

SCOPE

SCOT M3K+ Circuit Breaker Time Interval Meter



Forget about the high tension...
SCOT measures CB timings in live EHV switchyards,
quickly & reliably

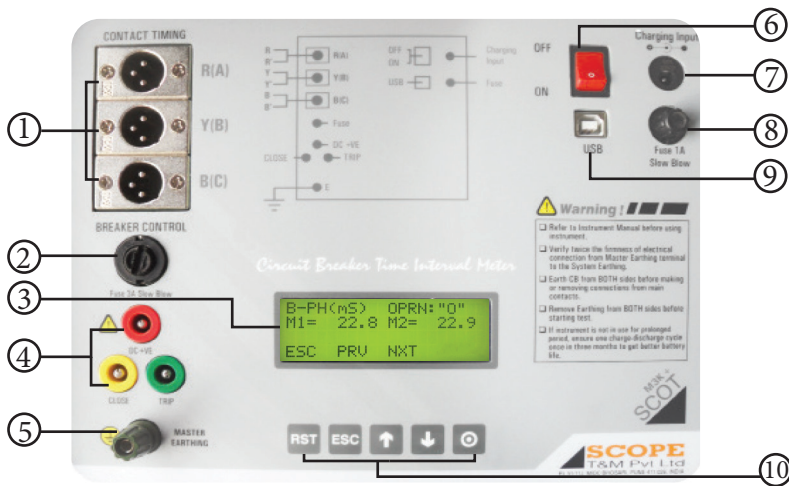
The Product

SCOPE's iconic SCOT series Circuit breaker time interval meter is in all new super light avatars, based on cutting edge micro-controller & embedded technology. SCOT M3K+ incorporates some state of the art hardware & smart software features making it a must have tool for testing & maintenance engineers. It is compact, lightweight and reliable instrument used for measurement of operating time of all types of HV and EHV circuit breakers under live switchyard conditions.

SCOT M3K+ measures and displays CLOSE, OPEN and CLOSE-OPEN times of Main contacts of 3 poles connected end to end, simultaneously. Ideally suitable for CBs with single break per pole.

The Measurement

Proper functioning of CBs is of vital importance to ensure safety & availability of power system. Circuit breakers are expected to operate reliably & within specified time limits in order to isolate the faults & save expensive equipment from excessive stress or damage. In order to be assured of such consistent performance of CBs, periodical timing measurements are carried out. SCOT M3K+ is being used as the most trusted tool for these measurements. SCOT M3K+ is connected to give command to Circuit breakers for CLOSE, OPEN or CLOSE-OPEN operation and timings in milliseconds are directly obtained for Main contacts of 3 poles connected end to end, Simultaneously. The non-simultaneity of operation of poles as well as contacts can be verified.



SCOT M3K+

- ① Contact Timing Measurement Channels
- ② Fuse for Coil Supply
- ③ LCD Display
- ④ Breaker Control Section
- ⑤ Master Earthing Connection
- ⑥ Power ON-OFF Switch
- ⑦ Battery Charging Input
- ⑧ Fuse for Battery Protection
- ⑨ USB Port
- ⑩ Keypad



Special Features

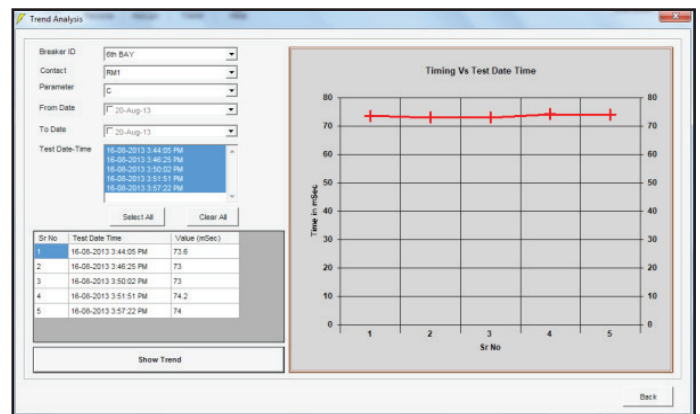
- A radically new design makes SCOT the lightest available CB Time Interval Meter
- High sampling frequency of up-to 10 KHz offers high timing resolution of 0.1ms
- Mains as well as rechargeable Li-ion battery operated.
- Real Time Clock, Memory and Printer, Automatic Test time stamping
- PC Downloading & Analysis including 'Trend Analysis' possible with "CData SCOT+" Software supplied with kit
- Create CB Identification data (CB Library) on PC and upload to instrument - Save the test results in respective CB folder in kit - Download the same to PC in similar folder structure
- Instrument debug options like Contact Status Check, Command Check, Memory Check, PC Communication Check is provided
- Simple operation - Tests can be conducted even by technicians
- Supplied with rugged test lead set, suitable for testing EHV CBs
- Enclosed in ultra-rugged IP67 class hard molded case

CData SCOT+: PC Downloading & Analysis Software

This windows based software has facility of creating DUT(CB) ID details which can be uploaded 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 get 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. Organizing records, printing of report on any external printer (not part of supply) is also possible. This report can be exported to PDF or Microsoft Excel™. You can add operator name and any additional notes if you want to add. Overall, software facilitates effective data management makes condition monitoring of CBs quite easy.

Test Date Time	Operation	Sampling Frequency	R01	R02	V01	V02	S01	S02	S03
16-08-2013 3:14:00 PM	5 KC	74.0 mS	Disable	73.4 mS	Disable	73.2 mS	Disable	73.2 mS	73.2 mS
16-08-2013 3:52:22 PM	5 KC	45.8 mS	Disable	45.8 mS	Disable	46.0 mS	Disable	46.0 mS	46.0 mS
16-08-2013 3:52:22 PM	5 KC	36.8 mS	Disable	36.8 mS	Disable	36.8 mS	Disable	37.0 mS	37.0 mS
16-08-2013 3:51:51 PM	5 KC	74.2 mS	Disable	73.4 mS	Disable	73.4 mS	Disable	73.8 mS	73.8 mS
16-08-2013 3:50:02 PM	2 KC	36.0 mS	Disable	36.0 mS	Disable	36.0 mS	Disable	36.5 mS	36.5 mS
16-08-2013 3:50:02 PM	2 KC	73.0 mS	Disable	73.0 mS	Disable	73.0 mS	Disable	72.5 mS	72.5 mS
16-08-2013 3:48:25 PM	1 KC	44 mS	Disable	44 mS	Disable	45 mS	Disable	47 mS	47 mS
16-08-2013 3:48:25 PM	10 KC	36.7 mS	Disable	36.7 mS	Disable	36.8 mS	Disable	37.1 mS	37.1 mS
16-08-2013 3:48:25 PM	10 KC	73.0 mS	Disable	72.8 mS	Disable	72.8 mS	Disable	72.3 mS	72.3 mS
16-08-2013 3:45:10 PM	10 KC	45.7 mS	Disable	45.9 mS	Disable	45.8 mS	Disable	45.6 mS	45.6 mS
16-08-2013 3:44:57 PM	10 KC	36.9 mS	Disable	37.0 mS	Disable	37.0 mS	Disable	37.1 mS	37.1 mS
16-08-2013 3:44:05 PM	10 KC	73.8 mS	Disable	73.8 mS	Disable	73.2 mS	Disable	73.0 mS	73.0 mS



Benefits

- Quick & simple tool to assess the operational healthiness of circuit breakers
- Understand the non-simultaneity of pole & break operation
- 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

Specifications

Parameter	SCOT M3K+
Contact Timing Channels	3 (Main contacts of 3 poles connected end to end, simultaneously)
Sampling Speed	10kHz, 5kHz, 2kHz, 1kHz & 100Hz - Selectable
Timing Range	1s, 2s, 5s, 10s & 100s respectively for above sampling speeds
Resolution	0.1ms, 0.2ms, 0.5ms, 1ms & 10ms respectively for above sampling speeds
Accuracy	Value $\pm 0.05\% \pm 1$ Digit
Breaker Control	Two solid state contacts rated at 300V, 35A AC/DC for breaker operation
Trigger Options	Close, Open, Close-Open
Display	4 Line X 20 character backlit LCD
Keypad	5 keys
Memory	100 records, Internal
Inbuilt Battery	Li-Ion, 11.1V, 4Ah
Power	Input to Battery Charger - 90 to 275V AC, 50/60Hz $\pm 10\%$;100 to 300V DC Charger output - 13.5V DC, 1000mA Max.; Instrument consumption - 15VA
Communication Port	USB
Software	CData SCOT+ : For PC Downloading & Analysis, Windows™ based
Environment	0 to 50°C, Upto 95%RH (Non condensing)
Dimensions	300 x 250 x 200 mm
Instrument Weight	5kg
Standard Accessories	15m long highly flexible wear-resistant Timing Test Cables - 1 Set, 7m long Breaker Control Cable - 1 No, 7m long Master Earthing Cable - 1 No, Battery Charger - 1 No, USB Communication Cable - 1 No, Spare Fuses - 1 Set, CData SCOT+ Software, Soft Carrying Case for Instrument and Test Lead Set - 1 No, Instruction Manual - 1 No, Factory Test & Calibration Report

Ordering Code

Example: SCOT M3K+ **F 1 F F F N F F R F I N** #

SCOT M3K+ **F F F F F F F F F**

F	Reserved	Customised	Z
N	None	None *	N
1	With Software *	Universal Plug	U
F	Reserved	Indian Plug *	I
F	Reserved	Reserved	F
F	Reserved	Customised Length of Test Lead Set	Z
N	None *	15m Test Lead Set *	R
Z	Customised	7m Test Lead Set	S
F	Reserved	Reserved	F

Note : * Standard Accessory / Feature

SCOT M3K+ (Ordering Code : F1FFNFRRFIN) means Circuit breaker time interval meter, 15m Test Lead Set, Indian Plug

Simple solutions for difficult measurements®

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