

SCOPE

CRM 100B+
CRM 200B+
Contact Resistance Meter



Now 100 and 200 Amps are portable enough to measure micro-ohms quickly & reliably in EHV Switchyards...
... directly on CRM

CRM 100B+, CRM 200B+

The Product

SCOPE introduces its next generation of hugely popular CRM series contact resistance meters, CRM 100B+ and CRM200B+ in all new super light avatars, based on cutting edge ultra capacitor technology. CRM incorporates some state of the art hardware & smart software features making it a must have tool for testing & maintenance engineers.

CRM directly measures micro-ohm values at 100 / 200 Amps DC under live EHV switchyard conditions quickly & accurately.

CRM is specially designed to reliably measure micro-ohm contact resistances of circuit breakers, isolators, busbar joints, earth switch joints, welded joints etc., under the hostile electrostatic noise found in live EHV switchyards up-to 765 kV. SCOPE's ability to make electronics work in such environment enables CRM to measure millivolts signal in the presence of kilovolts noise. CRM is equally suitable for MV / HV / EHV equipments and is very useful to Power Companies, Equipment Manufacturers, Testing & Commissioning Companies and Test Laboratories etc.

Two models CRM 100B+ & CRM 200B+ having in-built 100A & 200 A current source respectively make use of innovative technology that makes them the lightest 100 / 200 Amps micro-ohm meter available.



CRM 200B+

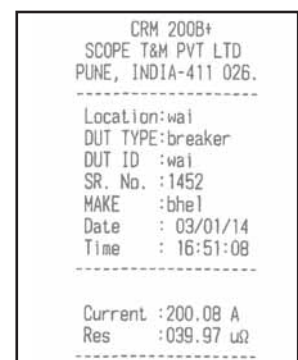
- ① Current Output Section
- ② LCD Display
- ③ Voltage Input Section
- ④ Master Earthing Connection
- ⑤ Power ON-OFF Switch
- ⑥ Battery Charging Input
- ⑦ USB Port
- ⑧ Fuse for Battery Protection
- ⑨ Thermal Printer
- ⑩ Keypad

The Measurement

Contact resistance measurement is very important for above mentioned equipments which are generally carrying large currents. Even small change in contact resistance value can cause heavy power loss and overheating of contacts or components which can lead to premature damage. Hence regular monitoring of contact resistance of such equipments is essential for all companies in Power Generation, Transmission & Distribution as part of their preventive maintenance.

CRM has a built-in 100 / 200 A DC current source, a precision instrumentation amplifier, digital readout & control logic. Measurement is effected by passing 100 / 200 ADC through the test object and sensing the voltage drop using the classical Kelvin's four wire method to measure the contact resistance.

Easy user interface & direct display as well as printing of test current & micro-ohm contact resistance makes testing really fast. It has two modes of operational control, Stand-alone mode & Control through PC mode.



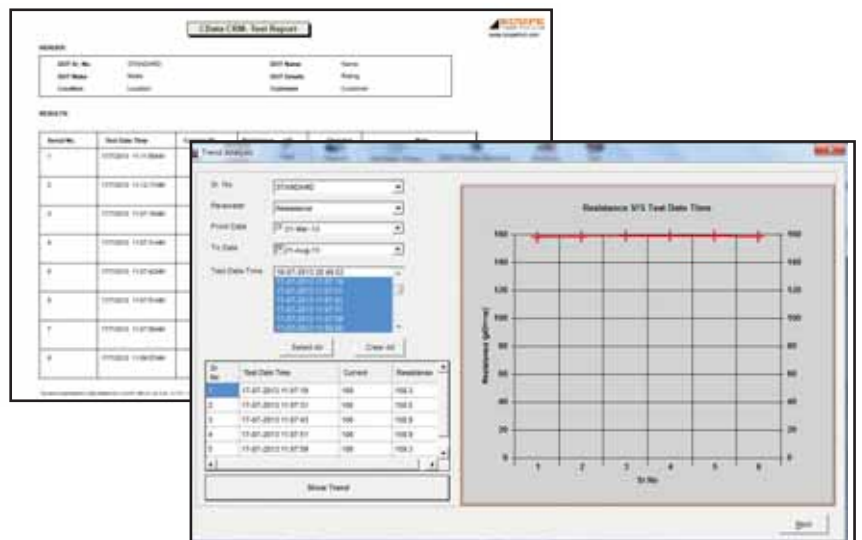
Special Features

- A radically new design makes CRM the lightest available contact resistance meter.
- Simultaneous & multiple samples of test current and voltage drop are taken at high speed using fast & high resolution ADCs.
- Resistance will be calculated by taking actual V/I ratio and averaging of individual samples giving stable & accurate results. It makes it independent of test current variations.
- Autoranging. Direct display of micro-ohm value does away with manual calculations.
- Create Device Under Test Identification data (DUT Library) on PC and upload to instrument. Save the test results in respective DUT folder in kit. Download the same to PC in similar folder structure.
- In built real time clock, memory and printer. Test time stamping on each record enables time references for future use.
- Fool-proof connections and repeatability are ensured by SCOPE's specially designed proprietary Ck clamps.
- Supplied with rugged calibrated test lead set suitable for 4 wire measurement.
- Optimised test lead set design gives lengths enough for testing EHV CBs, yet are lightweight.
- Mains as well as rechargeable Li-ion battery operated. In built battery monitor and cut off circuit for protection against battery deep discharge.
- Simple operation. Tests can be conducted even by technicians.
- Instrument is continuously available for measurements one after the other. No ON/OFF duty cycle.
- Enclosed in ultra rugged IP67 class hard moulded case.
- PC Downloading & Analysis including 'Trend Analysis' possible with "CData CRM" Software supplied with kit.
- Instrument debug options like memory check, printer check, PC downloading check are provided.

CData CRM: PC Downloading & Analysis Software

This windows based software enables control of CRM through PC, uploading of DUT ID details to instrument & downloading of test results from instrument to PC. Instrument is having a plug-n-play facility using USB cable. So once the software is installed on PC, instrument can be directly connected without wasting any time.

Trend Analysis for trending of historical data of a specific DUT over specified period and Report Generation for the tests taken is also possible. This report can be exported to PDF or Microsoft Excel and also can be printed. You can add operator name and any additional notes if you want.



Benefits

- Quick & simple tool to assess heat dissipation inside CB interrupter without opening it.
- Understand the power loss in high current capacity test objects, loose joints.
- Get early warning of developing hot spots. Save cascading effect.
- Battery operation enables measurement in absence of AC supply, especially useful on under-construction sites.
- Proven reliability in EHV switchyard environment. Thousands of units in use worldwide.
- Suits equally to Utilities, OEMs, Test Labs as well as Testing & Commissioning Companies.

CRM 100B+, CRM 200B+

Specifications

Parameter	CRM 100B+	CRM 200B+
Test Current (DC)	100A plus. Peak Test Current will be decided by the load resistance, however 100A minimum is guaranteed	200A plus. Peak Test Current will be decided by the load resistance, however 200A minimum is guaranteed
Resistance Range	0 - 200 $\mu\Omega$, 2000 $\mu\Omega$, 20m Ω ; Autoranging	
Resolution	0.1 $\mu\Omega$, 1 $\mu\Omega$ & 10 $\mu\Omega$ on above Ranges	0.01 $\mu\Omega$, 0.1 $\mu\Omega$ & 1 $\mu\Omega$ on above Ranges
Accuracy	Value \pm 2% \pm 1 Digit	Value \pm 1% \pm 1 Digit
Output Voltage (Max.)	10 VDC	17.5 VDC
Operation Modes	Stand Alone & PC Control	
Display	4 Line X 20 character LCD. 3 1/2 digit display for Test Current & Resistance	4 Line X 20 character LCD. 4 1/2 digit display for Test Current & Resistance
Printer	In-built, Thermal Printer	
Keypad	5 keys	
Memory	1000 records, Internal	
Inbuilt Battery	Li-Ion, 11.1V, 4 Ah	
Power	Input to Battery Charger - 90 to 275 VAC, 50/60 Hz \pm 10% ;100 to 300 VDC Charger output - 13.5 VDC, 1500 mA Max	
Communication Port	USB	
Software	CData CRM - For PC Control & PC Control, Downloading & Analysis, Windows based	
Environment	0 to 50°C, Upto 95% RH (Non condensing)	
Dimension	340 x 295 x 155 mm	
Instrument Weight	4 kg	5 kg

Ordering Information

Description	Quantity		
Contact Resistance Meter, Model CRM 100B+ complete with standard accessories	1 Set		
Contact Resistance Meter, Model CRM 200B+ complete with standard accessories	1 Set		
Description	Quantity	Description	Quantity
Standard Accessories			
Calibrated Test Cables 15m, with Ck clamps of 75mm opening	1 Set	CData CRM :PC Control Downloading & Analysis Software on CD	1 No.
Master Earthing Cable, 7m	1 No.	Carrying Case for Test Lead Set	1 No.
Battery Charger	1 No.	Instruction Manual	1 No.
USB Communication Cable	1 No.	Factory Test & Calibration Report	1 No.
Spare Fuses	1 Set		
Optional Accessories			
Calibrated Test Cables 20m, with Ck clamps of 75 mm opening	1 Set	Calibrated Test Cables 25m, with Ck clamps of 75 mm opening	1 Set
Ck clamps of 100 mm & 150 mm opening can be optionally supplied with any of above mentioned Test Cables.		Special Clamps / Spikes / Probes & Connector are optionally available to suit different test objects.	

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