

CPRI

## TEST REPORT



**Central Power Research Institute**

(A Govt. of India Society)

P.B.No. 8066, Sadashivanagar Post Office,  
Sir C.V. Raman Road,  
Bangalore - 560 080 (INDIA)



**SHORT CIRCUIT LABORATORY  
CENTRAL POWER RESEARCH INSTITUTE  
(Member of STL)**

P.B.NO.8066, SADASHIVANAGAR POST OFFICE  
SIR C.V.RAMAN ROAD, BANGALORE - 560 080 (INDIA)  
Phone : +91 (0) 80 - 23602662 Fax : +91 (0) 80 - 23601213



T-0010

Sheet 1 of 4


**CPRI**

**TEST REPORT**

<b>Test Report Number</b>	SC10935A	<b>Dated:</b> 7 <sup>th</sup> January, 2011
<b>Name &amp; Address of the Customer</b>	M/s. Trilogix, Plot No. 197, Deendayal Nagar, Old Safilguda, Hyderabad – 500 056.	
<b>Name &amp; Address of the Manufacturer</b>	M/s. Trilogix, Plot No. 197, Deendayal Nagar, Old Safilguda, Hyderabad – 500 056.	
<b>Particulars of sample tested</b>	Low-voltage switchgear and controlgear assembly - LT Panel	
<b>Condition of the sample on Receipt</b>	New	
Type	Indoor, Cubicle	
Designation	---	
Serial Number	---	
Number of samples tested	One	
Date (s) of test (s)	30 <sup>th</sup> December, 2010	
CPRI sample code no(s).	SC10S2124	
<b>Particulars of tests conducted</b>	Verification of the short-circuit withstand strength	
Test in accordance with Standard / specification	Sub-clause 8.2.3 of IS 8623 (Part 1) : 1993 / IEC Pub 439-1 (1985) (Reaffirmed 2004)	
Sampling plan	Not applicable	
Customer's requirement	50 kA rms for 1.0 second & 105 kA peak on phase bus-bars	
Deviations if any	None	
<b>Name of the witnessing persons</b>		
Customer's representative	Mr. G.X. Antony	
Other than customer's representatives	None	
Test subcontracted with address of the laboratory	None	
<b>Documents constituting this report (In words)</b>		
Number of sheets	Four	
Number of oscillograms	Three	
Number of graphs	Nil	
Number of photos	Two	
Number of test circuit diagrams	Two	
Number of drawings	Two	

  
(G. Girija)  
**Test Engineer**



  
(B. R. Ravishankar)  
**Joint Director**

**AUTHORISED SIGNATORIES**



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Sheet 2 of 4

**Report Number: SC10935A**

**Description of sample tested (ratings as assigned by the manufacturer)**

Test sample	Low-voltage switchgear and controlgear assembly - LT Panel
Type	Indoor, Cubicle
Designation	---
Serial number	---
Rated voltage	415 V a.c
Rated insulation voltage	660 V rms
Rated current	4000 A
Rated frequency	50 Hz
Number of phases	Three & neutral
Rated short-time withstand current & peak withstand current	50 kA rms for 1.0 s & 105 kA peak on phase bus-bars & 30 kA rms for 1.0 s & 63 kA peak on neutral bus-bar

**Documents attached to this report**

Oscillogram number(s)	SC10935A.S002, SC10935A.S003 & SC10935A.S004
Photo number(s)	SC10935A.PB1 & SC10935A.PA1
Test circuit diagram number(s)	CRTL/SC/STC-04A & CRTL/SC/STC-02A
Drawing number(s)	127/10-11/T/1/1 SHEET NO: 1/2 & 127/10-11/T/1/1 SHEET NO: 2/2

*B. Linge*  
Test Engineer



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Sheet 3 of 4  
Report Number: SC10935A

**Schedule of tests**

**VERIFICATION OF THE SHORT-CIRCUIT WITHSTAND STRENGTH [Sub-clause 8.2.3]**

**Test conditions**

Short-circuit generator

**Phase**

Test on phase bus-bars  
Test on neutral bus-bar

Three  
Single

**Frequency**

50 Hz

**Test sample**

**Condition before test**

In clean and new condition; terminals of horizontal bus-bars connected to source.

**Body/Enclosure**

2mm thick CRCA sheet; isolated from earth and connected to the source neutral through a fine-wire fuse (FWF) of diameter 0.1 mm and length 50 mm in series with a 2.0 ohms resistor.

**Test details**

Test circuit drawing number  
Test on phase bus-bars  
Test on neutral bus-bar

CRTL/SC/STC-04A  
CRTL/SC/STC-02A

**Short-circuit applied**

On the end of the vertical bus-bars

**Short-circuit point**

Grounded

**Test results**

Test on: Horizontal and vertical phase bus-bars of the panel

Oscillogram Number	Current (kA)		Duration (s)	Ambient Temperature °C	Observations
	Peak	RMS			
SC10935A.S002	119.2	R – 43.32 Y – 49.47 B – 46.55 Average - 46.45*	1.181	24.5	<b>During test:</b> No abnormality <b>After test:</b> Fine-wire fuse intact.

\* Equivalent to 50.48 kA rms for 1.0 s

Test on: Horizontal and vertical neutral bus-bar of panel with nearest phase bus-bar as return conductor

Oscillogram Number	Current (kA)		Duration (s)	Ambient Temperature °C	Observations
	Peak	RMS			
SC10935A.S003	---	31.36	1.20	24.5	<b>During test:</b> No abnormality <b>After test:</b> Fine wire fuse intact.
SC10935A.S004	68.31	---	0.114	24.5	<b>During test:</b> No abnormality <b>After test:</b> Fine wire fuse intact.

**VERIFICATION OF THE DIELECTRIC PROPERTIES**

Condition of the sample: As after the verification of the short-circuit withstand strength test

Test procedure	Observations
A power frequency voltage of 2.5 kV rms for 1.0 min. was applied between:	
1. all live parts connected together and enclosure	Withstood
2. each pole and all the other poles connected to enclosure	Withstood

**Physical Inspection**

Bus-bars : No visible damage or deformation  
Supports : Intact

**Remarks:** The sample tested complies with sub-clause of the standard referred to.

**Test Engineer**



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Sheet 4 of 4  
Report Number: SC10935A

**NOTE**

- a) This is not a certificate of rating. A certificate of rating is not issued as only limited tests as requested by the customer were carried out.
- b) The test results relate only to the item(s) tested.
- c) Publication or reproduction of this report in any form other than by complete set of the whole report and in the language written, is not permitted without the written approval of CPRI.
- d) Corrections / erasings invalidate the test report.
- e) Any anomaly / discrepancy in the test report should be brought to our notice within 45 days from the date of issue.

**Additional Information:**

CPRI issues following types of reports/certificates:

**Test Report:**

The test report contains the record of the values of test parameters as obtained during testing, the physical condition of the sample during / after the test(s) and copy of oscillogram(s). Test report is issued when partial tests are performed as against the complete test requirement for proving specific ratings.

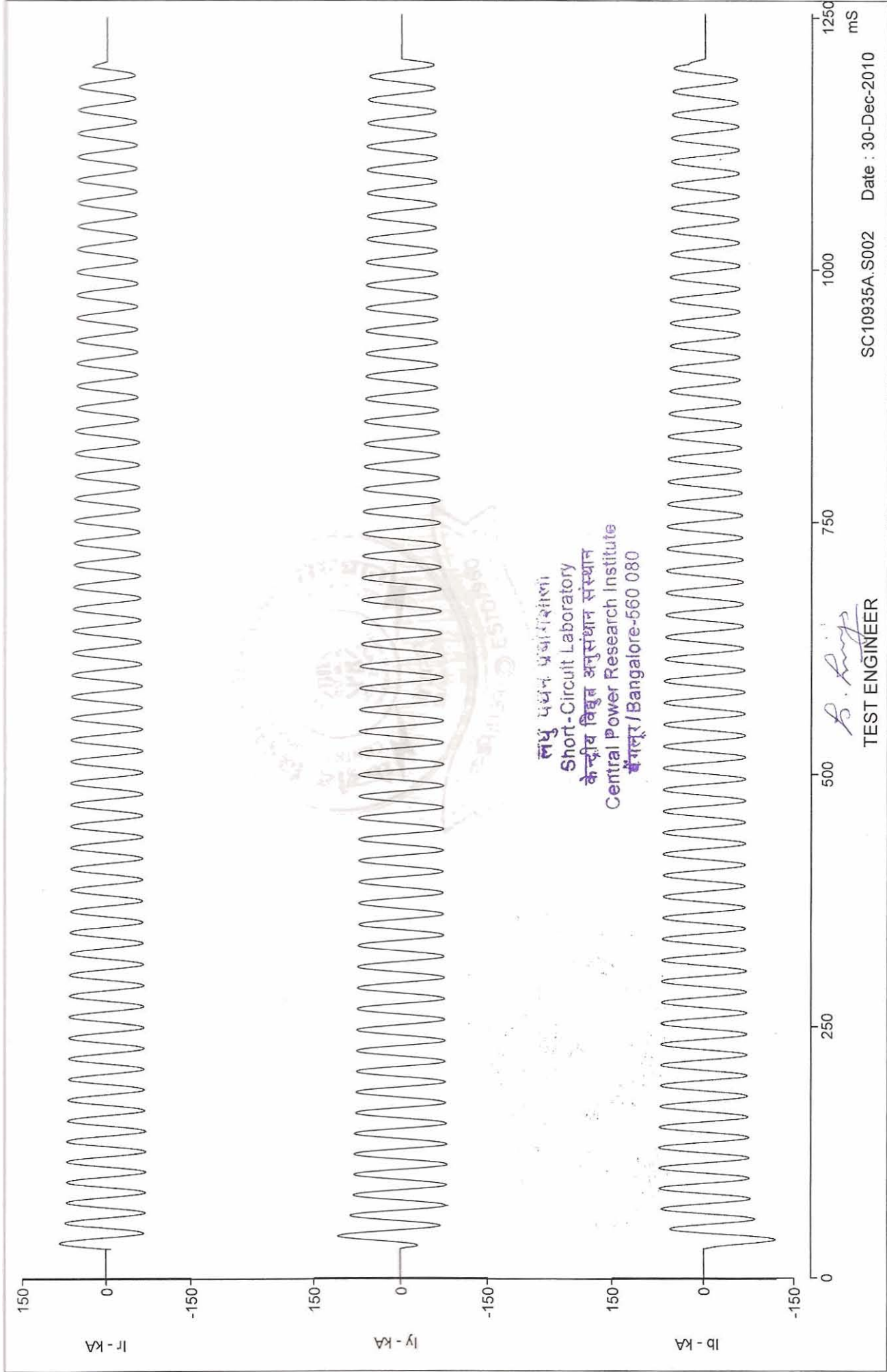
**Sealed Certificate:**

The sealed certificate is issued, on request and payment of the prescribed charges thereof only when the sample of particular type and rating has satisfactorily passed all the specified tests in compliance with the condition stipulated in a published National / International standard.

**CPRI issues the following type test certificates based generally on STL Guidelines:**

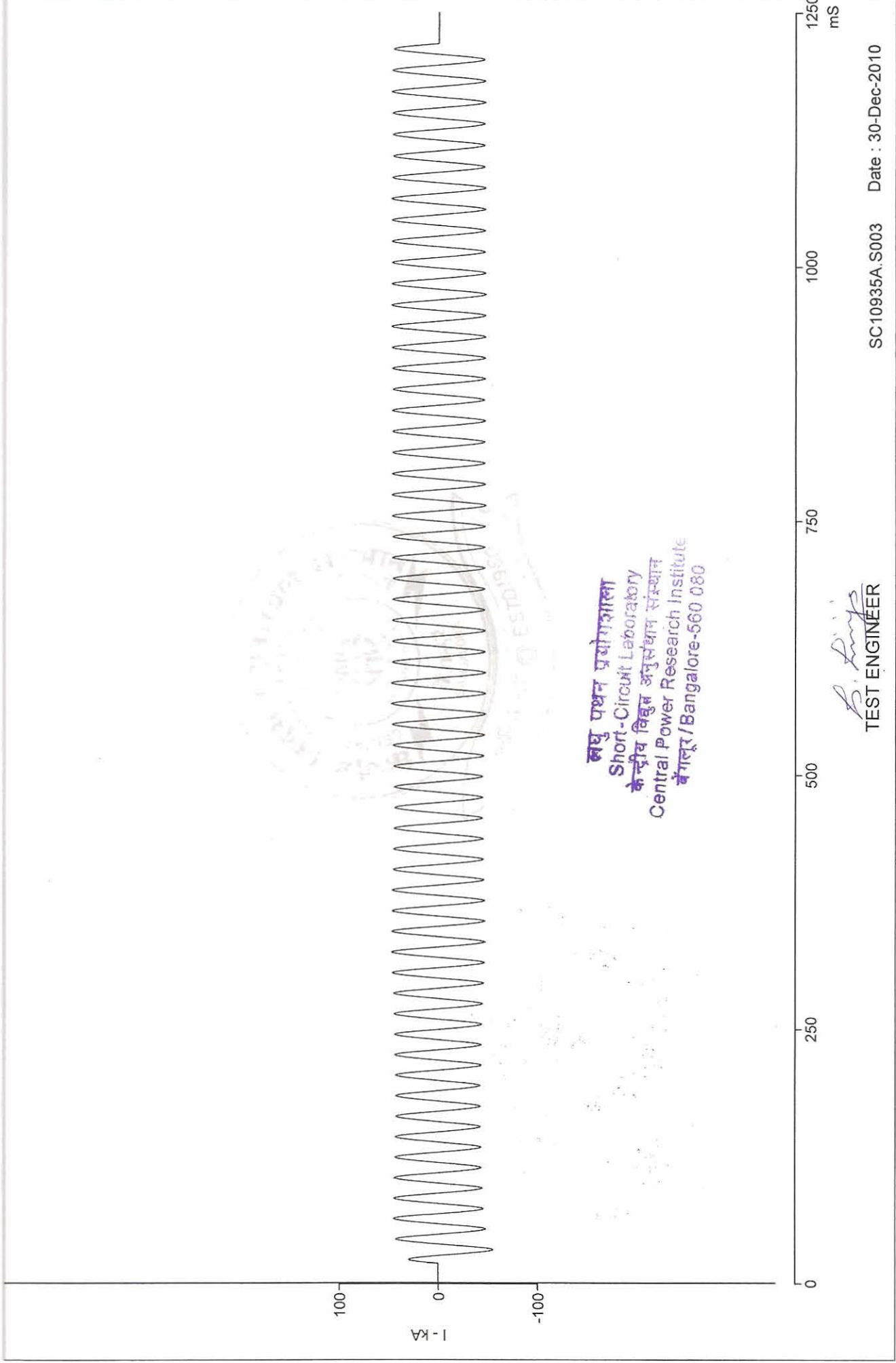
- I. Type test certificate of Short Circuit Performance.
- II. Type test certificate of Switching Performance.
- III. Type test certificate of Temperature Rise Performance.
- IV. Type test certificate of Dielectric Performance
- V. Type test certificate of complete type test.

  
Test Engineer



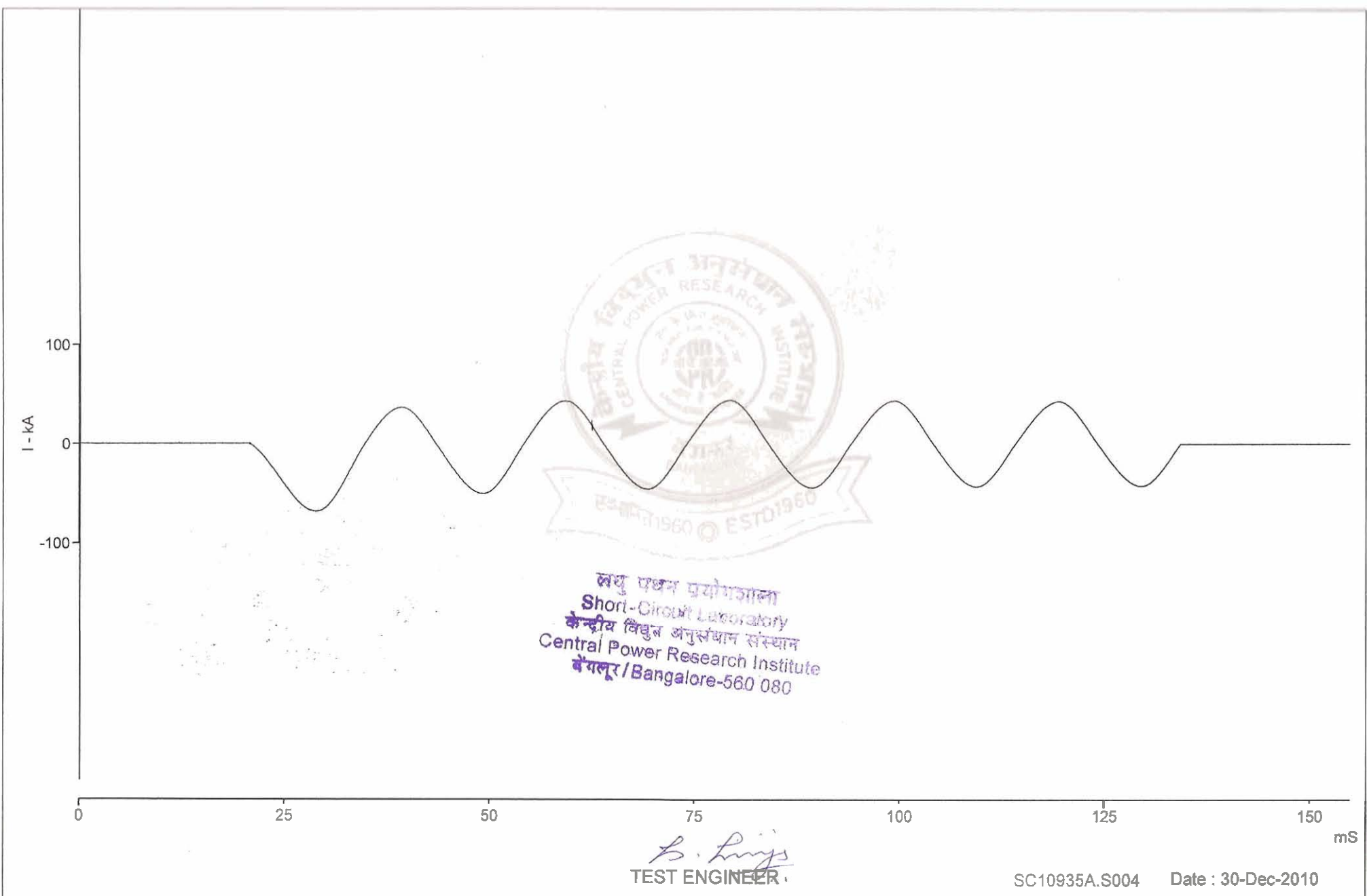
लघु पथन प्रयोगशाला  
 Short-Circuit Laboratory  
 केन्द्रीय विद्युत अनुसंधान संस्थान  
 Central Power Research Institute  
 बंगलूर / Bangalore-560 080

*B. Singh*  
 TEST ENGINEER



बिजु पथन प्रयोगशाला  
Short-Circuit Laboratory  
केन्द्रीय विद्युत अनुसंधान संस्थान  
Central Power Research Institute  
बंगलूरु/Bangalore-560 080

*B. Pathan*  
TEST ENGINEER



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Short-Circuit Laboratory  
केन्द्रीय विद्युत अनुसंधान संस्थान  
Central Power Research Institute  
बैंगलूर / Bangalore-560 080

*B. Lings*  
TEST ENGINEER



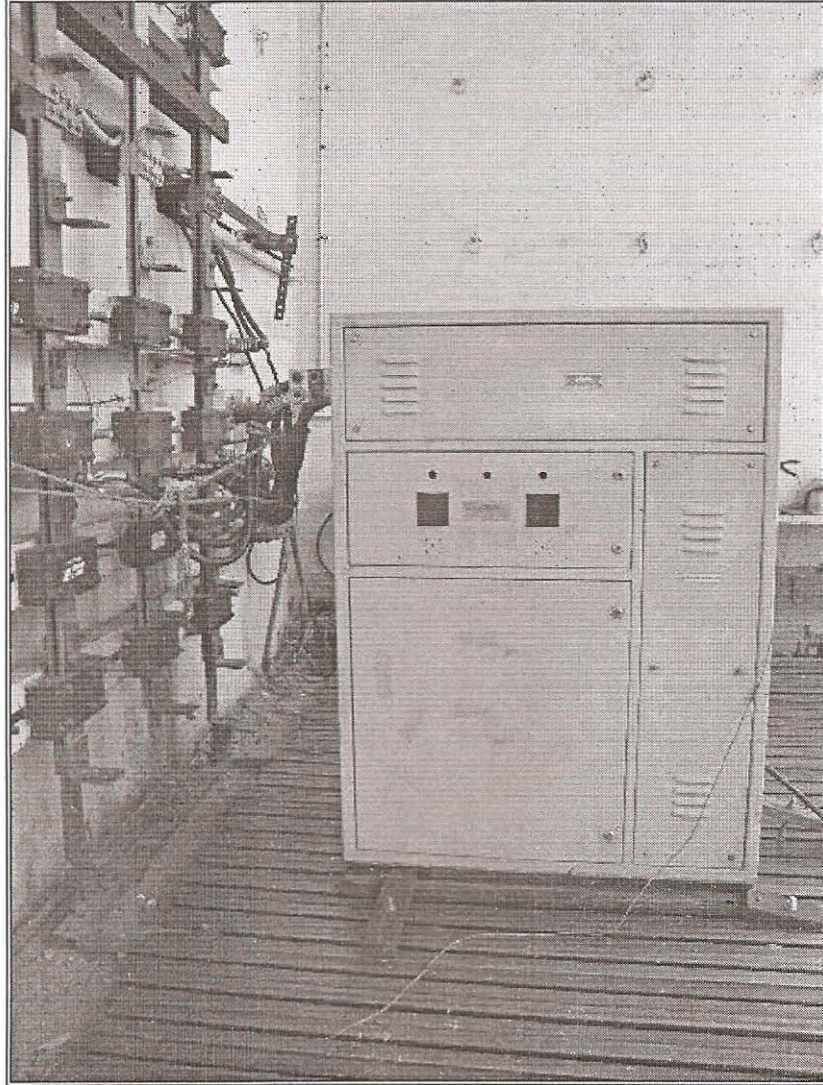


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Mounting arrangement (Before test)

SC10935A. PB1

*B. Singh*  
Test Engineer

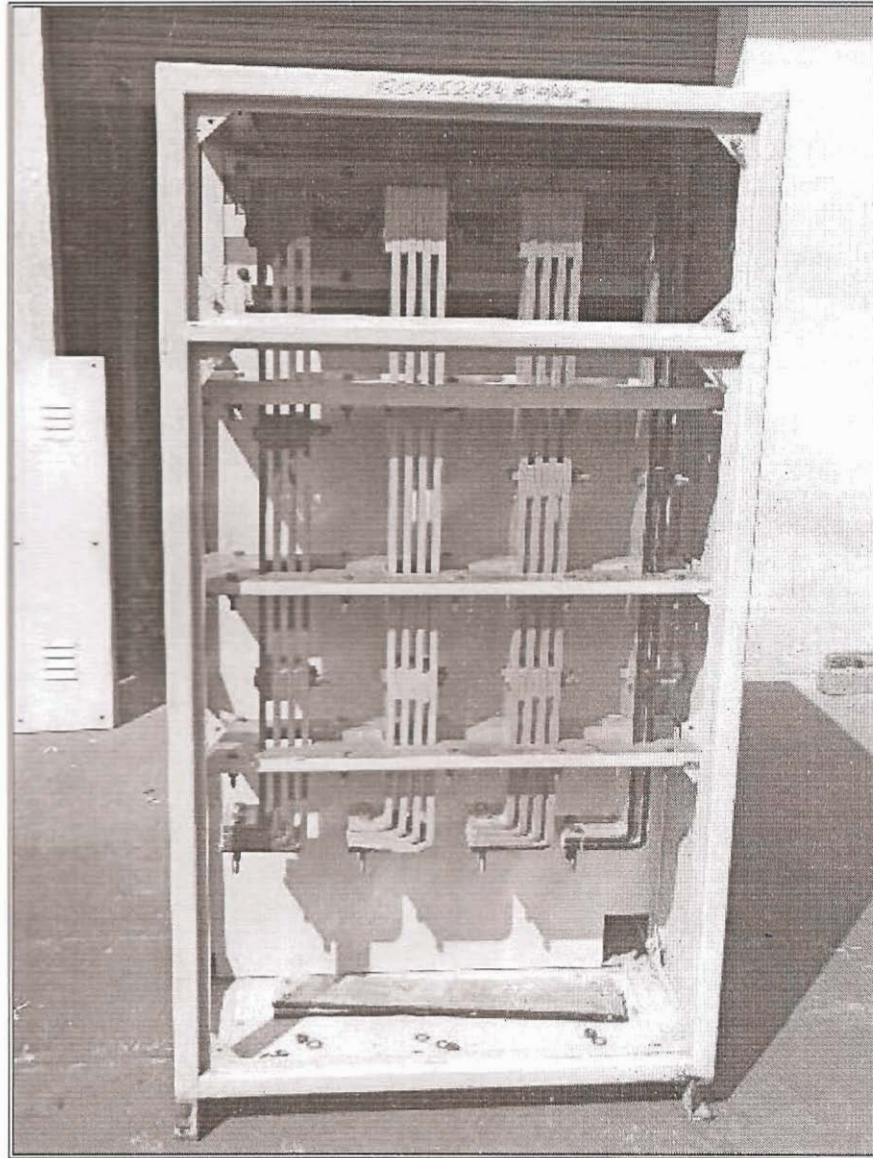


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Condition of the sample (After test)

SC10935A. PA1

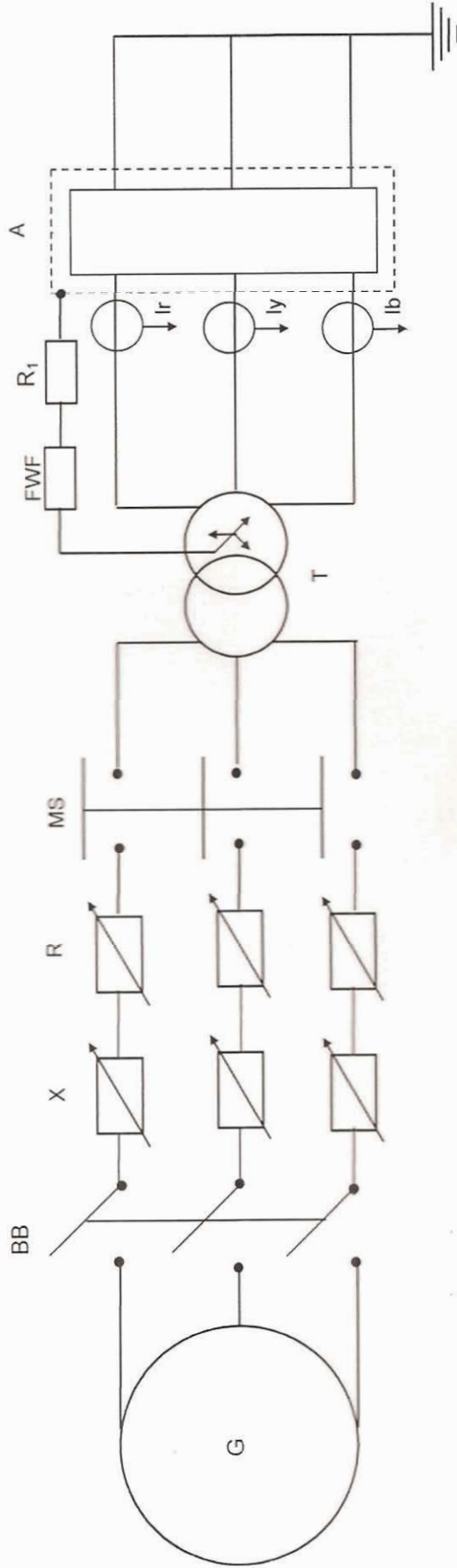
*P. Ranga*  
Test Engineer



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### Schematic of main & measurement circuits - Three phase test

Circuit Number: CRTL/SC/STC-04A



G	Short-circuit Generator	T	Transform
BB	Back Up Circuit-breaker	FWF	Fine Wire Fuse
X	Reactor	Ir, Iy & Ib	Current sensors
R	Resistor	R <sub>1</sub>	Current Limiting Resistor
MS	Make Switch	A	Sample under test

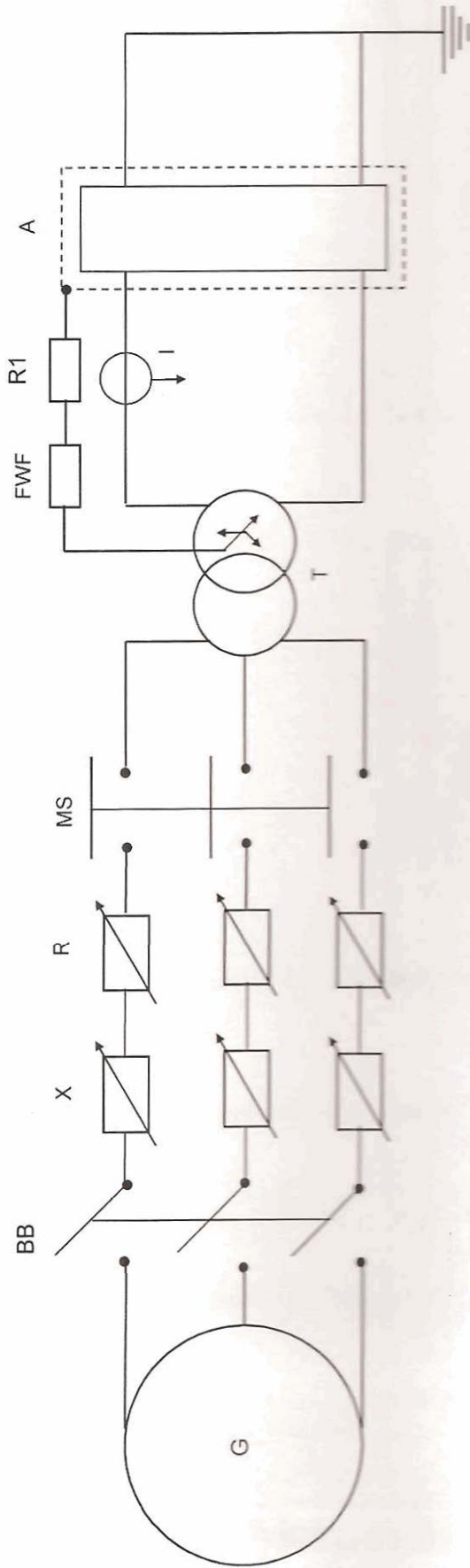
*B. Singh*  
Test Engineer.



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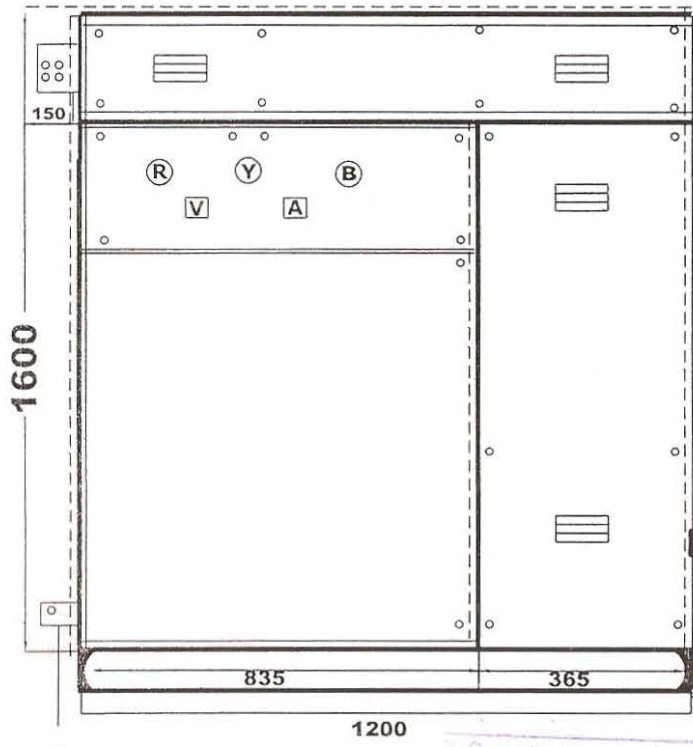
### Schematic of main & measurement circuits - Single phase test

Circuit Number: CRTL/SC/STC-02A



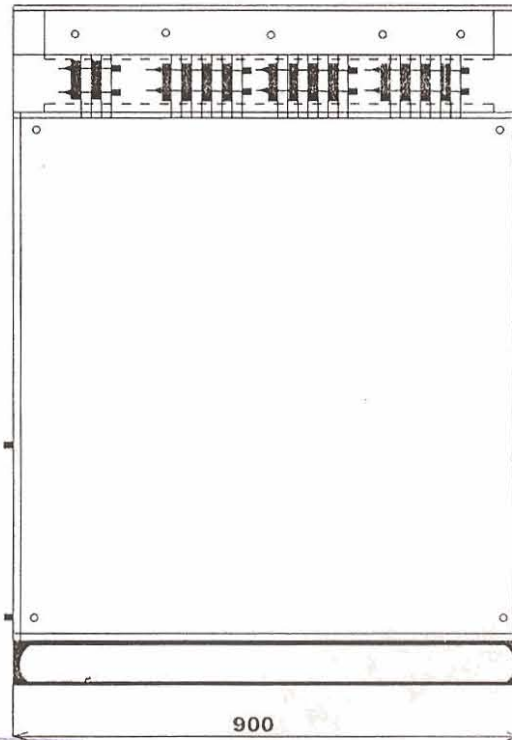
G	Short-circuit Generator	T	Transformer
BB	Back Up Circuit Breaker	FWF	Fine Wire Fuse
X	Reactor	R1	Current Limiting Resistor
R	Resistor	A	Sample Under Test
MS	Make Switch	I	Current Sensor

*S. Singh*  
Test Engineer

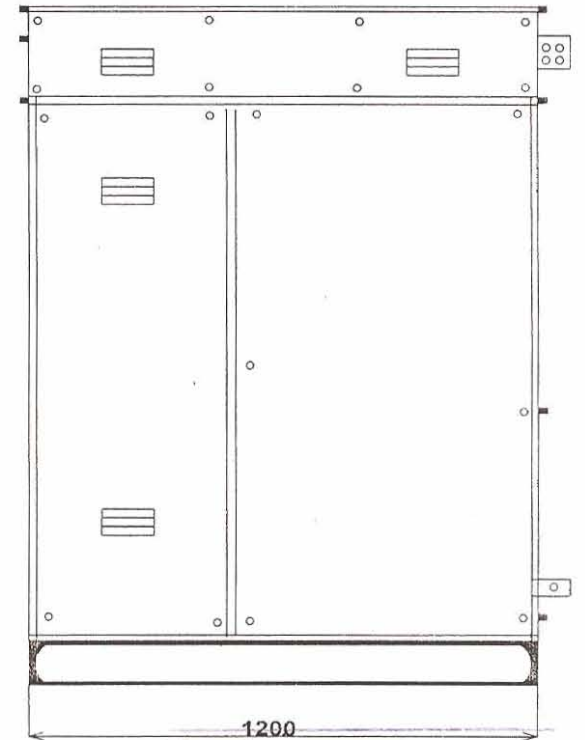


40x6mm AL EARTH BUS BAR

FRONT VIEW



SIDE VIEW



BACK VIEW

वि.क.स. द्वारा इस रेखाचित्र का संवर्धन जहाँ तक की संभव हो सके-सकिए जाये तक ही सीमित है।  
 REVISION OF THIS DRAWING IS LIMITED TO DIMENSIONAL CHANGES ONLY WHEREVER POSSIBLE.

डॉक्यूमेंट क्रमांक .....  
 से संबंधित दस्तावेज  
 Document Pertaining to  
 Report No.: SC10935A

**ADDRESS**

**ENCLOSURE**  
 M.S ANGLE 35x18x3MM  
 DOORS :2mm CRCA SHEET



**TRILOGIX**  
 Plot No.197, Deendayal Nagar,  
 Old Safilguda, Hyderabad- 500056.

**G. A - DRAWING**

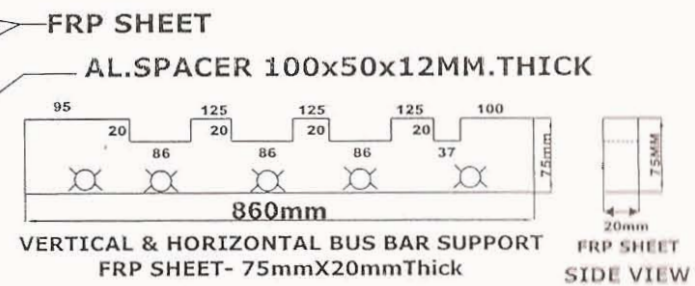
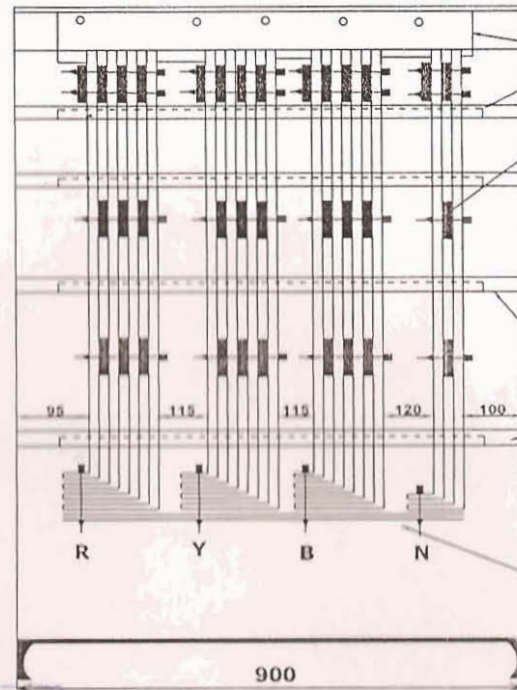
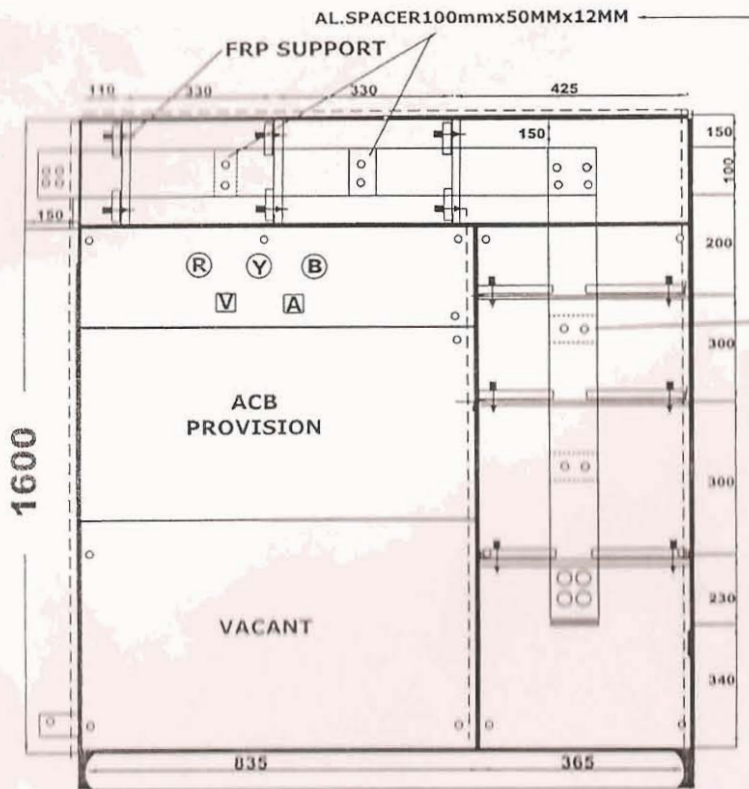
*B. Singh*

परीक्षण अभियन्ता / Test Engineer  
 स.प. पर्योगशाला / S. C. LAB  
 सी. पी. आर. आर्. / CPRI  
 बंगलूर / Bangalore

DRG NO : 127/10-11/T/1/1

SHEET NO :1/2

**S.C. Test / LT PANEL 4000Amps / 415 V**



FRONT VIEW

FRONT SIDE VIEW

ALL DIMENSIONS IN MM  
TOLERANCE ±3%

M.S ANGLE 35x18x3MM  
DOORS :2mm CRCA SHEET

ENCLOSURE

Document Pertaining to  
Report No: SC10935A

ADDRESS



**TRILOGIX**  
Plot No.197, Deendayal Nagar,  
Old Safilguda, Hyderabad- 500056.

DRG NO : 127/10-11/T/1/1

SHEET NO :2/2

S.C. Test / LT PANEL 4000Amps / 415 V

*B. Lings*  
परिक्षण अभियन्ता / Engineer  
ल.प. परीक्षाशाला / S. C. LAB  
सी. पी. आर. आई. / CPRI  
बैंगलूर / Bangalore

- AL. BUSBAR SIZE: 1.HORIZONTAL 1200x100x12x4 RUNS/PHASE  
(N) 1200x100x12x2RUNS  
2. VERTICAL 1240x100x12x4 RUNS/PHASE INCLUDING "L" BLEND  
(N)1240x100x12x2RUNS INCLUDING "L" BEND  
3. SHORTING LINK 100X12mm, 2 RUNS X 675mm