

CENTRAL POWER RESEARCH INSTITUTE
(Member of STL)

No. CPRI/SC/11/2024

Dated: 19 November, 2024

M/s. Magnetic & Controls,
D.No.6/300/631, Comsia Industrial Estate,
Kalipalayam Village, Sarkar Samakulam,
Veerapandi Pirivu, Coimbatore - 641 110,
Tamil Nadu, India.

एमएस। चुंबकीय और नियंत्रण,
डी.नं.6/300/631, कॉम्सिया इंडस्ट्रियल एस्टेट,
कलिपलायम गांव, सरकार समाकुलम,
वीरपांडी पिरिवु, कोयंबटूर - 641 110,
तमिलनाडु, भारत।

विषय/Sub: परीक्षण दस्तावेज /Test Document(s)

महोदय/Dear Sir,

हमारे प्रयोगशाला में आपके पर संचालित परीक्षण के संबंध में निम्नांकित दस्तावेज संलग्न है। Please find enclosed the following document(s) in respect of the test(s) conducted on 80 kVA, 415 / 415 V, Three Phase Dry Type Isolation Transformer

Test Report No CPRI/BLRSC/LMISC24T1297

In order to prevent tampering of test report, CPRI has introduced hologram on the first page of the test report with effect from 01.10.2007.

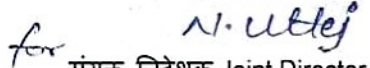
रिपोर्ट में यदि असंगतियाँ हों तो इस रिपोर्ट के जारी होने की तारीख से ४५ दिनों के अंदर लिखित रूप में हमारे ध्यान में लायी जाए, ताकि आवश्यक संशुद्धि की जा सके। इसके लिए रिपोर्ट की सभी प्रतियाँ लौटाई जाएँ। कृपया नोट करें कि इस तारीख के बाद प्राप्त अनुरोधों पर कोई कार्रवाई नहीं की जाएगी।

Any discrepancies in the report be brought to our notice in writing within 45 days of the date of issue of this report for effecting necessary corrections for which all the copies of report(s) must be returned. Please note that request received beyond this date will not be entertained.

कृपया दस्तावेजों की पावती भेजें। Please acknowledge the receipt of the document(s)

भवदीय

Yours faithfully


संयुक्त निदेशक Joint Director

संलग्न: यथोक्त
Encl: As above

CENTRAL POWER RESEARCH INSTITUTE
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CPRI

TEST REPORT

Test Report Number	: CPRI BLR SCLMISC24T1297 Date: 18 November 2024
Name and Address of the Customer	: M/s. Magnetic & Controls, D.No.6/300/631, Comsia Industrial Estate, Kalipalayam Village, Sarkar Samakulam, Veerapandi Pirivu, Coimbatore – 641 110, Tamil Nadu, India.
Name and Address of the Manufacturer	: M/s. Magnetic & Controls, D.No.6/300/631, Comsia Industrial Estate, Kalipalayam Village, Sarkar Samakulam, Veerapandi Pirivu, Coimbatore – 641 110, Tamil Nadu, India.
Particulars of sample tested	: 80 kVA, 415 / 415 V, Three Phase Dry Type Isolation Transformer
Type	: Indoor, dry type
Description of the test sample	: Refer Sheet 2 of 7
Serial Number	: MC 24 25 352
Number of samples tested	: One
Date(s) of test (s)	: 20, 23 & 24 September, 2024
CPRI Sample code Number (s)	: SCLMISC24S1346
Particulars of tests conducted	: Refer Sheet 3 of 7
Test in accordance with Standard / specification	: Customer's instruction
Sampling plan	: Not applicable
Customer's requirement	: Refer Sheet 3 of 7
Deviations if any	: —
Name of the witnessing persons	
Customer's representative	: Mr. Saravanan. E – Design & Tech Head & Mr. Manikandan. S – Testing Engineer
Other than customer's representative	: None
Test subcontracted with address of the laboratory	: None
Documents constituting this report (In words)	
Number of Sheet(s)	: Seven
Number of Oscillogram(s)	: Nil
Number of Graph(s)	: Nil
Number of Photograph(s)	: Nil
Number of Test Circuit Diagram(s)	: Nil
Number of Drawing(s)	: Four
Test Engineer	

N. Uttej
(Nepak Uttej)
Test Engineer



T. Gurudev
(T. Gurudev)
Head of Division
Reviewed and Authorized by

CENTRAL POWER RESEARCH INSTITUTE
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CPRI

TEST REPORT

Test Report Number: CPRI BLSCLMISC24T1297

Date: 18 November 2024

DESCRIPTION OF SAMPLE TESTED
(As assigned by the manufacturer)

Test sample	: Dry Type Isolation Transformer
Type	: Indoor, dry type
Serial number	: MC 24 25 352
Rated power	: 80 kVA
Rated voltage – Primary / Secondary	: 415 / 415 V
Insulation levels	
Primary LI / AC	: - / 3 kV
Secondary LI / AC	: - / 3 kV
Impedance (Percent) at 145 °C	: 4 %
Number of phases	: Three
Rated frequency	: 50/60 Hz
Vector group	: Dyn 11
Taps	: Nil
Type of cooling	: ANAF
Class of insulation	: H
No-load loss at rated voltage at rated frequency	: 250 W
Load loss at rated current at 145°C	: 2500 W
Month & Year of Manufacture	: September, 2024
Coil	: Aluminium conductor, circular
Core material	: CRGO
Fan	: 9 Nos. 6 Inch , 230V, Make: Rexnord

N. Uttej
(Nepak Uttej)
Test Engineer

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CPRI

TEST REPORT

Test Report Number: CPRI/BLR/SCLMISC24T1297

Date: 18 November 2024

SUMMARY OF TESTS CONDUCTED

1. Tests conducted : Refer table below
2. Rating for which tested : Refer Sheet 5 of 7 to Sheet 6 of 7
3. Schedule of tests :

Sl. No.	Tests Conducted	Clause Numbers	Sheet
1	Measurement of winding resistance	Customer's instruction following the procedure stipulated in sub-clause 14.2.1 of IEC 60076-11 : 2018	5 of 7
2	Measurement of voltage ratio and check of phase displacement	Customer's instruction following the procedure stipulated in sub-clause 14.2.2 of IEC 60076-11 : 2018	5 of 7
3	Measurement of short-circuit impedance and load loss	Customer's instruction following the procedure stipulated in sub-clause 14.2.3 of IEC 60076-11 : 2018	5 of 7
4	Measurement of no-load loss and current	Customer's instruction following the procedure stipulated in sub-clause 14.2.4 of IEC 60076-11 : 2018	5 of 7
5	Measurement of insulation resistance	Customer's instruction	5 of 7
6	Applied voltage test (AV)	Customer's instruction following the procedure stipulated in sub-clause 14.2.5 of IEC 60076-11 : 2018	6 of 7
7	Induced voltage withstand test (IVW)	Customer's instruction following the procedure stipulated in sub-clause 14.2.6 of IEC 60076-11 : 2018	6 of 7
8	Magnetic balance test	Customer's instruction	6 of 7
9	Calculation of Efficiency	Customer's instruction	6 of 7

4. Drawing Number(s) : Refer Sheet 4 of 7
5. Customer's instruction : Above mentioned tests to be conducted following the procedure stipulated in IEC 60076-11 : 2018
6. Criteria for evaluation :
- 1) Magnetic balance test: The voltage induced in the center phase shall be 40% to 90% of the applied voltage on the outer phases. However, when the center phase is excited then the voltage induced in the outer phases shall be 30 to 70% of the applied voltage.
 - 2) The percentage of efficiency at 100% rated current at UPF at 145°C shall be more than 96.5%

N. Uttej
(Nepak Uttej)
Test Engineer

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CPRI

TEST REPORT

Test Report Number: CPRI BLR SCL MISC 24 T 1297

Date: 18 November 2024

LIST OF DRAWINGS

Drawing Numbers

The manufacturer has guaranteed that the sample submitted for the test(s) has been manufactured in accordance with the following drawings.

Sl. No.	Drawing Number	Sheet Number	Revision Number
1	MC-2024-2025-80KVA-NPD	4 OF 4	00
2	MC-2024-2025-80KVA-GA	1 OF 4	00
3	MC-2024-2025-80KVA-SLD	2 OF 4	00
4	MC-2024-2025-80KVA-PCD	3 OF 4	00

It is verified that these drawings adequately represent the sample tested. Verification of this drawing by CPRI is limited to dimensional check only wherever possible.

N. Uttaj
(Nepak Uttaj)
Test Engineer

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TEST REPORT

Test Report Number: CPRI BLSCLMISC24T1297

Date: 18 November 2024

TEST RESULTS

1) MEASUREMENT OF WINDING RESISTANCE

Primary winding resistance at 145 °C (Ω)	0.112
Secondary winding resistance at 145 °C ($m\Omega$)	28.222

2 a) MEASUREMENT OF VOLTAGE RATIO AT ALL VOLTAGE POSITIONS

Voltage ratio	R	Y	B
Primary / Secondary	1.732	1.731	1.732

b) Check of phase displacement

Vector group Dyn11 checked and found OK

3) MEASUREMENT OF SHORT-CIRCUIT IMPEDANCE AND LOAD LOSS

% Impedance at 145 °C	4.266
Load loss at 145 °C (W)	2458.84

4) MEASUREMENT OF NO-LOAD LOSS AND CURRENT

Voltage (V)	No-load Current (A)	No-load loss (W)	Frequency (Hz)
415.15	1.554	245.19	50.02

5) MEASUREMENT OF INSULATION RESISTANCE

Insulation resistance of	Measured value
Primary winding with respect to secondary winding & frame connected together and earthed.	10.7 G Ω
Secondary winding with respect to primary winding & frame connected together and earthed.	2.73 G Ω
Primary winding with respect to secondary winding with frame earthed.	17.6 G Ω

N. Uttej
(Nepak Uttej)
Test Engineer

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Date: 18 November 2024

6) APPLIED VOLTAGE TEST (AV)

Test on	Observation
a) Primary winding and all terminals of secondary winding & frame connected together to earth	Withstood 3 kV for 60 s
b) Secondary winding and all terminals of primary winding & frame connected together to earth	Withstood 3 kV for 60 s

7) INDUCED VOLTAGE WITHSTAND TEST (IVW)

Test on	Observation
Secondary winding by keeping primary winding open circuit	Withstood 830 V at 100.0 Hz for 60 s

8) MAGNETIC BALANCE TEST

Voltage applied on secondary terminals		Voltage measured between secondary terminals			
Terminal	Voltage (V)	Terminal	Voltage (V)	Terminal	Voltage (V)
2U – 2N	240.0	2V – 2N	154.6	2W – 2N	94.1
2V – 2N	240.0	2U – 2N	121.4	2W – 2N	119.0
2W – 2N	240.0	2U – 2N	95.4	2V – 2N	152.9

9) CALCULATION OF EFFICIENCY AT 100% OF RATED CURRENT AND AT UNITY POWER FACTOR

Measured no-load loss (W)	: 245.19
Measured load loss at 100 % of rated current at 145°C (W)	: 2458.84
% Efficiency at 100% rated current and at Unity Power factor	: 96.73

Conclusion: The sample tested complies with the requirement of the customer for the tests conducted.


(Nepak Uttej)
Test Engineer

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CPRI

TEST REPORT

Test Report Number: CPRI BLR SCL MIS G24 T1297

Date: 18 November 2024

NOTE

- a) The Test results relate only to the sample(s) tested.
- b) Publication or reproduction of this Test Report in any form other than by complete set of the whole Test Report and in the language written is not permitted without the written consent of CPRI.
- c) Any Corrections / erasure invalidate the Test Report.
- d) Any anomaly / discrepancy in the Test Report should be brought to notice of CPRI within 45 days from the date of issue.
- e) All documents constituting the Test Report are stitched together with a continuous silk thread, the two ends of which have been brought over the front sheet of the Test Report and sealed with a CPRI logo printed paper sticker.

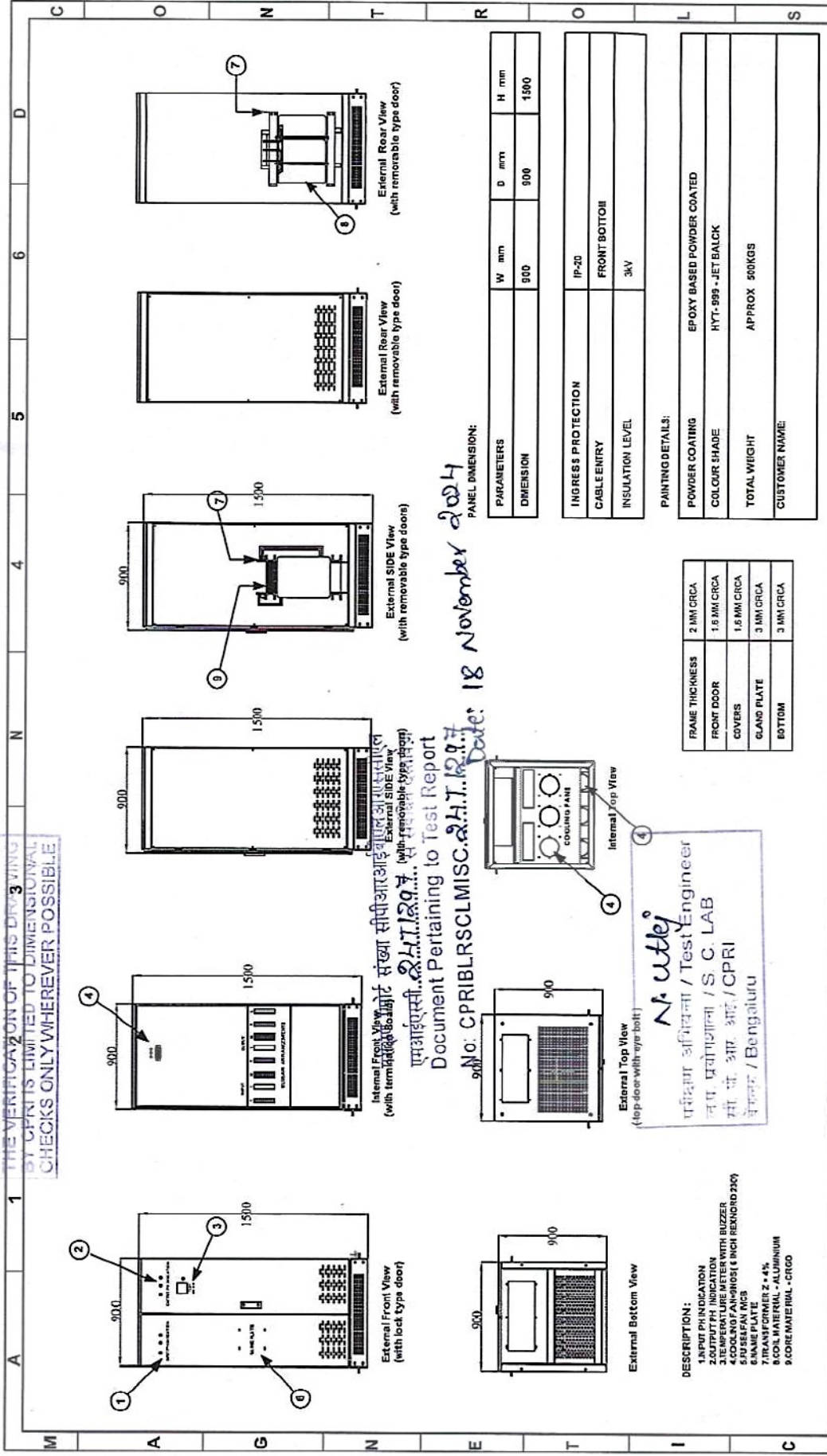
N. Uttej
(Nepak Uttej)
Test Engineer

----- End of Test Report -----

N. Udej
परिभाषा अभियन्ता / Test Engineer
ज. प. पर्याप्तता / S. C. LAB
सी. पी. और आई/CPRI
बैंगलूरु / Bengaluru

केवि अ.सं. द्वारा इस रेखाचित्र को-रीखायन नहीं
कही भी संभव हो सिक्ति विधीय आर्ब तक ही सीमित है।

THE VERIFICATION OF THIS DRAWING
BY CPRI IS LIMITED TO DIMENSIONAL
CHECKS ONLY WHEREVER POSSIBLE



MAGNETIC & CONTROLS

D.NO. 6300/631, Comsila Industrial Estate, Kalpalayam Village,
Sarkar Samakulam, Veerapadi Piruvu,
Coimbatore-641 110
Ph no : 0422-7140001, 7140002,
E-mail: magnetcontrols@transformershop.org

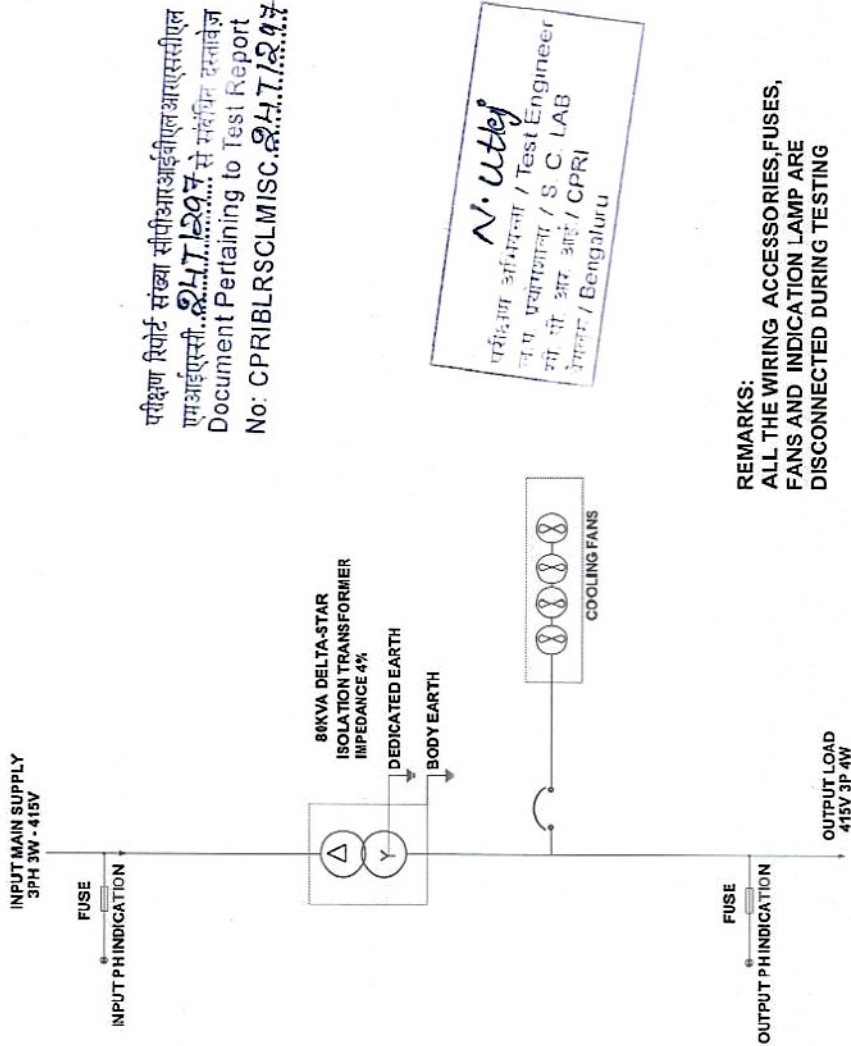
TITLE :

GENERAL ARRANGMENTS DRAWING OF 80KVA
DRY TYPE ISOLATION TRANSFORMER

ALL DIMENSIONS ARE IN MM	± 10% TOLERANCE UNLESS OTHERWISE STATED	SCALE: 1:1.5
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DRAWING NO. MC-2024-2025-80KVA-GA	REV
SHEET : 1 OF 4	00
APPROVED BY	P.T.M
CHECKED BY	E.S
DRAWN BY	C.V.R
DATE	17.09.2024

SLD ARRANGEMENT FOR 80KVA ISOLATION TRANSFORMER

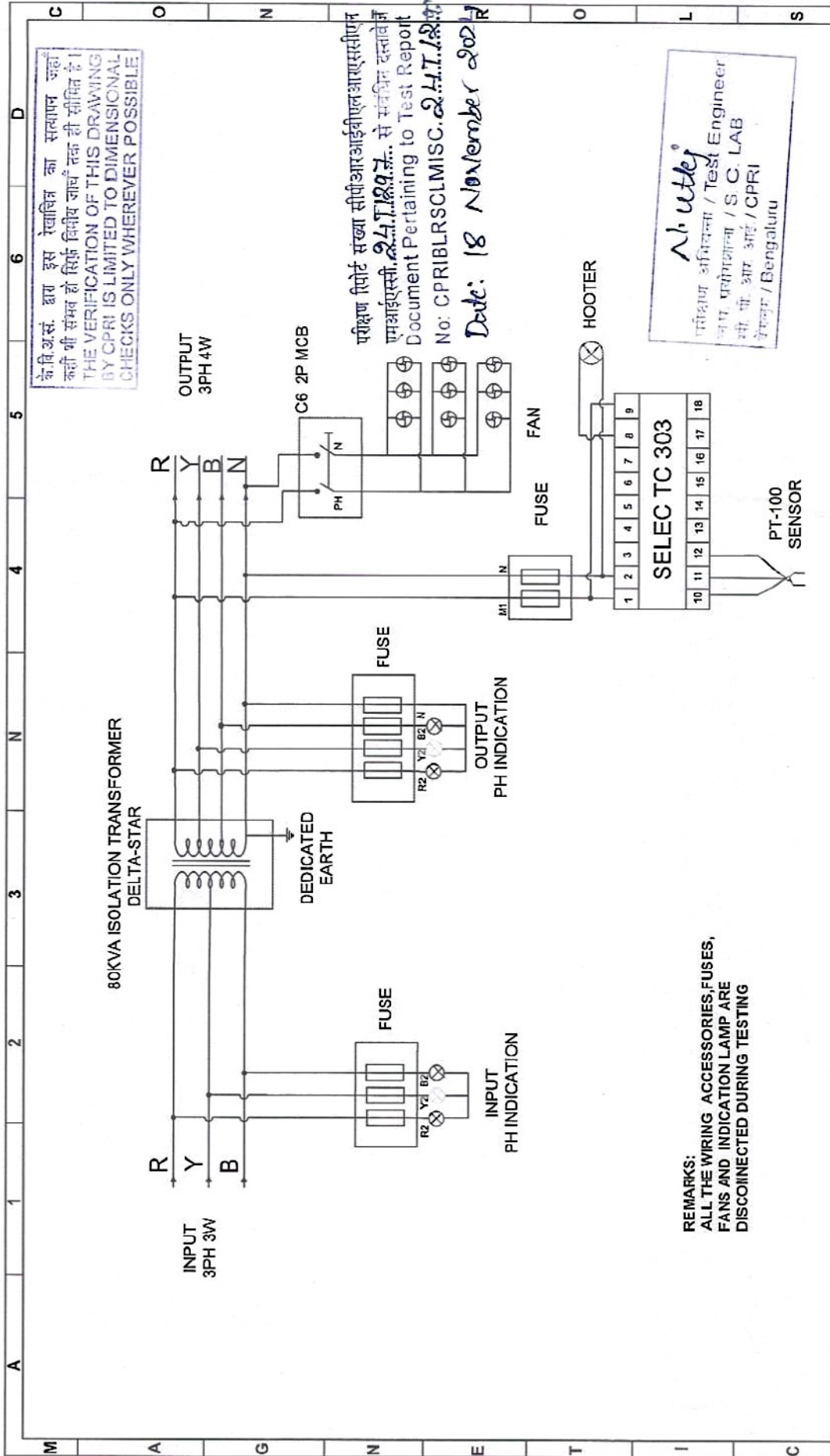


परीक्षण रिपोर्ट संख्या सीपीआरआईवीएल आरएससीएल एमआईएसी...
 Document Pertaining to Test Report
 No: CPRI/RSCLMISC.24.7.247

N. Utley
 परीक्षण अभियंता / Test Engineer
 सी पी आर आई / S. C. LAB
 कोलकाता / Bengaluru

REMARKS:
 ALL THE WIRING ACCESSORIES, FUSES,
 FANS AND INDICATION LAMP ARE
 DISCONNECTED DURING TESTING

	MAGNETIC & CONTROLS		TITLE :		DRAWING NO: MC-2024-2025-80KVA-SLD		REV	
	D.NO. 6/300631, Comsila Industrial Estate, Kalpalayam Village, Sarkar Samakulam, Veetapatti Pithu, Coimbatore-641 110		SINGLE LINE DRAWING OF 80KVA DRY TYPE ISOLATION TRANSFORMER		SHEET : 2 OF 4		00	
	Ph no : 0422-7140001, 714002, E-mail: magneticcontrols@transformershop.org		TOLERANCE UNLESS OTHERWISE STATED		APPROVED BY P.T.M		CHECKED BY E.S	
			SCALE : 8/5		DRAWN BY		DATE : 17.09.2024	



MAGNETIC & CONTROLS D.NO. 6/300/631, Comsila Industrial Estate, Kalpalayam Village, Sekar Samakulam, Veerapandi Pithu, Coimbatore-641 110 Ph.no : 0422-7140001, 7140002 E-mail: magneticcontrols@transformershop.org		TITLE : POWER CIRCUIT DRAWING FOR 80KVA DRY TYPE ISOLATION TRANSFORMER		DRAWING NO: MC-2024-2025-80KVA-PCD		REV	
		ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED SCALE: 1:1		SHEET : 3 OF 4		00	
		APPROVED BY CHECKED BY DRAWN BY		P.T.M T.B M.A		DATE : 17.09.2024	
		ANGLES & 6.5					