

# SCOPE

## Prima Series Primary Injection Kit



Innovative solution for CT Testing from Primary Side

## The Product

Prima Series of Primary Injection Kits are designed for Primary Current Injection Testing of Current Transformers, Protection Relays & Circuit Breakers during their Factory Testing, Commissioning and Routine Test. It is also used to test the secondary current of Current Transformers and for other applications that require variable high currents. The kit is designed for most optimal use of man and machine and is suitable to work in live switchyard conditions. Kit to be used for the injection of high current to the Primary side of the CT as per the guidelines of IEC 60044 / IEC 61869 and is suitable to work in live switchyard conditions up to 765kV.



Prima consists of separate Control Unit and light weight Loading Unit which can be taken very near to the DUT terminals, reducing the requirement of the higher open circuit voltage & burden. Further, due to this arrangement, length of the output current leads got reduced and the overall weight of the kit got reduced substantially.

## The Measurement

Primary current injection tests are among the most valuable tests that can be carried out on power systems as they take into account the performance of every component and are, therefore, the most reliable way of assessing the performance of the system under real world operating conditions. Primary current injection kits are used to test and commission Circuit Breakers, Bus Bars, CTs, Relays, MCBs etc. Current Transformers are used for measurement of system current. As we cannot measure the high current directly flowing in the system, we need to step down the current to a lower value. The standard values for rated Secondary Current are 1A and 5A, which is directly used for the Protection and Metering purpose.

As per IEC 61869/60044, to test the ratio or the healthiness of the CT, we need to inject the high current up to 120% of rated CT current in the primary side of the CT and the secondary current required to be measured simultaneously. As a general practice, the CTs are tested with 20%, 40%, 60%, 80%, 100% and 120% of the rated current. Also, for checking of thermal current behavior of CT, the rated thermal current is required to be injected in the primary side of the CT continuously. This is known as the Primary Current Injection Testing of the CT.

The ratio test of the CT is also done by injection of high current in the Primary side and measuring the current in the Secondary side. Also, it is required to test the actual performance of the Protection scheme (performance of Relays & Circuit Breakers) by injection of various current in the Primary side of the CT. Easy user interface & direct display of currents makes the testing really fast.

## Application

- Primary Current Injection Testing
- Current Transformer Testing
- Switchgear Testing
- Protection Scheme Checking / Relay Testing by Primary Injection
- Temperature Rise / Heat Run Test
- Loose Connection Identification
- Circuit Breaker, Bus-Bar Testing by Rated Current Injection

## Features & Benefits










- A radically new design makes Prima the lightest available kit in its category
- Modular, rugged and wheel mounted design with collapsible handle for easy transportation
- Suits equally to Utilities, OEMs, Test labs as well as Testing & Commissioning companies
- User friendly and simple standalone front panel operation
- Optional timer function for measurement of operation time of CB through Primary injection
- Continuous Current output up to 1000A / 2000A / 3000A AC (as per selection)
- Configurable current output of 'Rated', 'Rated/2' & 'Rated/4'
- Over-current protection - Auto cut-off when the output current exceeds 110% of the selected range
- Course Control through 'Raise' & 'Lower' Switch and Fine Control through rotary knob
- Secondary current measurement function through Clamp-on CT - first of its kind in its category
- Selectable secondary current measurement ranges of 1A, 5A & 10A
- Inbuilt input voltage measurement & display facility (Optional)
- Safety features like input supply fuses, MCBs, Power ON indications
- Automatic variac zero operation at power on
- Slow-blow fuse at mains input and MCB for overload protection
- Output On-Off function in control unit
- Natural air cooled with Thermal Cutoff/Protection facility
- Additional lifting handles provided for easy lifting of the kit
- Specially designed highly flexible flameproof output cable with higher current rating

## Specifications










Parameters		Prima 1\$	Prima 2\$	Prima 3\$
RatedMaxCurrent(Max.Burden)		1000A (1250VA)	2000A (2500VA)	3000A (3750VA)
Duty Cycle		Continuous up to 15 Min, 5 Min OFF		
Current Measurement		Primary : Through Rogowski Coil, Secondary: Through Clamp-on CT		
Timer (Optional)	Modes	OFF, O-C, C-O		
	Display	4 Digit LED		
	Range	9.999s / 99.99s / 999.9s / 9999s / 99min 59s / 999.9min / 99h 59 min / 999.9h		
	Resolution	0.001s / 0.01s / 0.1s / 1s / 10s / 0.1min / 1min / 0.1h		
	Accuracy	±0.05%		
Current	Display	Primary & Secondary Current : 5 Digit LED		
	Resolution	Primary : 0.1A, Secondary : 0.1mA		
	Accuracy	±0.5% of Reading ±0.5% of Range		
Supply Voltage		230V AC ± 10%, 50Hz ± 10%, Single Phase		
Environment	Temperature	Operating Temp. : -10°C to 50°C		
		Storage Temp. : -20°C to 60°C		
Dimensions	Humidity	Up to 95% RH (Non-condensing)		
	Control Unit	520mm (L) x 500mm (W) x 600mm (H)		
Weight (Approx.)	Loading Unit	230mm (Ø) x 130mm (H)		
	Control Unit	37.5kg	41.5kg	47kg
	Loading Unit	21kg	21.5kg	22kg
	Test Leads	13kg	17kg	20kg

\$ - Remaining Characters of Order Code

## SCOPE of Supply

	Items	Rated Max Current		
		1000A	2000A	3000A
	Control Unit	1 No	1 No	1 No
	Loading Unit housed in Soft Bag	1 No	1 No	1 No
	Rogowski Coil	1 No	1 No	1 No
	Connector Box	1 No	1 No	1 No
	Clamp-on CT	1 No	1 No	1 No
	120mm <sup>2</sup> Primary Current Cable, 2m with lugs at both end (1 Set)	2 Nos	3 Nos	4 Nos
	Test Lead Set (As per Order Code) with Carrying Case	1 Set	1 Set	1 Set
	Factory Test & Calibration Report	1 No	1 No	1 No
	Operation Manual	1 No	1 No	1 No

## Test Lead Set Composition

Details	Test Lead Set (TLS) Option		
	10m TLS	15m TLS	20m TLS
	1 Set	1 Set	1 Set
	3m	3m	5m
	10m	15m	20m
	10m	15m	20m
	6m	8m	10m
	10m	10m	10m
	1 Set	1 Set	1 Set
	1 Set	1 Set	1 Set
	1 Set	1 Set	1 Set

## Ordering Code

Example: Prima		N	N	F	F	N	N	N	M	R	I	N	#
Prima				F	F								
1	1000A Rated Max Current											Customised	Z
2	2000A Rated Max Current											None*	N
3	3000A Rated Max Current											Universal Plug	U
<b>N</b>	<b>None*</b>											<b>Indian Plug*</b>	<b>I</b>
1	Timer up to 9.999S											110V ± 10%, 50/60Hz AC Input	Q
2	Timer up to 99.99S											<b>230V ± 10%, 50/60Hz AC Input*</b>	<b>R</b>
3	Timer up to 999.9S											20m Test Lead Set	L
4	Timer up to 9999S											15m Test Lead Set	R
5	Timer up to 99M 59S											<b>10m Test Lead Set*</b>	<b>M</b>
6	Timer up to 999.9M											Crocodile Clamp	CC
7	Timer up to 99H 59M											None*	N
8	Timer up to 999.9H											Pulley Arrangement	P
<b>N</b>	<b>None*</b>											None*	N
1	With Voltage Display											Customised	Z
F	Reserved											None*	N
F	Reserved												

Note: \* Standard accessory / feature

# Prima (Ordering Code : 1NNFFNFFMRIN) means Primary Injection Kit, 1000A Output Current, 10m Test Lead Set, 230V ± 10%, 50/60Hz AC Input, Indian Plug

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