Messtechnik • Prozessinstrumentierung • Prüf- und Kalibriertechnik
Measurement • Process Instrumentation • Test and Calibration Equipment

ICS SCHNEIDER MESSTECHNIK

✓ **Ohmic resistance (Rel)**

✓ **Charge-Transfer Resistance (Rct)**

✓ DC voltage measurement:
  ±2.45 VDC (Res. 0,00001V)
  ±24.5 VDC (Res. 0,0001V)
  ±600 VDC (Res. 0,001V)

✓ Storage of **300000** readings

✓ Up to **1000 battery definitions** can be transferred from a database to the device.

✓ **RF-ID** battery identification with the use of unique transponder tags.

✓ Direct connection of **DMA35**(v3) density probe.

✓ **10 hours** of continuous operation

Mobile Battery Tester

TMC – 2001RTS

The **TMC-2001RTS** is a universal, multifunctional test device for the user-friendly and professional maintenance of battery systems. Together with our comprehensive **CS-Manager software** (included free of charge), this tester forms a professional and complete battery management system that can also be established centrally on a server. The measuring device is designed for safe and mobile use on site. A logistically flawless recording of measured values is perfectly supported by the transfer of battery definitions and the use of a **RF-ID transponder system** integrated in the device.

The **TMC-2001RTS** logs the voltage, ohmic and electrochemical resistance of a battery block in one step. The measurements of the temperature and electrolyte density (optional sensors) complete the extensive possibilities for examination the condition of a battery system.

May 2024
Subject to technical changes

Analog section

	Range	Resolution
Block voltage	± 24,5 VDC	0,1 mV
Total voltage	± 600 VDC	1 mV
Aux. voltage	± 2,45 VDC	0,01 mV
Resistance	1000 mΩ	10 µΩ

Interfaces

- Infrared (Standard)
- Bluetooth (Option)
- RF-ID Transponder System

Software

A complete battery management software, CS-Manager, is included.

The CS-Manager software is based on a SQL-Database. As on option, this database can be installed on a central server.

Delivery Scope

Option 1 – Scope of supply:
- TMC-2001RTS test instrument
- Battery charger
- Battery Management PC software (download)
- Carrying case

Option 2 – Scope of supply:
- TMC-2001RTS test instrument
- Battery charger
- Battery Management PC software (download)
- Carrying case
- Protective rubber holster with magnets
- Kelvin test probes, straight

Option 3 – Scope of supply:
- TMC-2001RTS test instrument
- Battery charger
- Battery Management PC software (download)
- Carrying case
- Protective rubber holster with magnets
- Kelvin test probes, right-angled

Measuring method

In contrast to simple test devices, the TMC-2001RTS loads the battery with a superposition of ramped current pulses. During testing, this current can produce a controlled current change of up to 2A.

The internal resistance is calculated from the resulting voltage profile. For this purpose, several highly accurate, synchronous A/D converters are integrated in the system.

A special feature is the simultaneous measurement of the ohmic resistance and the charge transfer resistance.

The **ohmic resistance** is the pure electrical loss. These losses occur at the pole bridges, grids, the electrolyte… This resistance indicates the ability of a battery to provide temporally rapidly varying currents, e.g. for clocked DC / DC converters. The ohmic resistance is one part out of the DC-resistance.

The **charge transfer resistance** is an electrochemical indicator, showing the ability of the charge transfer while charging or discharging. **Rct** increases while charging and decreases under discharge. This resistance can cause an insufficient charge of a battery block, or limit the expected DC discharge current. It is always a good idea to evaluate this parameter. These two resistors are in series and form together the DC resistance of a battery. **This resistance indicates the ability of a battery to deliver a DC current**. In this case, not only the ohmic resistance should be tested alone.

This shows that pure ohmic resistance testers (impedance testers from approx. 500 Hz upwards) only identify about half of the faults in a battery. **Electrochemical deficits are not discovered at all**. Testers with low frequency (about 10-60Hz), measure a mixture of these resistors and are usually not able to identify errors exactly.