



सत्यमेव जयते

TEST / CALIBRATION REPORT

TYPE TEST FOR SELF POWERED CURRENT TRANSDUCER



ELECTRONICS REGIONAL TEST LABORATORY (WEST)

MINISTRY OF COMMUNICATIONS & INFORMATION TECHNOLOGY, (STQC Dte.)

Government of India

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ELECTRONICS REGIONAL TEST LABORATORY (WEST) DEPARTMENT OF INFORMATION TECHNOLOGY	REPORT NO. ERTL (W)/2004 E&S 283		
SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)	DATE 3 DEC 2004	PAGE 1	OF 10

1. SCOPE

1.1 Service Request No : ERTL(W)/20042011 dated 6TH Oct. 2004

1.1.1 Service Request finalised on : 6TH Oct. 2004

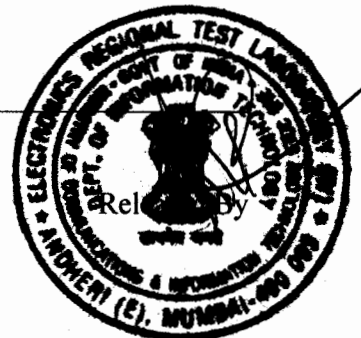
1.2 Requested by (Name and address of organisation) : MECO INSTRUMENTS PVT. LTD.
301,BHARAT INDUSTRIAL ESTATE,
T.J. ROAD,SEWREE,MUMBAI 400 015

<u>Description</u>	<u>Qty</u>	<u>Manufacturer</u>	<u>Type No.</u>	<u>Serial Nos.</u>
Current Transducer	01	MECO INSTRUMENTS PVT. LTD.	CMT	043536

1.4 Test specifications : TYPE TEST AS PER IEC 60688

1.5 Lab Ambient : Temperature: (25 ± 2) ° C
RH : (55 ± 5) %

- 1.6 Test Equipment used :
1. POWER ENERGY CALIBRATOR (E&S126)
 2. OSCILLOSCOPE (E&S/077)
 3. DMM (E&S/132)
 4. TTC 2 (ENV 29)
 5. ENV CHAMBER (ENV/75)
 6. FUNCTION GENERATOR (SAF/139)
 7. HF TEST GENERATOR,COUPLING NETWORK (EMI/19,23)
 8. IMPULSE GENERATOR (COM/ 209)



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
2

OF
10

2.0 TEST RESULTS

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation	Remark
2.1	Open circuit voltage	Input current = 1 A AC	24 VDC (max.)	Output 1: 20.253 V Output 2: 20.256 V	Complied
2.2	Ripple	Input current = 1 A AC	Not exceed twice of class index	Output 1: 0.67% Output 2: 0.67%	Complied
2.3	Response time	Input current switched from 0 to 1A AC	Time required for output signal to reach 90 % from 0 % of fiducial value	Output 1: 834 msec. Output 2: 780 msec.	-----
2.4	Limiting conditions for storage and transport	Temp.: - 20 deg.C. Temp.: 70 deg.C.	After returning to reference conditions the DUT shall meet the requirements of the specification.	Conditioned	
2.5	Intrinsic error	a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.5 %)	Output 1 (mA) a) 0.9771 b) 4.950 c) 9.952 Output 2 (mA) a) 0.9782 b) 4.960 c) 9.955	Complied



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
3

OF
10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation			Remark	
				Input current = 1 A AC	Input current = 0.1 A AC	Input current = 0.1 A AC		
2.6	Variation due to ambient temp.	a)Temp. 25 deg. C b)Temp. 0 deg. C c)Temp. 50 deg. C	100 % of class index	Output 1 (mA) a)9.983 b)9.962 c)10.002	Output 2 (mA) a) 10.000 b) 9.992 c) 10.007	Output 1 (mA) a) 0.9703 b) 0.9670 c) 0.9725	Output 2 (mA) a) 0.9722 b) 0.9712 c) 0.9728	Complied
2.7	Variation due to frequency of input quantities	a)l/p. Freq. = 50 Hz b)l/p. Freq. = 45 Hz c)l/p. Freq. = 55 Hz	100 % of class index	Output 1 (mA) a)9.954 b)9.956 c)9.954	Output 2 (mA) a)9.957 b)9.958 c)9.963	Output 1 (mA) a)0.9778 b)0.9766 c)0.9786	Output 2 (mA) a)0.9789 b)0.9778 c)0.9795	Complied
2.8	Variation due to output load	a)At load resistance = 1000 ohm b)O/p load resistance = 100 ohm	50 % of class index	Output 1 (mA) a)9.939 b)9.941	Output 2 (mA) a)9.952 b)9.954	Output 1 (mA) a)0.9775 b)0.9783	Output 2 (mA) a)0.9790 b)0.9792	Complied



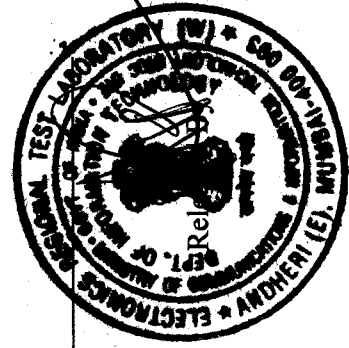
SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
 4

OF
 10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation			Remark	
				Input current = 1 A AC	Input current = 0.1 A AC			
2.9	Variation due to distortion of input quantities	a) /p without distortion b) /p with 20 % 3 rd harmonics	200 % of Class index	The UUT is average reading type and not meant for distorted parameter, as declared by customer.			-----	
2.10	Variation due to magnetic field of external origin	a) Without magnetic field b) With Magnetic field of 0.4 kA/m	100 % of class index	Output 1 (mA) a) 9.746 b) 9.765	Output 2 (mA) a) 9.726 b) 9.690	Output 1 (mA) a) 0.9985 b) 1.0020	Output 2 (mA) a) 0.9892 b) 0.9976	Complied
2.11	Variation due to self heating	a) Measurement between 1 min. to 3 min. b) Measurement between 30 min. to 35 min.	100 % of class index	Output 1 (mA) a) 10.000 b) 10.013	Output 2 (mA) a) 10.006 b) 10.010	Output 1 (mA) a) 0.9734 b) 0.9744	Output 2 (mA) a) 0.9738 b) 0.9733	Complied
2.12	Variation due to continuous operation	a) Initial measurement b) Measurement after 6 hrs	Continue to comply the accuracy class	Output 1 (mA) a) 9.953 b) 9.961	Output 2 (mA) a) 9.982 b) 9.989	Output 1 (mA) a) 0.9785 b) 0.9792	Output 2 (mA) a) 0.9752 b) 0.9760	Complied



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE: **3 DEC 2004**

PAGE: 5

OF: 10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation			Remark	
				Input current = 1 A AC	Output 2 (mA)	Input current = 0.1 A AC		
2.13	Variation due to series mode interference	a) Normal output b) With 1 Vrms at 45 Hz to 65 Hz applied in series with output signal	Class index	Input current = 1 A AC Output 1 (mA) a) 9.777 b) 9.785 at 60Hz	Output 2 (mA) a) 9.820 b) 9.775 at 60 Hz	Input current = 0.1 A AC Output 1 (mA) a) 0.9986 b) 0.9882 at 60 Hz	Output 2 (mA) a) 0.9868 b) 0.9890 at 60 Hz	Complied
2.14	Permissive excessive inputs							
2.14.1	Continuous excessive inputs	Apply 120 % of nominal upper value on current inputs for 24 Hours.	Continue to comply the accuracy class after test	Input current = 1 A AC Output 1 (mA) a) Pre meas. 9.8216 b) Post meas. 9.7850		Input current = 0.1 A AC Output 2 (mA) a) Pre meas. 0.9933 b) Post meas. 0.9955		Complied
2.14.2	Excessive inputs of short duration	For current inputs: 20 times the nominal value of the measured current applied for 1 s and repeated 5 times at 300 s interval	Continue to comply the accuracy class after test			Conditioned		Complied
2.14.3	Intrinsic error	a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A A AC	Class index (0.5 %)	Output 1 (mA) a) 0.9715 b) 4.988 c) 9.997		Output 2 (mA) a) 0.9870 b) 5.048 c) 10.041		Complied



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
6

OF
10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation	Remark
2.15	Voltage test,	At 2 kV AC for 1 min. between Input & output1/output2	No breakdown	No breakdown or flashover is observed	Complied
2.16	Impulse voltage tests	At peak test voltage of 5 kV in both positive and negative senses having the standardized impulse waveform of 1.2/50 us, applied between terminals of each circuit in turn and all other circuit connected together.	After completion of the test the DUT shall comply with the requirement appropriate to its class index.	No breakdown or flashover is observed	Complied
2.16.1	Intrinsic error	Auxiliary power supply : 230 VAC a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.5 %)	Output 1 (mA) a) 0.9782 b) 4.957 c) 9.968 Output 2 (mA) a) 0.9802 b) 4.966 c) 9.962	Complied
2.17	High frequency disturbance test	2.5 kV peak between independent circuits. 1kV peak between terminals of the same circuit.	The variation due to the effect of disturbance shall not be twice of class index.	Conditioned	
2.17.1	Intrinsic error	Auxiliary power supply : 230 VAC a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.5 %)	Output 1 (mA) a) 0.9725 b) 4.983 c) 9.995 Output 2 (mA) a) 0.9740 b) 4.993 c) 10.008	Complied



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE **3 DEC 2004** PAGE 7 OF 10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation	Remark
2.18	Test for temperature rise	Current circuit loaded at 110 % Duration 2 h.	For input circuits: 60 k For exterior surface: 25 k	For input circuits: 15.3 k For exterior surface: 12.4 k	Complied
2.19	Vibration	Freq.: 10 - 55 - 10 Hz. Amplitude: 0.15 mm. 5 cycles, 1 octave/min. Axis: Vertical		Conditioned	
2.19.1	Intrinsic error	a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.2 %)	Output 1 (mA) a) 0.9832 b) 4.985 c) 9.995	Complied
2.20	Shock	15g, ½ sine, 11 ms, 3 shocks on each sense. Total 18 shocks.		Conditioned	
2.20.1	Intrinsic error	a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.2 %)	Output 1 (mA) a) 0.9788 b) 4.985 c) 9.995	Complied
2.21	Drop & topple	Drop height: 25 mm, one drop about each of four bottom edges. One topple about each of four bottom edges.		Conditioned	
2.21.1	Intrinsic error	a) Input current = 0.1A AC b) Input current = 0.5 A AC c) Input current = 1 A AC	Class index (0.2 %)	Output 1 (mA) a) 0.9802 b) 4.965 c) 9.989	Complied



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
8

OF
10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation	Remark
2.22	Marking	As per cl. 7 of IEC 60688	<ul style="list-style-type: none"> a) Manufacture's Name or mark b) Manufacture's type designation c) Serial no. d) Class index e) Nature of the measurand. f) Lower and upper nominal values of the measurand. g) Ratios of CT/PT h) Range of values of the output current and output load within which specified operation is obtained i) Limits of the measuring range j) Serial numbers of the associated equipment ,if applicable k) Deleted l) Values(s) of the auxiliary supply m) Symbol showing that some other essential information n) Space for adjustment data o) Nominal range of use for Temperature 	<ul style="list-style-type: none"> a) MECO b) CMT c) 043536 d) CLASS 0.5 e) ~ f) 0-1 A AC g) NOT APPLICABLE h) 0-10 mA DC 0-1kOhm i) NOT APPLICABLE j) NOT APPLICABLE k) -- l) SELF POWERED m) Nil n) Nil o) 0.....25.....50 DEG.C. 	----



SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)

DATE
3 DEC 2004

PAGE
9

OF
10

Sr.No.	Test/Parameter	Test Condition	Requirement	Observation	Remark
2.22	Marking		p) Common mode voltage q) over voltage category r) Pollution degree according s) Other required safety symbols	p) Nil q) Nil r) Nil s) Nil	----



ELECTRONICS REGIONAL TEST LABORATORY (WEST) DEPARTMENT OF INFORMATION TECHNOLOGY	REPORT NO. ERTL (W)/2004 E&S 283		
SUBJECT: TESTING OF CURRENT TRANSDUCER (SELF POWERED)	DATE 13 DEC 2004	PAGE 10	OF 10

3.0 **General Remarks** : EMC Tests are not carried out as per customer's request.

REPORT APPROVED BY

REPORT

2/11/04
HEAD (E&S)

