

MATERIAL SPECIFICATIONS CELL

TECHNICAL SPECIFICATION

OF

RELAY TESTING KIT

INDEX

Contents

1.0	SCOPE	3
2.0	CLIMATIC CONDITIONS	3
3.0	GENERAL FEATURES	Error! Bookmark not defined.
4.0	APPLICABLE STANDARDS	3
5.0	CALIBRATION CERTIFICATE	5
6.0	PRE DESPATCH INSPECTION	5
7.0	NAME PLATE & MARKING	6
8.0	GUARANTEE.....	6
9.0	PACKING	6
10.0	TRAINING OF ENGINEERS:	6

1.0 SCOPE

The Relay test kit shall be capable of single phase testing in electrical distribution system. The kit should be used for manual three phase secondary testing of protection devices. The kit shall be capable of testing Numerical relay by using reference voltage simulating the busbar. The kit shall also be used to test Electromagnetic and Static relays

2.0 CLIMATIC CONDITIONS

Maximum Ambient Air Temperature	55°C
Minimum Ambient Air Temperature	05°C.
Maximum Relative Humidity	Upto 95% (non-condensing)
Storage Temperature	-20°C to 70°C
Storage Humidity	Upto 95% (non condensing)
Max. Altitude	1000 meter

3.0 APPLICABLE STANDARDS

- a) EN 61010-1:2001, 61010-031 CAT III 600V for Safety requirement for electrical equipment for measurement, control & laboratory use
- b) EN 61326-1:2006 for EMI & EMC requirement for electrical equipment for measurement, control & laboratory use.
- c) IEC 60529 for Ingress Protection (IP 54 Required).
- d) CISPR 16-1 and 16-2 for Radiated emission for enclosure
- e) IEC 61000-4-2 for Electrostatic Discharge (ESD)
- f) IEC 61000-4-3 RF Electromagnetic Field
- g) IEC 60068-2-2/IS 9000 Part 3/Sec3 for Dry Heat Test
- h) IEC 60068-2-78/IS 9000 Part 4 for for Steady State Damp Test
- i) IEC 60068-2-14/IS 9000 Part 14/Sec 1 for Change of temperature
- j) IEC 60068-2-6/IS 9000 Part 8 for Vibration test
- k) IEC 60068-2-29/IS 9000 Part 7/Sec 2 for Bump Test
- l) IEC 60068-2-27/IS 9000 Part 7/Sec 1 for Mechanical Shock test

4.0 GENERAL FEATURES

4.01 The kit shall have provision for adjusting amplitude, phase angle, frequency.

4.02 The relay tester should be easy to operate, portable and lightweight.

4.03 All the voltage and current generators should be fully overload and short circuit protected. It should give LED indication of it on front panel

4.04 RS 232 port should be available for optional control through PC. The necessary compatible Serial to USB Converter cable should be supplied for interfacing with PCs having only USB ports

TECHNICAL SPECIFICATION OF RELAY TESTING KIT

4.05 After sales support: The after – sales service support / warranty services has to be provided.

4.06 Technical evaluation: Technical evaluation of offer of the equipment shall be carried out

4.07 Documentation: Sufficient no. of Operating/Service Manuals shall be provided along with supplied material

4.08 GENERAL TECHNICAL REQUIREMENTS

Input	
Input Main	100 - 240 V AC, 50 Hz
Current consumption	10A
Power Consumption	500 VA
Output	
AC current Source	2 x 35A @ 250VA [1 source 0 to 360 deg]
Accuracy	0.5%
Distortion(THD + N)	< 0.14% typical (0.25% max)
AC voltage Source	2 x 0-300V AC [1 source 0 to 360 deg] @ 125VA
Accuracy	0.03% range + 0.05% of reading
Distortion(THD + N)	< 0.14% typical (0.25% max)
Variable DC voltage Source	0-300V @ 125W
Variable phase angle	0-360deg, Accuracy -0.5deg, <1deg resolution
Variable frequency	10Hz-600Hz, Accuracy 0.03%, <10mHz
Impedance measurement	Z(ohms and angle), Z(ohms), R and X (ohms and ohms)
Power measurement	P (watts), S (VA), Q (VAR)
EXTERNAL MEASUREMENT	In-built multimeter
i. AC/DC Current	0-10A

TECHNICAL SPECIFICATION OF RELAY TESTING KIT

ii. AC Voltage	0-900V
iii. DC Voltage	0-900V
iv. Binary Inputs	4nos
v. External Start & Stop Timer -	2nos with Potential with Both AC/DC & potential Free
Time limit	35minutes
Binary outputs	1no.
Phase Angle measurement	0 - 360 degree
Relay Testing Application	<ol style="list-style-type: none"> 1. Differential relays 2. Directional relays 3. Overcurrent relay 4. Earth fault relay only 5. Under voltage/ Over voltage Relay
Safety	<i>LVD : IEC61010-1:2010</i> <i>EMC : IEC61326-1</i>
Accessories	The equipment should be supplied with test leads and mandatory accessories for testing relays.

5.0 CALIBRATION CERTIFICATE

The calibration of equipment shall be carried out at approved laboratory by National Board of Accrediation of Laboratories (NABL).

The manufacturers calibration certificates for all other equipment under supply with report from NABL approved laboratory shall be submitted for approval of C.E. (Testing & QC) before commencement of supply. Validity of calibration certificate shall be one year

The equipment shall be type tested for IP 54 degree of protection as per IS: 12063/ IEC 60529 against ingress of dust, moisture & vermin. The type test certificate shall be submitted along with the offer

6.0 PRE DESPATCH INSPECTION

The inspection shall be carried out at the place of manufacturer unless otherwise agreed upon by the manufacturer and purchaser at the time of purchases. For imported equipments the supplier/bidder shall offer the equipment at the authorized service centre /works of the original manufacturer

in India or at the supplier's works/Testing centre. The manufacturer shall offer to the inspector representing.

7.0 NAME PLATE & MARKING

Equipment shall have name plate clearly visible, effectively secured against removal and indelibly and distinctly marked with all essential particulars as per relevant standards. Following details shall be marked on the Name Plate

Manufacturer's name & address:

Serial no.

Purchase Order No.

Month and Year of manufacture

Name of purchaser: MSEDCL

Guarantee: Five Years

ISI mark if applicable

8.0 GUARANTEE

The instrument shall be guaranteed for the period of **Five** years from the date of Dispatch.

9.0 PACKING

The instrument shall be suitably packed in order to avoid damage or disturbance during transit or handling. Each instrument may be suitably packed in the first Instance to prevent ingress of moisture and dust and then placed in a cushioned carton of a suitable material to prevent damage due to shocks during transit. The lid of the carton may be suitably sealed. A suitable number of sealed cartons may be packed in a case adequate strength with extra cushioning if considered necessary. The cases may then be properly sealed against accidental opening in transit. The packing cases may be marked to indicate the fragile nature of the contents.

The following information shall be furnished with the consignment:

- i) Name of consignee.
- ii) Details of consignment
- iii) Destination
- iv) Total Weight of consignment.
- v) Sign showing upper / lower side of the crate.
- vi) Sign showing fragility of the material.
- vii) Handling and unpacking instructions

10.0 TRAINING OF ENGINEERS:

The successful supplier shall train Engineers of MSEDCL free of charge at their works for familiarization of design, operation and maintenance of testing equipments

TECHNICAL SPECIFICATION OF RELAY TESTING KIT

GURANTEED TECHNICAL PARTICULARS

ITEM NAME	RELAY TESTING KIT		
SR. NO.	PARTICULARS	REQUIREMENT	GTP VALUES
1	Input-		
	i. Main Supply	100 - 240 V AC, 50Hz	
	ii. Current consumption	10A	
	iii. Power Consumption	500VA	
2	CURRENT SOURCE OUTPUT		
	i. AC current Source	2 x 35A @ 250VA [1 source 0 to 360 deg]	
	ii. Accuracy	0.5%	
	iii. Distortion(THD + N)	< 0.14% typical (0.25% max)	
3	VOLTAGE SOURCE OUTPUT		
	i. AC voltage Source	2 x 0-300V AC @ 125VA [1 source 0 to 360 deg]	
	ii. Accuracy	0.03% range + 0.05% of reading	
	iii. Distortion(THD + N)	< 0.14% typical (0.25% max)	
4	Variable DC voltage	0-300V @ 125W	
5	Variable phase angle	0-360deg, Accuracy - 0.5deg, <1deg resolution	
6	Variable frequency	10Hz-600Hz, Accuracy 0.03%, <10mHz	
7	EXTERNAL MEASUREMENT	In-built multimeter	

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	i. AC/DC Current	0-10A	
	ii. AC Voltage	0-900V	
	iii. DC Voltage	0-900V	
	iv. Binary Inputs	4nos	
	v. External Start & Stop Timer - (2nos with Potential with Both AC/DC & potential Free)	Yes	
8	Time limit	35minutes	
9	Binary outputs	1no.	
11	Phase Angle measurement	0 - 360 degree	
12	Impedance measurement	Z(ohms and angle), Z(ohms), R and X (ohms and ohms)	
13	AC Power Measurement	P (watts), S (VA), Q (VAR)	
14	Shock & Vibration standard- (non-condensing Shock and vibration - IEC 60068-2-27 Vibration - IEC 60068-2-6)	Yes	