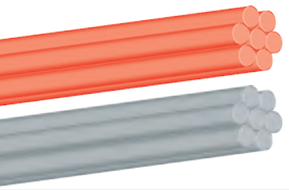
Large Aluminium and Copper Stranded Cable Measurement.

CLAMPING DEVICE 2383 WITH RESISTOMAT® 2304



Copper stranded cable

Aluminium stranded cable

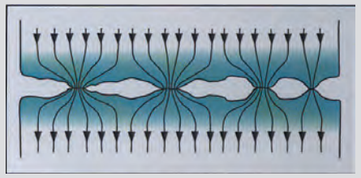
up to **2500 mm²**

One solution for two materials

The system is designed to cover the special requirements of aluminium. However copper cables can also be measured precisely – versatility that pays off.

The challenge of aluminium cables

The rapid formation of an oxide film and impurities between the wire strands of aluminium cables are the reason why standard clamping systems simply can't generate enough force to overcome the barriers and meet the requirements: as a result the measurement is less precise and non-reproducible.



Current paths.
Contact points between the individual strands.

burster system 2383 – the unrivaled power solution for aluminium cables

By applying forces of up to 100 kN the new clamping technology of burster overpowers whatever thick oxide film. The uniform power supply is ensured. Due to torque control, reproducible reference values for resistance are achieved.

A bonus for efficiency and safety

You obtain expedient and comparable control parameters for your production planning aimed at optimizing material deployment and cost cutting. Furthermore burster resistance measurement ensures documented proof that your aluminium or copper wire batch complies with customer requirements.

Precise measurement results

The exceptionally accurate measurement of the RESISTOMAT® 2304 ohmmeter creates a sound data basis for your quality management (detail see page 4).

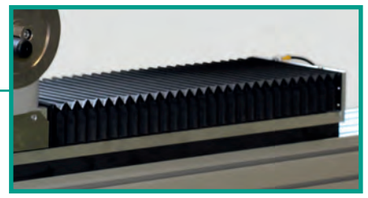
Symmetrical cable mount

Uniform mounting of the cable sample is always ensured by the special geometry of the clamping jaws. No bending or sample preparation needed. The clamping jaws optimally transfer their tremendous force to the cable probe.

Current input
±10 A

Precision based on exact distance

Adjustability of the distance between the power input and the measurement point ensures correct results and allows the sample to be shortened from 3.40 m to 2.20 m, saving material and easing the handling.



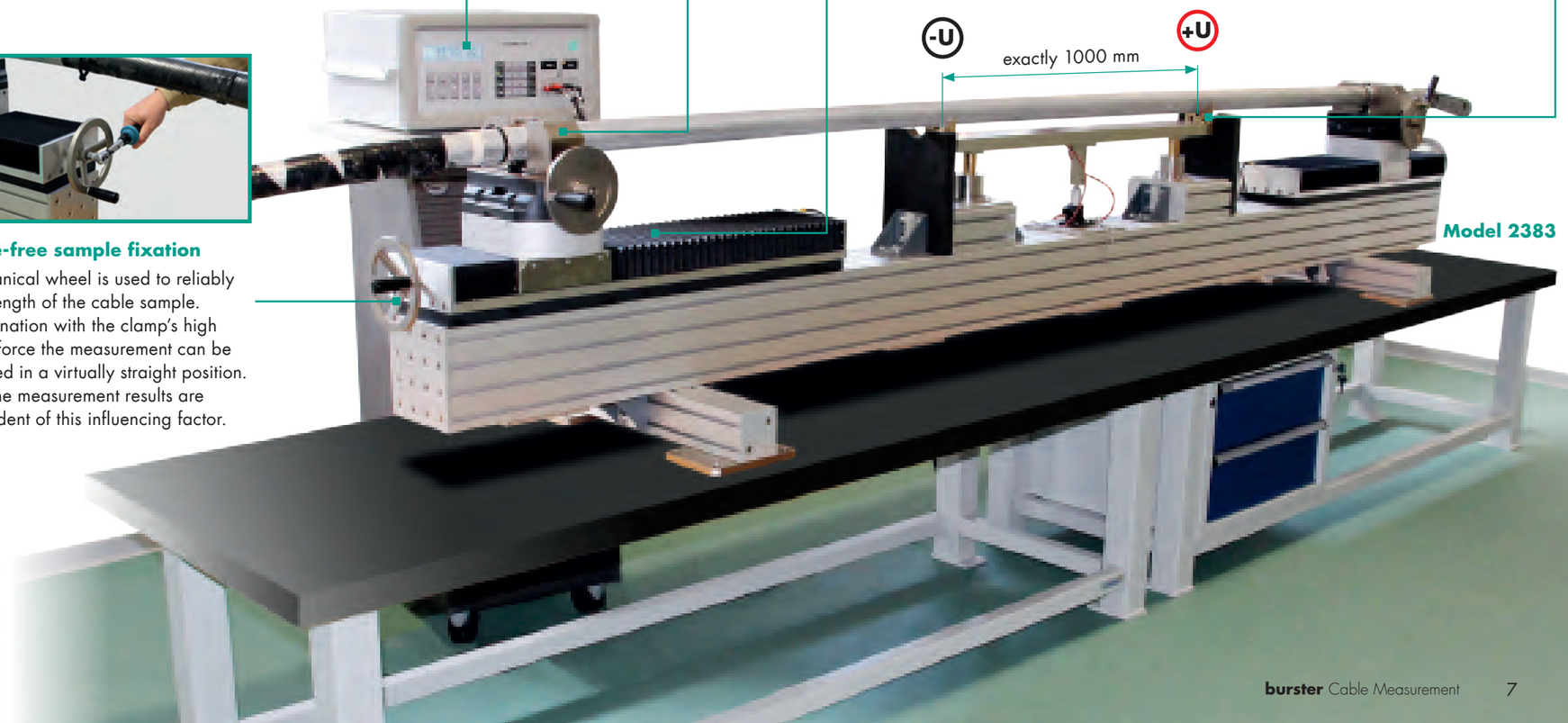
Reproducibility due to exact temperature values

Copper respectively aluminium changes its resistance by around 0.4 % per Kelvin. In order to create clearly defined measurement conditions despite temperature fluctuations the RESISTOMAT® 2304 ohmmeter is connected to a calibrated RTD sensor.

RESISTOMAT® 2304

Flexure-free sample fixation

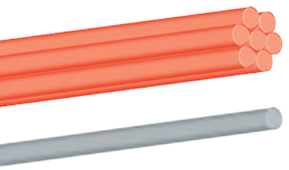
A mechanical wheel is used to reliably set the length of the cable sample. In combination with the clamp's high fixation force the measurement can be performed in a virtually straight position. By this the measurement results are independent of this influencing factor.



Model 2383

Large Cable and Wire Measurement.

CLAMPING DEVICE 2381-V001 WITH RESISTOMAT® 2317



Copper twisted or wire

Aluminium wire

1 mm² up to **2500 mm²**

Clamping Fixture

- Measuring length 1000 mm, sample cross-sections from 1 mm² up to 1500 mm² (max. diameter 44 mm) Optional: up to 2500 mm² (max. diameter 57 mm)
- Large distance between current and voltage tap ensures uniform current distribution
- Adjustable clamping support for sample straightening, particularly advantageous for larger cross-sections
- High clamping force
- Pt100 sensor integrated for ambient temperature measurement of cable

RESISTOMAT® 2317

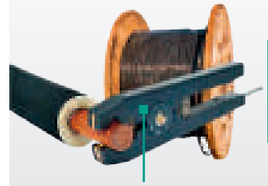
Measuring range	Resolution	Measuring current
200.00 µΩ	0.01 µΩ	7 A
20.000 mΩ	0.001 mΩ	1 A
200.00 mΩ	0.01 mΩ	1 A
2.0000 Ω	0.1 mΩ	100 mA

- Accuracy 0.03 % Rdg.
- Autorange
- Temperature measurement accuracy 0.1 °C
- Temperature compensation for all materials
- Thermal e.m.f. compensation

Cable Drum Measurement.

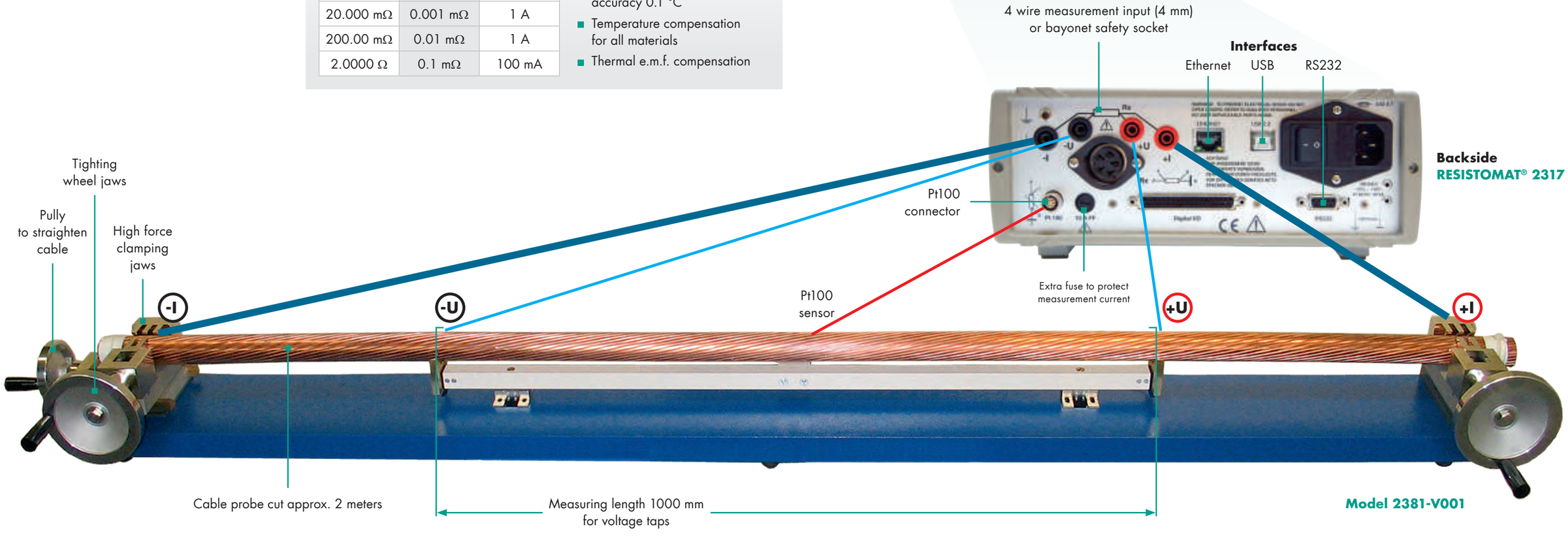
KELVIN TEST-TONGS 2386 WITH RESISTOMAT® 2317

- 4 wire measurement of ohmic resistances on dispatch-ready cable drums. Cross-sections up to 2400 mm² (ø 55mm)
- Indication in Ohm per km or Ohm per ft
- Measurement with respect of the temperature Pt100 sensor
- Inductive Mode



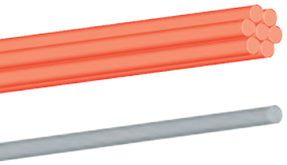
KELVIN test tong
2386-V001 – 4 wire

Display 2317



Highest Precision Power Cable Measurement.

WATERBATH CLAMPING DEVICE 2382 L WITH RESISTOMAT® 2304



Copper twisted or cable

Aluminium wire

1 mm² up to **1500 mm²**

- Measurement of resistance on wires, rails, cables or sector conductors for power cables

Coppers and Aluminium high temperature coefficient of around 0.4 % per Kelvin add substantial measurement error if not properly compensated. Lack of stable ambient temperature in a laboratory, the need for fast measurement near the production at elevated temperature or simply the most precise measurement for cut probes are achieved with this set.

- Water bath for exact temperature measurement
- Automatic temperature compensation and display of nominal ohmic value of 20 °C at RESISTOMAT® 2304
- Application measurement probe, length, diameter etc. same as model 2381-V001 (see page 2/3)

RESISTOMAT® 2304

The high current ±10 A source combined with the voltage bipolar quotient measurement in proven Kelvin-4-wire measurement let RESISTOMAT® 2304 achieves highest resolutions of 1 nΩ (0.001 µΩ) and basic accuracies 0.01 %. Decades of experience from the inventors of the digital ohmmeter result in the most accurate low ohmic instrument on the market many national laboratories rely on.

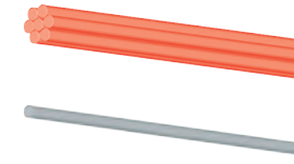
Thin Wire and Cable Measurement.

CLAMPING DEVICE 2381 WITH RESISTOMAT® 2316

0.1 mm² up to **100 mm²**

Copper twisted or cable

Aluminium wire



- Clamping device designed for sample cross-sections of 0.1 mm² up to approx. 100 mm²
- For use in production monitoring, quality assurance and general compliance testing
- Designed as robust, light-metal rail with one movable and one rigid clamping device
- Measuring length adjustable 50 – 1000 mm

RESISTOMAT® 2316

- Measuring range from 20.000 mΩ with up to 1 A
- Resolution up to 1 µΩ; accuracy 0.03 % Rdg.
- Temperature compensation for all materials
- Ethernet, USB, RS232, interfaces
- Backside connection (see page 3 / RESISTOMAT® 2317)