

# SCOPE

## HISAC Swift Circuit Breaker Operational Analyser



All in one solution for comprehensive yet quick testing  
of MV & HV circuit breakers...  
... HISAC Swift

## The Product

### HISAC Swift Circuit Breaker Operational Analyser

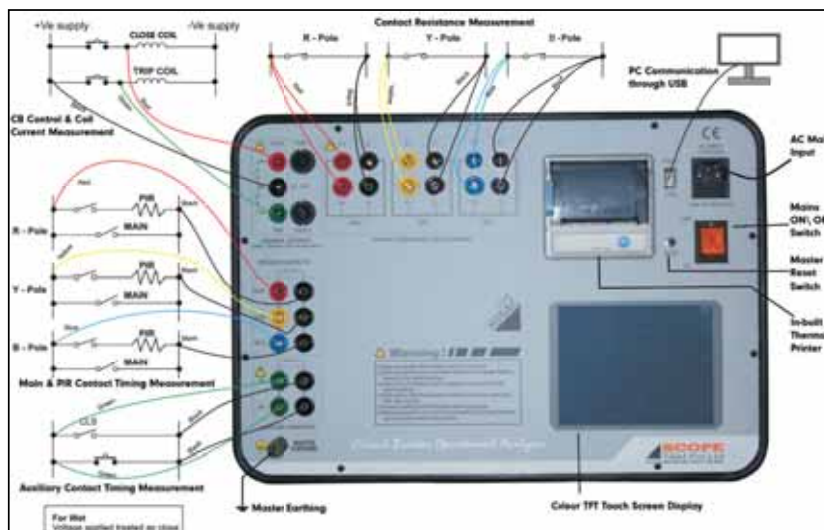
HISAC Swift, the latest offering from SCOPE of its hugely popular HISAC Series circuit breaker testing solutions is an all in one test instrument designed to accelerate the performance testing of MV & HV CBs. It is housed in robust moulded case and has built-in colour touch screen display, thermal printer, memory & PC downloading facility. It combines the features of CB Analyser & Micro-ohm Meter and yet is very portable & light weight. It is designed to work under the hostile electromagnetic conditions prevailing in live HV switchyards.

HISAC Swift is an ideal test tool for Utility maintenance engineers, Test & Commissioning engineers and engineers from industries that have large number of LV, MV or HV circuit breakers ; and where shut-down time is limited and testing productivity matters. It checks, records & prints all important parameters like operation timings of main & pre-insertion resistor contacts, auxiliary contact timings, close/trip coil current and contact resistance of all 3 poles, simultaneously. It eliminates the need of carrying separate instruments for these measurements. Simple user interface through on-board colour touch screen display & smart connections ensures swift testing of various types of CBs. Though the instrument can be used for any configuration of CBs, it is best suited for gang operated CBs.

## The Measurement

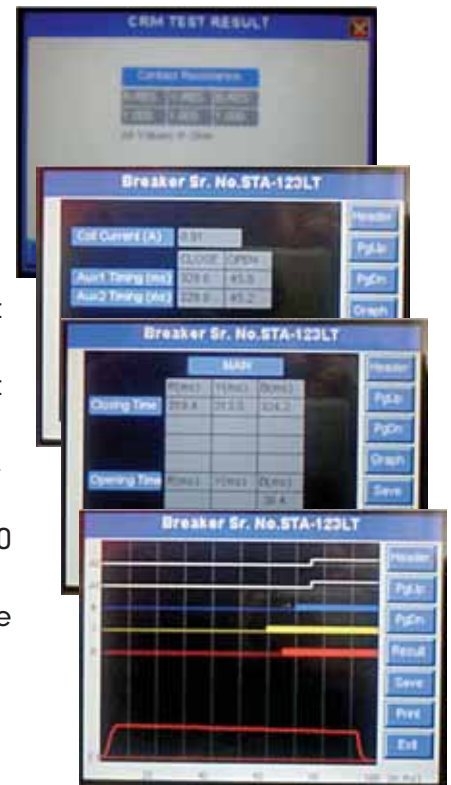
Proper functioning of CBs is of vital importance to ensure safety & availability of power network. These are expected to operate reliably & within specified time limits in order to isolate the faults & save expensive equipment from stress or damage. In order to be assured of such consistent performance of CBs, periodical testing of important parameters is carried out. HISAC Swift is a smart & trusted tool for these measurements.

- TESTS all types of CBs - LV, MV & HV for all critical performance parameters of all three poles in a single shot, thus saving downtime.
- MEASURES Main/PIR contact timings, bounce, non-simultaneity of contacts and auxiliary contact timings.
- RECORDS trip and close coil current characteristics.
- REGISTERS the contact resistance of three poles simultaneously - helps assessing condition of the contacts without opening the interrupter.
- DISPLAYS settings, graphical and tabulated test results.
- PRINTS test report in graphical format with test header and calculation footer, on built-in thermal printer.
- DOWNLOADS test data to PC for permanent storage & analysis
- CONNECTS to CB with wear resistant test leads of sufficient length, having quick-fit connectors, suitable for HV CBs.
- TRANSPORTS over long distance in rugged moulded case.
- ENABLES effective Condition Monitoring of CBs through CPlot 8: PC downloading & analysis software by comparing present test data with previous signatures and predicting future performance.



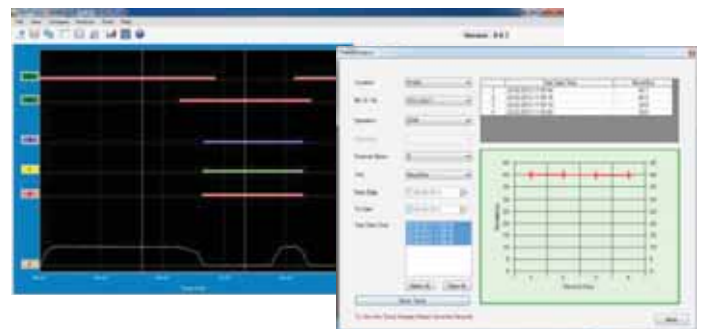
## Special Features

- Operations - C, O, C-O, O-C, O-C-O with configurable delays.
- Breaker information data entry and system settings are possible through the touch screen keyboard, which automatically invokes when this menu is selected.
- Contact Timing channels for 3 Main, 3 PIR & 2 Auxiliary Contacts with 0.05mS resolution.
- One internal channel to measure Close and Trip Coil currents.
- Three channels to measure Contact Resistance with 0.1 $\mu\Omega$  best resolution and range up to 2 $\Omega$ .
- TFT color graphical display with touch screen. Displays the test set-up & test results including graphical data.
- Printout through inbuilt 56 mm thermal printer. Prints test header, graph and calculation footer.
- In built real time clock, 2 MB inbuilt memory. Can store up to 100 records.
- PC Downloading & Analysis including 'Trend Analysis' & 'Compare Graph' possible with CPLOT 8 Software supplied with the kit.
- Simple operation. Tests can be conducted even by technicians.
- Enclosed in ultra-rugged IP67 class hard moulded case.



## CPLOT 8: PC Downloading & Analysis Software

- CPLOT 8 has many new, powerful features to make your maintenance strategy extremely effective and to really make it possible to perform condition based maintenance.
- Receipt of test records & storage in structured manner for quick future retrieval.
- Analysis of test results by moving two cursors to find out instantaneous values, differential values, zoom & pan.
- 'Compare' feature enables comparison of Header information, Graphs and Calculation Footer of two records in a single view.
- The trend analysis of parameters like close time, open time, trip / close coil currents, contact resistance values of a particular circuit breaker, taken over a period gives valuable inputs for decision making. The data is taken from set of up to 4 selected operations from records of different dates.
- Facility of back-up & retrieval of test records.
- Save graph as JPEG image for use elsewhere like during report generation.
- Test Report generation including Header, Graphical data & numerical calculation Footer.
- Printing of report on any external windows compatible printer (not part of supply).



## Benefits

- Single instrument for quick yet comprehensive testing of all types MV & HV CBs.
- Make connections to CB only once & measure all important parameters like operation timings, coil currents & contact resistance of all 3 poles simultaneously.
- Assess the operational healthiness of circuit breakers & the heat dissipation inside CB interrupter without opening it.
- Analysis of test results provides inputs to assess and correct settings for contact timings, auxiliary contact settings for obtaining specified C-O times & trip/close release mechanism settings.
- Built-in TFT colour touch screen display, memory & thermal printer makes it completely autonomous instrument.
- Suits equally to Utilities, OEMs, Industries, Test Labs as well as Testing & Commissioning Companies.
- Gives you the power to design your own condition based maintenance strategy and obtain optimum breaker performance with minimum maintenance shutdowns.

## Specifications

CHANNELS	CONFIGURATION	RANGE	RESOLUTION	ACCURACY
Contact Status	6: 1 Main + 1 PIR per pole, 3 poles simultaneously	Measurement duration 1mS to 4S @ 1kC, 0.05mS to 200mS @ 20kC	1mS @ 1kC 0.05mS @ 20kC	Value $\pm 0.05\%$ $\pm$ resolution
Auxiliary Contacts	2: Dry / Wet selectable	15 to 300V DC (for Wet Channels)	1mS @ 1kC 0.05mS @ 20kC	Value $\pm 0.05\%$ $\pm$ resolution
Coil Current	1: Trip / Close Coil current	1, 2, 5, 10, 25, 50A DC	0.1% of selected range	Value $\pm 1\%$ $\pm$ resolution
Contact Resistance	3: Multiplexed 3 Channels.10A Max.	200 $\mu\Omega$ , 2000 $\mu\Omega$ , 20m $\Omega$ , 200m $\Omega$ & 2 $\Omega$ , auto ranging	0.1 $\mu\Omega$ @200 $\mu\Omega$ 1m $\Omega$ @2 $\Omega$	Value $\pm 2\%$ $\pm 5 \times$ resolution*
Breaker Control	Two solid state contacts rated at 50A, 300V AC/DC for breaker operation			
Trigger Options	Open, Close, C-O, O-C, O-C-O, delay between operations selectable			
Sampling Speed	20kC, 10kC, 5kC, 2kC & 1kC selectable			
Plot Length	200mS at 20kC, 400mS at 10kC, 800mS at 5kC, 2000mS at 2kC and 4000mS at 1kC			
Test Results	Clear graphical result with test header and computation footer			
Display	320 x 240 pixel 5.7" colour TFT LCD with LED back light, touch screen			
Communication	USB port, for data download			
Printer	56 mm paper width, thermal printer			
Environment	0 to 50 C, 95% RH (non-condensing), Electrical noise normally found in charged HV switchyards			
Power	90 - 260V AC, 47-63 Hz, 25VA (approx)			
Dimensions	415 x 330 x 200mm			
Weight	10kg			
Type Testing	As per IEC 60068 / IS 9000 for Supply Voltage Variation, Dry Heat, Damp Heat, Change of Temperature, Bump, Vibration, Mechanical Shock			
Safety	As per IEC 61326 for EMI/EMC & As per IEC 61010-1 for Safety			

\*For 200 $\mu\Omega$  accuracy is Value  $\pm 5\%$   $\pm 5 \times$  resolution

## Ordering Information

Description	Quantity		
Circuit Breaker Operational Analyser, model HISAC Swift complete with standard accessories	1 Set		
Description	Quantity	Description	Quantity
<b>Standard Accessories</b>			
Contact Timing & Voltage Pick-up Cable, 7m	3 Nos.	Spare Fuses	1 Set
Auxiliary Contact Cables, 7m	2 Nos.	Soft Carrying Case for Test Leads	1 No.
Breaker Control Cable, 7m	1 No.	CPL0T 8 : PC Downloading & Analysis Software on CD	1 No.
Contact Resistance Current Cable, 7m	3 No.	Printer Paper Roll. One fitted in instrument + One in TLS case	2 Nos.
Master Earthing Cable, 7m	1 No.	Operation cum Instruction Manual	1 Set
Mains Cord, 3m	1 No.	Factory Test & Calibration Report	1 Set
USB Link Cable, for communication with PC, 1.5m	1 No.		
<b>Optional Accessories</b>			
Printer Paper Roll, 10 Nos.	1 Set		

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