सूक्ष्म, लघु एवं मध्यम उद्यम
MICRO, SMALL & MEDIUM ENTERPRISES
MSME - TECHNOLOGY DEVELOPMENT CENTRE, MUMBAI

वैद्युतिक मापन उपयंत्र अभिकल्प संस्थान, मुंबई
INSTITUTE FOR DESIGN OF ELECTRICAL MEASURING INSTRUMENTS, MUMBAI
भारत सरकार की सोसाईटी
सूक्ष्म, लघु एवं मध्यम उद्यम मंत्रालय
Government of India Society
Ministry of Micro, Small & Medium Enterprises

IDEMI

संदर्भ सं. / Ref. No. WO/ETL/041/18-19

दिनांक 14.06.2018
Date :

M/s. ENERTRAK INSTRUMENTS PVT. LTD.
IT-3,EPIP,RIICO INDUSTRIAL AREA,
SITAPURA,JAIPUR,
RAJASTHAN-302 020, INDIA

Kind Attn : Mr. Rajesh Sharma

विषय : परिक्षण रिपोर्ट
Sub : **Test Report**

महोदय, TR/ETL/058/18-19

आपके उपकरणों / अवयवों पर किये हुये परिक्षण रिपोर्ट संख्या ( ) आपको जानकारी के लिए पत्र के साथ भेंज रहे हैं। यदि आपको परिक्षीत मदों पर स्पष्टीकरण की कोई आवश्यकता हो तो, कृपया परिक्षण रिपोर्ट जारी करने वाले प्राधिकारी को हमारे संदर्भ संख्या और तारीख का उल्लेख करते हुए, रिपोर्ट प्राप्त होने पर चार सप्ताह के अन्दर सम्पर्क करें अथवा लिखें। हम इस पत्र के साथ फीड बॅक फॉर्म भेज रहे हैं। कृपया उसे भरके प्रधाननिदेशक, वैमाउअसं को भेजे।

धन्यवाद!

भवदीय

प्रधान निदेशक

संलग्न पत्रानुसार

Dear Sir, TR/ETL/058/18-19

Test Report No. ( ) / on your instruments/ Components/ Equipments are / is enclosed herewith for your information. If you need any clarification on Test Report, please write/contact Test Report issuing officer quoting our reference and date within 4 weeks from the date of receipt of this report. We are also enclosing here with feed back form. Kindly fill up and send to the Principal Director of IDEMI
Thanking you,

Yours faithfully

Sanjeev Rastogi
PRINCIPAL DIRECTOR

Encl. As above

Swatantryaveer Tatya Tope Marg, Chunabhatti, Sion P.o. **Mumbai** - 400 022. (M.S)
Phone : (022) - 2405 0301/2/3/4 **Fax** : (022) - 2405 0016.
• **Website** : **www.idemi.org / msmetdcmumbai.org** • **Email** : **idemi@vsnl.net, idemi@rediffmail.com**

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TEST REPORT

Cert No. TC-5538

Accreditation Field: Electrical Testing
Accreditation Valid upto : 23.04.2019
Work Order No. : WO/ETL/041/18-19
Date : 29.05.2018

NABL Accreditation No.: TC-5538
Test Report No. : TR/ETL/058/18-19
Date of Testing : 02.06.2018 to 14.06.2018

Test Item : 3 Phase Multifunction Meter

Tested for: M/s : Enertrak Instruments Pvt.Ltd.
IT-3,EPIP,RIICO Industrial Area,Sitapura,Jaipur,Rajasthan-302 020,India.

Tested at : M/s.IDEMI MUMBAI

Specification of Items Under Test	Specification of Standards Used
Manufacturer : M/s. Enertrak Instruments Pvt. Ltd., Jaipur Condition of Item on reciept : Good Range /Rating : Aux Supply : 40-300 V AC Ph-N I/P Voltage : 80-600 V AC L-L Current : (-/5) Amp Model: TMF Sr. No: 268637 Class :1.0	1 Energy Meter Test System Model No.: MT 3000,Sr. No.: ID 11054 Calibration valid upto : Jan 2019 2 Electrical safety analyzer Model No.: Guardian 6100plus,Sr. No.: 10112754 Calibration valid upto : Dec 2018 3 Vibration Test System i. Vibration Test System Model : SPARK - USB, Sr. No.: 10652 Calibration Valdity : July 2018 ii. Charge Accelerometer Model : 357BO3, Sr. No.: 28580 Calibration Valdity : March 2020 4 Portable Power /Energy Ref. Standard Model : RD-31-203,Sr. No.:301682 Calibration valid upto : Dec 2019 Traceability: Standard use are traceable to International Standards

Ambient Conditions :

Temperature : 25 ± 2.5°C Relative Humidity : 35% to 65%

Remarks : Please refer page 2 to 12 for Test Results.

1) Procedure of Test : The above mentioned item is tested as per IS 13875 & Customer requirement.

C. M. PATIL
ASSISTANT DIRECTOR
AUTHORISED SIGNATORY

ELECTRICAL TESTING LABORATORY

Sr. No.: 268637
Date of Testing: 02.06.2018 to 14.06.2018

Test Report No.: TR/ETL/058/18-19
Page No.: 2 of 12

Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
1		Insulation Resistance	500V DC applied for 1min between all terminals shorted together & body & IR value is measured	Not less than 5 MΩ	49.9 GΩ	Complied
2		High Voltage Test	2 kV AC, 50Hz for 1 min is applied between all terminals shorted together & body	No Flash over or Breakdown shall occur	No flash over or break down occurred	Complied

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Test Report No.: TR/ETL/058/18-19
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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
3	3.2	Intrinsic Error Test	At reference condition apply sufficient excitation to each at least five equidistant scale mark	Not to exceed class index of 1 % of Full scale		Complied

Std Reading	Measured Reading		
Volts	R	Y	B
100.00	99.9	99.8	100.2
200.00	199.8	199.8	200.2
300.00	300.3	300.1	300.0
400.00	399.8	398.7	399.9
500.00	500.1	500.3	500.1
600.00	600.2	599.9	600.1
Ampere	L1	L2	L3
1.000	1.001	1.000	1.002
2.000	1.999	2.003	1.997
3.000	2.999	3.004	2.996
4.000	3.998	4.005	3.995
5.000	5.008	5.015	5.003

Frequency@230 Volts	
45.00	45.00
50.00	50.00
55.00	54.99
60.00	60.04

PF			
Lag			
0.2	0.197	0.200	0.202
0.5	0.497	0.499	0.502
0.8	0.798	0.800	0.801
1.0	0.999	1.000	0.999
Lead			
0.8	-0.801	-0.799	-0.798
0.5	-0.502	-0.499	-0.497
0.2	-0.203	-0.199	-0.197
0.0	-0.003	0.000	-0.002

Wattage @ 5A, Upf	
kW	kW
3.00	2.97
2.27	2.26
1.5	1.49
1.2	1.19
0.6	0.597
0.4	0.398

(E) % Error at pF			
Load in %/ Amps	Upf	0.866 Lag	0.5 Lag
100	-0.001	0.000	0.001
50	-0.001	0.001	0.001
20	0.000	0.001	0.002
10	0.000	0.001	0.002
5	0.001	-0.001	0.002

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
4	3.6	Influence effect resulting from a change in position	a.) Take the error value (BR) at 90 % of the full scale value b.) Tilt the EUT as far as possible & check the error at 90% of the full scale value. c.) Calculate the difference between Bx and BR	Not to exceed 50% of Class index	Std Reading / Measured Reading Reference value (B_R) V: L1-L2: 540.2 / 540.7; L2-L3: 540.7; L3-L1: 540.8 A: L1: 5.001; L2: 5.000; L3: 5.002; 4.999 Influential value (B_X) V: L1-L2: 540.2 / 540.7; L2-L3: 540.7; L3-L1: 540.9 A: L1: 5.001; L2: 5.000; L3: 5.002; 4.999 The difference is within limits	Complied

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
5	3.8	Influence effect resulting from the supply voltage	a) Take the error value (BR) at 90 % of the full scale value	Not to exceed 100% of Class index	Std Reading / Measured Reading Reference value (B_R) V: 540.10 (L1-L2: 540.8, L2-L3: 540.7, L3-L1: 540.7) A: 5.001 (L1: 5.000, L2: 5.001, L3: 4.998)	Complied
			b) Vary the supply voltage at the lower limit of operation & after attaining the thermal equilibrium, check the error (Bxo) at 90% of the full scale value.		Influential value (B_{XO}) at lower limit V: 540.10 (L1-L2: 540.08, L2-L3: 540.7, L3-L1: 540.8) A: 5.001 (L1: 4.999, L2: 5.001, L3: 4.998)	
			c) Subject the EUT at upper limit of operation and after attaining thermal equilibrium, check the error (Bxu) at 90 % of the full scale value.		Influential value (B_{XU}) at upper limit V: 540.1 (L1-L2: 540.8, L2-L3: 540.7, L3-L1: 540.9) A: 5.000 (L1: 5.000, L2: 5.002, L3: 4.999)	
			d) Calculate the difference between Bxo or Bxu and BR		The difference is within limits	

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
6	4.9.1 (Part1)	Shock test	a.) Take the error value (BR) at 90 % of the full scale value	No damage shall occur to the measuring instrument during tests. After the test the error shall be within limits	Std Reading / Measured Reading Reference value (B_R)	Complied
			b.) Subject the EUT to shocks according to IS 9000 (Part 7/Sec 1) ➢ Pulse shape: half sine ➢ Number of shocks: three in each of the three vertically arranged axes and each of two directions (18 shocks in all) ➢ Pulse duration: 11 ms ➢ Peak accl.: 15 g			
			c) After the test verify for any damage. check the error (Bx) at 90 % of the full scale value.		Influential value (B_x)	

V	L1-L2	L2-L3	L3-L1
540.2	540.8	540.7	540.9
A	L1	L2	L3
5.000	5.001	5.003	5.000

V	L1-L2	L2-L3	L3-L1
540.2	540.8	540.7	540.9
A	L1	L2	L3
5.001	5.000	5.001	4.998

No mechanical damage was observed during & after the test.
The error is within limits.

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
7	4.9.2 (part1)	Vibration test	a.) Take the error value (BR) at 90 % of the full scale value	No damage shall occur to the measuring instrument during tests. After the test the error shall be within limits	Std Reading / Measured Reading Reference value (B_R) V: L1-L2: 540.3 / 540.8; L2-L3: 540.6; L3-L1: 540.7 A: L1: 5.002; L2: 5.000; L3: 5.002; L3-L1: 4.999	Complied
			b.) Subject the EUT to vibration according to IS 9000 (part 8) ➢ Direction of vibration: in the direction of the three vertically arranged axes ➢ Amplitude: ± 0.15 mm ➢ Frequency: 10-55-10 Hz ➢ Cycles: 2 in each direction (6 in all).			
			c) After the test verify for any damage. Check the error (Bx) at 90 % of the full scale value.		Influential value (B_x) V: L1-L2: 540.1 / 540.7; L2-L3: 540.8; L3-L1: 540.7 A: L1: 5.000; L2: 4.999; L3: 5.001; L3-L1: 5.001 No mechanical damage was observed during & after the test. The error is within limits.	

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
8	3.13 (Part2)	Frequency influence error in the case of a.c. voltage measurement	a.) Take the error value (BR) at 90 % of the full scale value for the a.c voltage at reference frequency	The change in error shall be within limits specified by manufacturer	Std Reading / Measured Reading Reference value (B_R) V: 540.3 — L1-L2: 540.8 — L2-L3: 539.9 — L3-L1: 540.8 A: 5.000 — L1: 5.001 — L2: 5.002 — L3: 5.000	Compiled
			b.) Vary the frequency within the rated range of use at constant voltage and determine the display value with the greatest deviation (Bx).		Influential value (B_x) V: 540.2 — L1-L2: 540.7 — L2-L3: 540.7 — L3-L1: 540.9 A: 5.001 — L1: 5.000 — L2: 5.003 — L3: 4.999	
			c.) Calculate the difference between Bx and BR		The difference is within limits	

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
9	3.15 a) (Part2)	Permanent overload	a.) Take the error value (BR) at 90 % of the full scale value	No damage shall occur to the measuring instrument during tests. After the test the error shall be within limits	Std Reading / Measured Reading Reference value (B_R) V: 540.3 (Std) — L1-L2: 540.8, L2-L3: 540.8, L3-L1: 540.9 A: 5.001 (Std) — L1: 5.001, L2: 5.002, L3: 4.999	Complied
			b.) Subject the EUT to overload of 120 % in all ranges for a minimum of 2 hours.			
			c) Check the error (Bxu) at 90 % of the full scale value.		Influential value (B_x) V: 540.0 — L1-L2: 540.7, L2-L3: 540.6, L3-L1: 540.8 A: 5.001 — L1: 5.002, L2: 5.001, L3: 4.999	
			d) Calculate the difference between Bx and BR		The difference is within limits No mechanical damage was observed during & after the test. The error is within limits.	

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
10	3.15 b) (Part2)	Short-time overload	a) Take the error value (BR) at 90 % of the full scale value	A fuse, if any, may operate. No damage shall occur to the measuring instrument during tests. After the test the error shall be within limits	**Std Reading** / **Measured Reading** **Reference value (B_R)** V: L1-L2 540.7, L2-L3 540.6, L3-L1 540.7 A: L1 4.999, L2 5.000, L3 4.997	Complied
			b). Subject the EUT once to given overload of 0.5 seconds in all ranges.			
			c) Check the error (Bxu) at 90 % of the full scale value.		**Influential value (B_{XU})** V: L1-L2 540.8, L2-L3 540.6, L3-L1 540.8 A: L1 5.000, L2 5.001, L3 4.999	
			d) Calculate the difference between Bxu and BR		The difference is within limits No mechanical damage was observed during & after the test. The error is within limits.	

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Sr. No.: 268637
Date of Testing: 02.06.2018 to 14.06.2018

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Test Results of : 3 Phase Multifunction Meter as per IS 13875: 1993

Sr. No	Clause No.	Test	Test Condition	Test Requirement / Limits	Observation	Remarks
11	3.16 (Part2)	Self Heating due to measured Quantity test.	a) Keep the EUT in a switched-on condition for at least two hours at reference temperature, but without a measured quantity applied.	The error shall be within the class index.		Complied
			b) Apply measuring quantity with approximately 90 % of the full scale value.			
			c) Note down the displayed value after the elapse of one minute (BR).		Std Reading / Measured Reading Reference value (B_R) V: L1-L2 540.2 / L2-L3 540.8 / L3-L1 540.7 A: L1 5.001 / L2 5.001 / L3 5.002 / L3 4.999	
			d) Keep the EUT for 30 minutes with input quantity applied.			
			e) Note down the displayed value after the elapse of 30 minutes.		Influential value (B_X) V: L1-L2 540.2 / L2-L3 540.9 / L3-L1 540.7 / 540.8 A: L1 5.002 / L2 5.001 / L3 5.003 / 5.000	
			f) Calculate the self heating influence error Bx-BR		The difference is within limits. The error is within class index.	

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ELECTRICAL TESTING LABORATORY

Sr. No.: 268637
Date of Testing: 02.06.2018 to 14.06.2018

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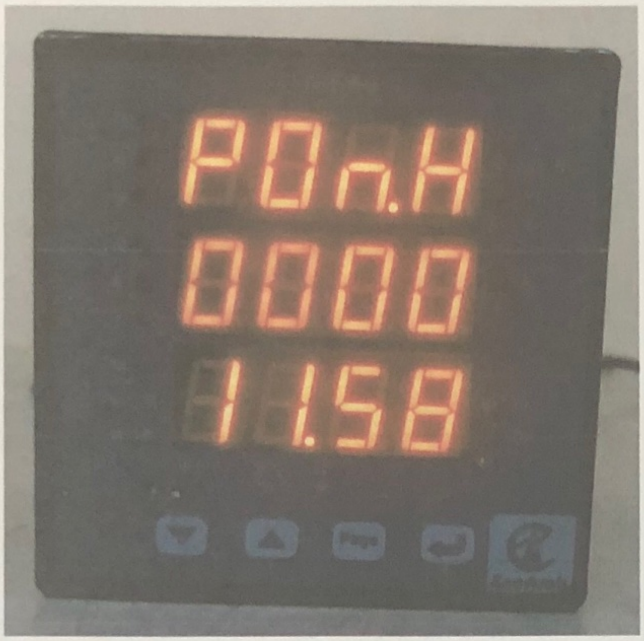
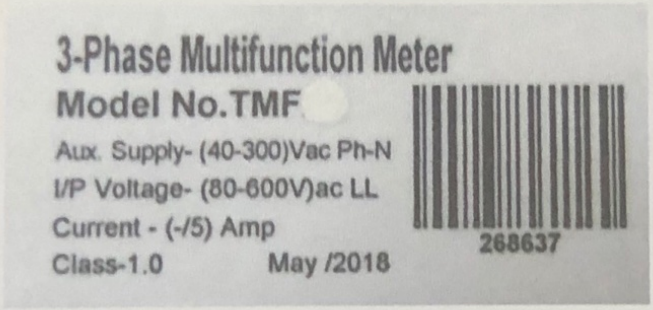
EUT PHOTOGRAPH



NAME PLATE



END OF TEST REPORT

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