



SCR ELEKTRONIKS

SALES PRESENTATION FOR MCCB TESTING EQUIPMENTS





LIST OF TEST EQUIPMENT

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1. MCCB THERMAL TRIP VERIFICATION TEST BENCH

● What It Is?

- SCR Elektroniks presents you a bench to test MCCB overload tripping as per IEC 60947-2 Cl 8.3.3 and custom based requirements.
- The system comes with user interface software configured in NI LabVIEW (Testware) making testing of MCCBs complete where thermal curves can be plotted on a PC. The test jig is flexible as well as custom built such that it accommodates a range of MCCBs of a particular manufacturer.

● Models Available and Customizing:

- The system can be customized for any number of MCCB testing stations
- Also the fixtures built to automatically test the MCCBs are customized as per the frame sizes of the user against a set of current ratings of the MCCBs
- Thus the user can indirectly customize the bench to test the entire MCCB range



● Basic Specifications :

- 440 V, 3 phase, 50 Hz input
- Number of Stations 1 to 4: User specified
- Output current programmable up to 8000 A (Economical Variants available for maximum continuous current less than 8000 A: User can customize the parameter) at a conveniently low voltage
- Can test MCCBs of different ratings and different number of poles on a single bench
- Test Procedure options: IEC 60947-2 / customized
- Pressure Required for pneumatic handling: Approximately 8-12 Bar depending on the MCCB size
- IBM PC / compatible make with NI LabVIEW 8. based Testware TM
- 500 VA branded UPS



● Salient Features :

- Available in multi-pole testing options
- Available in 1,2,3,4 testing stations
- Available in Manual as well as PC based option
- Drop down menu in the software to once select the type (rating or calibre) of MCCB: Rest of the test parameters get selected automatically (User can simply jump from one type of MCCB to other instantaneously)
- IEC based test parameters automatically configured
- Software: NI LabVIEW based for user interface, settings selection, process control & report generation
- Debug / Diagnostic Mode in the software
- Servo Controlled Voltage Regulation ensures stable voltage at the output
- Pneumatic based test jigs for correct contact at terminals
- Test results are displayed on monitor and stored against serial number or a bar code
- Generation of Reports in MS Excel format or to Print



● Key Benefits :

- The product is ideally suited for those factory floors where speed of testing and operator safety is paramount.
- The test bench is used to verify the thermal test (as well as instantaneous trip test if desired by the user) in one go.
- Additionally, those MCCBs equipped with a push button can be tested for push button off operation too.

● Key Photos :



MCCB Thermal Trip Verification Test Bench



2. MCCB SHORT CIRCUIT TRIP VERIFICATION TEST BENCH

● What It Is?

- This bench is built to test MCCB instantaneous tripping (also known as Short Circuit or Magnetic tripping) as per IEC 60947-2 Cl 8.3.3 and custom based requirements.
- A speciality of the system is that it includes differently designed systems for two different current ranges (Smaller range for currents < 2000 A and higher range for currents >2000 A) thus ensuring equal reliability, accuracy and regulation for both low current and higher current MCCBs.
- Specially designed custom built jigs are able to accommodate different types of MCCBs enabling the user to test all kinds of miniature circuit breakers on a single test bench. In addition, the system can be made such that it covers the entire range of MCCBs for production floors producing all ratings of MCCBs on a single line.

● Models Available and Customizing :

- The system can be customized for any number of fixture stations to accommodate any number of MCCB frame sizes and current ratings for thermal trip current values.
- Additionally, the system can be PC based, PLC based, manual, etc. The user, for example can have, say x number of stations for a given MCCB rating / frame size and y number of stations for another MCCB rating / frame size



Basic Specifications :

- 440 V, 3 phase, 50 Hz input
- Output current programmable up to 10000 A short time (Depending on the model chosen: User can customize the model) for short circuit trip testing of MCB at a conveniently low voltage
- Can test MCCBs of different ratings and different number of poles on a single bench
- Pressure Required for pneumatic handling: Approximately 8-12 Bar depending on the MCCB size
- PC provided: IBM PC / compatible make with NI LabVIEW based Testware TM
- 500 VA branded UPS (provided as an optional accessory)



● Salient Features :

- Available in multi-pole testing options
- Available in Manual as well as PC based option
- Drop down menu in the software to once select the type (rating or calibre) of MCCB: Rest of the test parameters get selected automatically (User can simply jump from one type of MCCB to other instantaneously)
- Current setting is instant without any auto transformer movement (Saves time and error due to human handling) for low current (<2000 A) system
- Software: NI LabVIEW based for user interface, settings selection, process control & report generation
- Debug / Diagnostic Mode in the software
- Servo Controlled Voltage Regulation ensures stable voltage at the output
- Pneumatic based test jigs for correct contact at terminals
- In built transducers and metering for accurate measurement and display of current and time transients ranging in milliseconds
- Contactor based heavy duty switching with indigenized relay based switching circuit for exact Test Ontime
- Test results are displayed on monitor and stored against serial number or a bar code
- Generation of Reports in MS Excel format or to Print
- Exact trip current wave-form (and not a vague band) is displayed on PC

● Key Photos :



MCCB Short Circuit Trip Verification Test Bench



3. MCCB RESEARCH AND DEVELOPMENT BENCH

- **What It Is ?**

- This is a hybrid bench to integrate MCCB instantaneous tripping as well as overload tripping as per IEC 60947-2 cl 6.3.3 and custom based requirements.
- In addition, temperature rise module helps monitor the temperature rise in various parts of the system.
- The system comes with user interface software configured in NI LabVIEW making testing of MCCBs complete where thermal curves with current as well as temperature rise can be plotted on a PC. The test jig is flexible such that different MCCBs can be tested and compared for their performance.

- **Models Available and Customizing :**

- The bench is purely customizable as per the R&D needs of the customer with respect to parameters.
- Additional measurement modules can be added of different makes for precision testing, measurement and compliance.



● Basic Specifications :

- 440 V, 3 phase, 50 Hz input
- Output current programmable up to 8000 A continuous and 20000 A short time depending upon the customer requirement at a conveniently low voltage. The source capacity can be custom built to suit a typical requirement w r t the current, voltage and VA rating.
- Can test MCCBs of different ratings and different number of poles on a single bench
- Test Procedure options: IEC 60947-2 / customized
- Pressure Required for pneumatic handling: Approximately 8-12 Bar depending on the MCCB size
- PC provided: IBM PC / compatible make with NI LabVIEW based Testware TM
- 500 VA branded UPS Temperature Rise Module : The test bench comes with an additional temperature rise module that can be integrated in to the main overload system. An advantage of this integration is that the temperature rise of a certain metallic part in the MCCB can be monitored and compared with the expected results. The module helps quality / R and D engineers to monitor any loose contacts with in the MCCB circuit that can be improved to obtain the desired quantity.



● Salient Features :

- Available in multi-pole testing options
- Drop down menu in the software to once select the type (rating or calibre) of MCCB: Rest of the test parameters get selected automatically (User can simply jump from one type of MCCB to other instantaneously)
- IEC based test parameters automatically configured
- Software: NI LabVIEW based for user interface, settings selection, process control & report generation
- Servo Controlled Voltage Regulation ensures stable voltage at the output
- Pneumatic based test jigs for correct contact at terminals
- Test results are displayed on monitor and stored against serial number or a bar code
- Generation of Reports in MS Excel format or to Print
- Exact trip current wave-form (and not a vague band) is displayed on PC
- Two or more curves can be compared on PC
- Temperature Rise module can be added as an additional option

● Key Benefits :

- This is a flexible bench with a lot of settable parameters.

● **Key Photos :**



MCCB Research And Development Bench



4. MCCB TEMPERATURE RISE TEST BENCH

- **What It Is?**

- This is a hybrid bench to integrate MCCB over current tripping as well as temperature rise testing as per IEC 60947 and custom based requirements.
- In addition, temperature rise module helps monitor the temperature rise in various parts of the system in rated current as well as over-current mode. The system comes with user interface software configured in NI LabVIEW making testing of MCCBs complete where thermal curves with current as well as temperature rise can be plotted on a PC.

- **Models Available and Customizing :**

- The system can be customized w.r.t the current source rating, the number of temperature channels, whether the system has to be supplied with isolation amplifiers or otherwise, etc.



● Basic Specifications :

- 440 V, 3 phase, 50 Hz input
- Output current programmable up to 8000 A continuous and 20000 A short time depending upon the customer requirement at a conveniently low voltage.
- Temperature rise as per IEC conformance / customized
- Test Procedure options: IEC 60947-2 / customized.
- Pressure Required for pneumatic handling: Approximately 8-12 Bar depending on the MCCB size (for routine testing)
- PC provided: IBM PC / compatible make with NI LabVIEW based Testware TM
- 500 VA branded UPS (optional).



● Salient Features :

- Available in multi-pole testing options
- Drop down menu in the software to once select the type (rating or calibre) of MCCB: Rest of the test parameters get selected automatically (User can simply jump from one type of test model to other instantaneously).
- IEC based test parameters automatically configured.
- Software: NI LabVIEW based for user interface, settings selection, process control & report generation.
- Servo Controlled Voltage Regulation ensures stable voltage at the output
- Pneumatic based test jigs for correct contact at terminals.
- Generation of Reports in MS Excel format or to Print.
- Temperature curves can be compared on a single graph.
- Temperature Rise software module.



- **Key Benefits :**

- Since the MCCB has a lot of parts that carry heavy current, this product is very essential for measurement of temperature rise of current carrying parts and otherwise.
- The measurement is usually carried at rated, near rated or overload current
- The test jig is flexible such that different MCCBs can be tested and compared for their performance. The bench integrates temperature data logger system with k type Cr-Al temperature probes with both digital and ON-PC online display of temperatures.
- Additionally, the bench may come only with a set of terminals – thus the user may test a range of MCCBs irrespective of the size which may include prototype as well as competitor breakers for quality comparison.

● Key Photos :



MCCB Temperature Rise Test Bench



5. MCCB Audit Test Bench with Temperature Chamber

• What It Is?

- This is a hybrid 3 station-bench to test MCCB thermal tripping characteristics as per IEC 60947-2 cl 6.3.3 and custom based requirements at a controlled temperature (that can be set) adding another compliance parameter to the list.
- The speciality of this test system is its in built heater allowing the user to conduct the test at any desired temperature.

➤ Models available and customizing:

- The system can be customized as per the desired current range and the number of stations.
- Additionally, temperature rise test module can be integrated with the bench.
- The temperature chamber (in which tests are conducted) can be customized for the desired temperature range (can mean a cold and a hot chamber), also the chamber size can be customized



• Basic Specifications :

- 440 V, 3 phase, 50 Hz input
- In built thermal heating chamber of dimensions depending upon the MCCB rating
- Output current programmable up to 800 A continuous (customizable)
- Can test MCCBs of different ratings up to 250 A
- Test Procedure options: IEC 60947-2 / customized
- Pressure Required for pneumatic handling: Approximately 8-12 Bar depending on the MCCB size
- PC provided: IBM PC / compatible make with NI LabVIEW based Testware TM
- 500 VA branded UPS



• Salient Features :

- Flexibility to the user for time, current and temperature settings for testing as per IEC as well as customized parameters
- Drop down menu in the software to once select the type (rating or calibre) of MCCB: Rest of the test parameters get selected automatically (User can simply jump from one type of MCCB to other instantaneously)
- IEC based test parameters automatically configured + The user can set its own parameters in the system for his / her research and development activities.
- Software: NI LabVIEW based for user interface, settings selection, process control & report generation
- Servo Controlled Voltage Regulation ensures stable voltage at the output.
- In built micro controller based timer to set time current cycle
- In built timers per station to display test and trip time
- Test results are displayed on monitor and stored against serial number or a bar code.
- Generation of Reports in MS Excel format or to Print
- Exact trip current wave-form (and not a vague band) is displayed on PC
- Two or more curves can be compared on PC



● Key Benefits :

- The system is mainly used to plot / determine the MCCB thermal trip characteristics in a high / low temperature environment.
- The system may be supplied with a test chamber which maintains temperature, humidity. More MCCBs (of different makes) can be compared simultaneously for tripping performance

• Key Photos :



MCCB Audit Test Bench With Temperature Chamber



6. PC BASED TEST SETUP FOR 63A TO 800A MCCB

- **What It Is?**

- SCR ELEKTRONIKS introduces PC Based Test Setup for 63A to 800A MCCB. The tests are Performed as Prescribed in IS the Panel Carries out different tests one by one and provides indication of the Test results as OK or NOT - OK.
- It is very useful and handy in line testing on Mass production line as the system hosts different fixtures to hat are designed as per exact frame sizes throughout the MCCB product range

- **Models Available and Customizing:**

- The current range can be customized
- The number of fixtures can be customized as per the frame sizes of the user
- Thermal manual calibration can be included as an additional option



• Features / Specifications :

- Two Variable Current Source are available 6V/800A CONT, 2500A INST & 8V/2400A CONT, 8000A INST.
- Four different types of test can be conduct
 - Thermal verification test.
 - Thermal calibration test.
 - Thermal magnetic test.
 - Temperature rise test.
- For temperature rise test seven sensors are provided for each station.
- Automatic pneumatic fixture are provided for Testing the product.
- PC Connectivity through USB port provided for data logging on PC.
- PC Based, interfaced with LabVIEW based Testware SCADA



● Key Benefits :

- High yield of production as the testing on all the fixtures is simultaneous and independent of each other
- Only placing the MCCB and lifting it from the product tray is manual – Rest of the electrical and mechanical processes are fully automatic
- Customized and modular design of fixtures makes support easy in case the customer design of MCCBs changes
- Prominent test and status screens make monitoring and result display easy and attractive
- Easy test settings – Even a factory level operator can operate the bench with ease
- Inbuilt diagnostic mode for periodic checking of the test bench – making maintenance easy
- Smart software for adding the product recipe and test sequencing
- Report generation directly to MS Excel for statistical analysis

- Key Photos :





7. GLOW WIRE TESTER

- **What It Is?**

- Table top model to verify flammability characteristics of moulds and insulators
- IEC 60695-2-10 (1980)

- **Models Available and Customizing:**

- **Automatic Version** – motorized movement of test specimen with automatic current control on contact with the heating loop (most popular model – less costly than pc based version)
- **Pc Based** - the above automated version with complete pc control and data logging + user management



• Basic Specifications :

- **Temperature Sensor** – Thermocouple: Fine wire of Cr/Al of 0.5 mm diameter located in 0.6 mm diameter pocket hole in temperature sheath resistant to 1000 degree centigrade
- In the model GWT A2, current is held approximately constant (15 % swing) once the heating element touches the specimen.
- **Heating Element** – Glow Wire: Nickel / Chromium (Ni/Cr-80:20%) wire of 4mm diameter with a shape as per the standard
- **Time Controller** - Micro-controller based programmable timer 0 to 999 sec
 - The total test time can be programmed through keyboard
 - The ignition time and extinguish time of flame can be registered in timer
 - The stored time values can be viewed after the end of test
 - Setting on PC for PC based variant
- **Penetration Depth** - Mechanically restricted to 7 mm
- **Specimen size** - 180 x 150 Sq.mm max. & 15 x 15 Sq. mm min., Thickness 10mm to 80 mm.
- Test specimen contact force against the glow wire is preloaded to 0.8 to 1.2N
- **Test Chamber Dimensions** – (Available only with automatic variants)
 - Dimensions – 600 mm W x 300 mm D x 610 mm H. (approx.)
- **Supply Voltage** – 230 V AC, 50 Hz, 1 Phase, 500 VA



• Salient Features :

- Nickel / Chromium based heating element (glow wire)
- Cr/Al based fine wire based thermocouple for temperature sensing
- Temperature Range - Adjustable up to 960° centigrade
- A motorized sliding carrier with an universally adjusted SS perforated tray is provided to mount the specimen
- Self adjusting constant current mode operation as soon as heater-specimen contact is established
- Motor brings the jig back to the pre-test position automatically as soon as the test is concluded
- Time Controller - Micro-controller based programmable timer 0 to 999sec Precision scale: Precision scale is provided to measure the height of the flame
- Safety – Emergency Switch, MCB, Fuses
- Entire panel hoisted in aluminium sections for better aesthetics
- Fully Automated Panel



● Key Benefits :

- Unique Benefits That Make Testing Reliable And Compliant :
 - Constant current mode (available only in automatic variants – the point of operation shifts from constant temperature mode to constant current mode once the loop touches the specimen)
 - Motor + weight arrangement – ensures 10 n force (thus, once loop – specimen contact takes place, the only force on the specimen stand (specimen) is that of a fixed weight

- Available Only In Pc Based Variant :
 - All the key benefits stated above
 - Plus, pc software for control and data logging with a few software features such as:
 - User hierarchy
 - Diagnostic and debug mode
 - Reports exportable to excel format
 - Calibration mode

● Key Photos :



Automatic Glow Wire Tester



Automatic Glow Wire With PC Based
Data Logging and Test Chamber



8. IMPULSE WITHSTAND TESTER

• What It Is ?

- Tester is designed to generate impulse voltage of 1.0 KV to 20 KV depending on the model chosen. The waveform generated has a rise time of 1.2 micro second and 50 micro second duration as defined in IEC 61180. The product conforms to the following list of standards:
 1. Low Voltage Switchgear and Control gear: IS/IEC 60947 -2004 Cl. No: 8.3.3.4.1
 2. Circuit Breakers: IS/IEC 60898:2002 Cl.no.: 9.7.6.1 & 97.6.2
 3. Residual Current Operated breakers: IEC 61008 & 61009 : Cl.no.: 9.20
 4. In addition, the test (commonly known as 1.2 / 50 uS test) is referred in a variety different standards.

• Models Available :

- Entire operation is pre programmable thus it is automatic. Peak voltage adjustable from front panel.
- The product is available in different kilovolt models such as 10, 12, 15 kV with customizable impedance.



● Basic Specifications :

- **Mains Supply :** 230 V AC, +/- 10% – 50Hz
- **Impulse Voltage** 1kV to 20 kV **adjustable with both polarities** (-1 kV to -20 kV) depending on the model chosen: 8 kV, 10 kV, 15 kV, 20 kV
- **Impulse Rise Time:** 1.2 micro sec. +/- 30%
- **Impulse Duration :** 50 micro sec. +/- 20%
- **Output for Oscilloscope:** Attenuated output 0 to 10 V for 0 to 10 kV and so forth depending on the model chosen (Linear Scale)
- **Air Supply** – Pressure – 5 Kg (Approximate)



Salient Features :

- Programmable and fully automatic test sequence
- LCD Display for Indication of test parameters and result
- Programmable module with sequencing for setting of:
 1. Positive, Negative or both polarities
 2. No. of pulses for positive or Negative polarity
 3. Duration between two consecutive Impulses
- Selection of polarity: Automatic through PLC Unit
- Automatic flash over detection and cut-off circuit
- Digital display for flashing number of cycles with polarities for breakdown
- Voltage Indication: Digital Meter to indicate peak voltage
- Short Circuit / Overload protection with MCBs
- Housed in extruded Aluminium Sections for better aesthetics
- Output pin for output to oscilloscopes to view exact wave shape



- **Key Benefits :**

- Unique Benefits That Make Testing Reliable:
 - PLC based operation enables pre-configurable settings thus automatic operation.
 - Modular design makes the tester maintenance friendly.
 - Specially designed legacy pneumatic switch which has an unique advantage over contactor.

● Key Photos :



Fig. Impulse Tester 15kV



Fig. Impulse Tester 10-12V



9. MILLIVOLT DROP TESTER

- **What It Is?**

- MVDT has a specially built constant current source (current generator) up to 400A (depending on model) and a dedicated PLC to store test parameters (in automatic models), perform test procedure, make the millivolt drop & junction resistance measurements and store test results, that can be retrieved later or downloaded to PC.
- PC based TestWare can display the test results & export those to Office, HTML, Printer or PDF.

- **Models Available and Customizing:**

- There are various models of this product – 10 V / 20 A, 5V / 50 A, 2 V / 100 A, 2 V / 200 A, 2 V / 400 A.
- In addition, the product can be PC based with the benefits such as graphical user interface, programmed current pump-in, and a time vs current vs millivolt drop curve



• Basic Specifications :

- Line Regulation (200V to 250V) : 0.2%
- Load Regulation (10-100% change) : 0.2%
- Measurement Accuracy (current) : 1%
- Measurement Accuracy (millivolt) : 1%
- Millivolt Range : 0-200mV & 0-2000mV
- Input Supply : User specified. default is AC 230V \pm 10%



• Salient Features :

- Microcontroller based unit
- Automated Operation Available
- Solid state DC current source from 1A to 400A depending on the range and model
- Millivolt range from 0-2000 mV
- Accurate adjustment of current with lesser time delay
- Line and load regulation of about 0.2%
- Compact in size
- Light weight and portable unit
- Heavy duty copper bus bars for minimal external voltage drop (error)
- Programmable keypad on the front panel
- LED Display to display test parameters and the test result
- PC Interface possible with software (optional) to convert test results to tabulated formats such as EXCEL



● Key Benefits :

- The product is used to measure the millivolt drop at a high dc voltage or to assess the micro-ohms of an MCB.
- The measurement is important – the MCB should not drop more voltage and consume active power in real world. Also the test ascertains if the MCB contacts are properly manufactured inside the MCB to prevent unwanted drops.
- The tester can be used as a routine tester if the manufacturer desires for additional compliance and quality control.

• Key Photos :



Millivolt Drop Tester



● Test It With Testware :

- SCR ELEKTRONIKS Testware enable you to automate the testing process, eliminates any room for human error and make automated testing, monitoring & reporting a breeze.
- Testware has all facilities like data logging, report generation, setting parameters for test through entering of some values, generation of graphs plotted against various factors. Generation of current and voltage waveforms are also possible
- Testware also has user hierarchy and password protection, diagnostic and calibration software modules, recipe configuration techniques and smart and friendly user interfaces
- We also boast of an in-house team of talented LabVIEW engineers being trained continuously

- Some Typical Software Screenshots :

Test Setup for 100A to 800A MCCB

Source 1
Source 2

Scan Barcode: P3B71AV

Magnetic - Test

Complete Results for this MCCB

	R (NT)	S (NT)	T (NT)	R (TR)	S (TR)	T (TR)
Current (A)	3926.7	-	-	-	-	-
Trip Time (mSec)	211.8	-	-	-	-	-
Result	PASS	-	-	-	-	-

Current: 3927 A
Time: 212 mSec

Selecting S Pole

Model Name	Rating	Serial No	Tested On	Set Hold Current	Set Trip Current	R Pole

Scan Barcode: INA718T85J

Magnetic - Test

Complete Results for this MCCB

	R (NT)	S (NT)	T (NT)	R (TR)	S (TR)	T (TR)
Current (A)	319.7	322.6	326.2	806.3	-	-
Trip Time (mSec)	209.6	209.7	209.7	209.8	-	-
Result	PASS	PASS	PASS	FAIL	-	-

Current: 806 A
Time: 210 mSec

FAIL

Model Name	Rating	Serial No	Tested On	Set Hold Current	Set Trip Current	R Pole
63A MCCB	63.0 A	INA718T85J	2017-10-02 11:16:12.416	315.0 A	800.0	

Buttons: Test, RETURN

Test Screen

- Some Typical Software Screenshots :



Settings Window

- **Documentation That Will Be Provided With Product :**

- Layout (dimensions, etc.)
- Metering and PCB termination diagram
- Power wiring diagram
- Control wiring diagram
- User manual
- Data acquisition module details (for PC based variants)
- Signed warranty certificate
- Calibration certificates (NABL optional)



• Why SCR Elektroniks ?

- Since 1975: Rich Experience In Test And Measurement
- Customized Solution
- Dedicated After Sales Support Team
- Designed More Than 100 Different Products
- In- House Team Of Micro-controller Design, Electrical And Electronic Design, Micro Controller Development, Labview (PC) Software And PLC Logic, Production, Testing And Commissioning And Support
- In-house Development Of Critical Electronic And Electrical Meters, Modules And Components
- ISO 9001 : 2015 Certified By Bureau Veritas – Maintaining High Quality In Our Internal Process
- Listed By IEC In The Past
- Fair And Consistent Pricing
- Our Ultimate Prize: Customer Delight

SCR ELEKTRONIKS

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THANK YOU