremely low resistance such as cables, contacts, fuses, power connections, graphite, carbon and metal samples. In the lowest measuring range of 100 µΩ the resolution is 10 nΩ!

The MR300C-A micro-ohmmeter features a constant current system, which guarantees an extremely stable measuring current (max. 10A) during a measurement. The measuring result is calculated as the quotient of the voltage drop across an internal reference resistor and the (amplified) voltage drop across the test object. Before each main measurement, in which the measuring current flows, a zero measurement without measuring current is performed, in which any offset voltages, in particular the thermo-electric voltage, are determined at the test object.

The zero point stored is compared with the actual value determined in the actual main measurement. After this, the result is displayed. Possibly a temperature conversion (see below) or other customer-specific conversions (e.g. linearization) are carried out before the result is displayed.

Due to this complex measuring procedure the measuring time of the MR300C-A is a little longer than that of comparable instruments. On the other hand, it is this complexity that guarantees the high accuracy and the very high long-term stability.

The measuring current does not flow continuously, but only for a short period of a measurement. For this reason, the heating-up of the instrument is reduced, and therefore a more compact design of the MR300C-A is possible.

Furthermore, the test object is measured more accurately, as it does not heat up. The temperature measurement converts the measuring value obtained to 20 °C using a coefficient of 0.392%/K for copper and 0.400%/K for aluminium.

The object temperature is measured via a probe (option) or entered directly, the conversion can be switched off. Direct input of the temperature is the standard.

As the MR300C-A performs a quotient measurement with exclusive reference to the internal reference resistances and compensates the offset voltages of the amplifiers and the thermoelectric voltage at the test object, an extreme stability of the measured values over long periods is reached.

The measurement error reached only depends on the stability of the reference resistors. The modification and ageing of any components do not affect the result of the measurements in any way. Unlike reference voltages and currents, such long-term stable resistances can be realised easily.

Features

- **Measuring range from 100 µΩ – 10 kΩ, decadic**
- **Overrange up to 80 %**
- **max. resolution of 10 nΩ**
- **Display 4 ½ digits**
- **Measuring error ≤ ± 0,02 % to ± 0,03 % depending on range**
- **Temperature measurements and conversion to 20 °C (switchable)**
- **Current flow time only 600 ms per measurement**
- **Contact error detection prior to every single measurement**
- **RS232C port to get external control over the instrument**

Questions?

phone: +49 (0)3328 / 3179 - 0

fax: +49 (0)3328 / 3179 - 10

email: sales@schuetz-messtechnik.com

Here you will get technical assistance as well as complete information regarding features, prices, shipment and reselling.

www.ohmmeter.de

Made in Germany

SCHUETZ MESSTECHNIK GMBH, Rheinstrasse 7a, D-14513 Teltow

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Technical Data

High Precision Resistance Meters

Micro-ohmmeters

Resistance measurement	
Range	100.00 µΩ – 10.000 kΩ, decadic
Overrange	80%, to 17.999 (e.g. 179.99 µΩ**)**
Max. error	± 0.03% of reading ± 3 digit (100 µΩ – 1 mΩ)
Max. error	± 0.02% of reading ± 2 digit (10 mΩ – 10 kΩ)
Measuring method	integrating dual slope quotient
Current	100 µA (10 kΩ) to 10 A (100 µΩ)
Range selection	automatically, using keypad, via RS232
Display	LED, 4 ½ digits
Current flow time	approx. 600 ms
Temperature Compensation	PT100: Copper - Aluminium selectable
Error detection prior to EVERY single measurement	
Current connection errors	display: ‚CUR', RS232: ‚ECUR'
Sense connection errors	display: ‚SEN', RS232: ‚ESEN'
Overrange >80%	display: ‚OVL', RS232: ‚EOVL'
Start of measurement	using keypad via RS232 or IEEE - 488 via PLC (potential free contact) via foot switch (optional)
Ports	RS232C (full device control) printer (parallel, optional) start contact (potential-free) IEEE – 488 (optional)
Dimensions	235 x 135 x 260 mm (WxHxD)

Available enhancements

- **PT100 1/10 DIN Temperature Probe**
- **IEEE – 488 enhancement:** control the instrument via IEEE – 488
- **Centronics printer interface:** parallel printers can be connected directly to the instrument using this enhancement
- **Foot switch:** to start measurement externally cable length 3 m
- **Software ‚Virtual MR300C-XFER'** sends measurement values to any Windows© application. Including special Excel© functions.

Available accessories

- **Cable** 4pin, 2 m long, banana plugs (4x, red, yellow, green, blue)
- **Cable** 4pin, 2 m long, various Kelvin clamps
- **DKD – calibration certificate** from the ‚Deutscher Kalibrierdienst'

DIN EN ISO 9001:2008

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