

## **TEST / CALIBRATION REPORT**

# Type Test Report for MECO Frequency Transducer

Testing as per IEC 60688 (Edition 2.2)



### 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	)/2003 E&S	\$27
SUBJECT: TESTING OF FREQUENCY TRANSDUCER	- 9 MAY 2003	PAGE 1	OF 7

#### 1. SCOPE

Service Request No		: ERTL(W)/2002	30563 DATED	21 <sup>st</sup> March 2003
Service Request finalised	on	: 21 <sup>st</sup> March 2003	;	
Requested by (Name and address of orga	nisation)	301, BHARAT I T.J. ROAD, SE	INDUSTRIAL WREE (W),	
Description	Qty	Manufacturer	Type No.	Serial Nos.
FREQUENCY TRANSDUCER, INPUT : 45 – 55 Hz OUTPUT : 0 – 10 mA & 4 – 20 mA Accuracy: 0.2 %	01 No.	MECO	FT	030946
Test specifications		Testing as per IEC	60688 (Editio	n 2.2)
Lab Ambient				
Test Equipment used :		<ol> <li>Energy Meter</li> <li>System DMM</li> <li>Vibration Mac</li> <li>Shock Test Mac</li> <li>Over Voltage 7</li> <li>HF Test Gener</li> <li>Coupling Netw</li> </ol>	Calibrator chine achine Test Generator rator vork	S&C/138 E&S/126 EM!/006 ENV/008 ENV/018 EMI/002 EMI/019 EMI/021 ENV/042
	Service Request finalised of Requested by (Name and address of organ Description FREQUENCY TRANSDUCER, INPUT : 45 – 55 Hz OUTPUT : 0 – 10 mA & 4 – 20 mA Accuracy: 0.2 % Test specifications Lab Ambient	Service Request finalised onRequested by (Name and address of organisation)DescriptionQtyDescriptionQtyFREQUENCY01 No.TRANSDUCER, INPUT : $45 - 55$ Hz OUTPUT : $0 - 10$ mA & $4 - 20$ mA Accuracy: $0.2$ %Test specificationsLab Ambient	Service Request finalised on       : 21st March 2003         Requested by       : MECO INSTRU- 301, BHARAT         (Name and address of organisation)       : MECO INSTRU- 301, BHARAT         T.J. ROAD, SE MUMBAI - 400         Description       Qty         Manufacturer         FREQUENCY       01 No.         TRANSDUCER, INPUT : 45 - 55 Hz         OUTPUT : 0 - 10 mA & 4 - 20 mA         Accuracy: 0.2 %         Test specifications         Test specifications         Test Equipment used :         1) Calibration Sy 2) Energy Meter         3) System DMM         4) Vibration Mac         5) Shock Test March         6) Over Voltage         7) HF Test General         8) Coupling Netw         8) Programmable	Service Request finalised on $: 21^{st}$ March 2003Requested by (Name and address of organisation): MECO INSTRUMENTS PVT 301, BHARAT INDUSTRIAL T.J. ROAD, SEWREE (W), MUMBAI – 400 015.DescriptionQtyManufacturerType No.FREQUENCY TRANSDUCER, INPUT : 45 – 55 Hz OUTPUT : 0 – 10 mA & $4 - 20$ mA Accuracy: 0.2 %MECOTest specificationsTesting as per IEC 60688 (Edition Temperature: $(25 \pm 2)^{\circ}$ C RH: $(55 \pm 5)^{\circ}$ %Test Equipment used :1)Calibration System 2) Energy Meter Calibrator 3) System DMM 4) Vibration Machine 5) Shock Test Machine 6) Over Voltage Test Generator 7) HF Test Generator 8) Coupling Network 8) Programmable Humidity

DATE         DATE         PAGE           PAGE         PAGE         PAGE           Requirement         O/p 1         Observation         2           Requirement         O/p 1         O/p 2         O/p 2         2           Class index         0.01 %         0.01 %         0.01 %         0.01 %         0.01 %         0.03 %         0.01 %         0.03 %         0.01 %         0.03 %         0.01 %         0.03 %         0.01 %         0.01 %         0.01 %         0.01 %         0.01 %         0.03 %         0.03 %         0.01 %         0.03 %         0.01 %         0.03 %         0.01 % <th>CT. TESTING OF FREQUENCY TRANSDUCER     DATE       St Results     DATE       St Results     DATE       St Reteraction     DATE       Class index     DATE       Class index     Observation       Constraint     Constraint       Class index     Opservation       Constraint     Opservation       Constraint     Class index     Opservation       Constraint     State     Opservation       Constraint     Opservation     Opservation       Constraint     State     Opservation       Class index     Opser</th> <th>CT. TESTING OF FREQUENCY TRANSDUCER     DATE       PAGE     PAGE       9     MAY 2003       2     2       8     Reentist       7     Test Variation       8     Requirement       0     1       12     Intrinsic error       13     Input rotages       14     Intrinsic error       14.12     Intrinsic error       14.2     Intrinsic error       14.1     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.3     Intrinsic error       14.4     Intrinsic error       14.5     Intrinsic error       14.4     Intrinsic error       15.4     Variation due to       16.4     Variation due to       17.4     Intervalues       18.4     Intervalues       19.4     Intervalues       10.4     Intervalues       10.4     Intervalues       10.5     Intervalues       10.4<!--</th--><th>ART</th><th>IMENT OF I</th><th>DEPARTMENT OF INFORMATION TECHNOLOGY</th><th>ALORY (WEST) VOLOGY</th><th></th><th>kepukt nu. ektl (W)/2003 e&amp;S 27</th><th>)/2003 E&amp;S 27</th><th></th></th>	CT. TESTING OF FREQUENCY TRANSDUCER     DATE       St Results     DATE       St Results     DATE       St Reteraction     DATE       Class index     DATE       Class index     Observation       Constraint     Constraint       Class index     Opservation       Constraint     Opservation       Constraint     Class index     Opservation       Constraint     State     Opservation       Constraint     Opservation     Opservation       Constraint     State     Opservation       Class index     Opser	CT. TESTING OF FREQUENCY TRANSDUCER     DATE       PAGE     PAGE       9     MAY 2003       2     2       8     Reentist       7     Test Variation       8     Requirement       0     1       12     Intrinsic error       13     Input rotages       14     Intrinsic error       14.12     Intrinsic error       14.2     Intrinsic error       14.1     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.2     Intrinsic error       14.3     Intrinsic error       14.4     Intrinsic error       14.5     Intrinsic error       14.4     Intrinsic error       15.4     Variation due to       16.4     Variation due to       17.4     Intervalues       18.4     Intervalues       19.4     Intervalues       10.4     Intervalues       10.4     Intervalues       10.5     Intervalues       10.4 </th <th>ART</th> <th>IMENT OF I</th> <th>DEPARTMENT OF INFORMATION TECHNOLOGY</th> <th>ALORY (WEST) VOLOGY</th> <th></th> <th>kepukt nu. ektl (W)/2003 e&amp;S 27</th> <th>)/2003 E&amp;S 27</th> <th></th>	ART	IMENT OF I	DEPARTMENT OF INFORMATION TECHNOLOGY	ALORY (WEST) VOLOGY		kepukt nu. ektl (W)/2003 e&S 27	)/2003 E&S 27	
at Results       Reference       Test Parameter     Test Condition     Requirement     Observation       4.2     Intrinsic error     Auxiliary power supply: 48 V DC.     Clause No.     Op 1     Op 2       4.2     Intrinsic error     Auxiliary power supply: 48 V DC.     Class index     On 9%     0.01 %       6.2     Variation due to     b) Input frequency = 51 Hz     0.05 %     0.01 %     0.01 %       6.3     Variation due to     Input voltage = 110 V AC.     0.2 %)     0.01 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC.     0.03 %     0.03 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC.     100 % of class     0.06 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC.     100 % of class     0.09 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC.     100 % of class     0.09 %     0.03 %       6.5     Variation due to     Input voltage = 110 V AC.     100 % of class     0.09 %     0.03 %       6.6     Variation due to     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       6.6     Variation due to     Auxiliary power supply: 48 V DC     50 % of class     0.09 %	At Realits           F Realits         Test/Parameter         Test/Parameter         Test/Parameter         Test/Parameter         Observation           Clause No.         Institution of the construction in the construction in the construction in the construction in the construction is an input voltage = 110 V AC         (0.2 %)         0.01 %	If Reultistic Streamster     Test Condition       Redirence     Test/Parameter     Test Condition     Requirement     Op       4.1     Intrinsic arror     Auxuliary power supply: 48 VDC.     Observation     Op       4.2     Intrinsic arror     Auxuliary power supply: 48 VDC.     Olservation     Op       6.2     Variation due to     Diput frequency = 35 Hz     0.03 %     0.01 %       6.3     Nariation due to     Diput frequency = 35 Hz     0.03 %     0.01 %       6.4     Variation due to     Auxuliary power supply: 48 VDC     0.03 %     0.03 %       6.4     Variation due to     Auxuliary power supply: 48 VDC     0.09 %     0.03 %       6.5     Variation due to     Input voltage varied from 38.4 V to     index       6.6     Variation due to     Auxuliary power supply: 48 VDC     0.09 %     0.03 %       6.7     Variation due to     Input voltage     110 VAC     0.09 %     0.03 %       6.9     Variation due to     Auxuliary power supply: 48 VDC     0.09 %     0.03 %       6.9     Variation due to     Auxuliary power supply: 48 VDC     0.09 %     0.03 %       6.9     Variation due to     Auxuliary power supply: 48 VDC     0.00 %     0.03 %       6.9     Variation due to     Auxuliary powe	EC	T: TESTING	OF FREQUENCY TRA	NSDUCER		DATE 9 MAY 2003	PAGE 2	0F 7
Reference         Test/Parameter         Test Condition         Requirement         Op 1         Op 2           4.2         Intrinsic error         Auxiliary power supply: 48 V DC.         Class index         0.01 %         0.01 %           4.2         Intrinsic error         Auxiliary power supply: 48 V DC.         (0.2 %)         0.01 %         0.01 %           6.2         Variation due to         Input frequency = 55 Hz         0.05 %         0.01 %         0.03 %           6.2         Variation due to         Input frequency = 55 Hz         0.00 %         0.03 %         0.03 %           6.2         auxiliary supply         Anx Voltage varied from 38.4 V to         index         0.00 %         0.03 %         0.03 %           6.4         Variation due to         Input frequency = 55 Hz         0.00 %         0.03 %         0.03 %           6.4         Variation due to         Input voltage varied from 38.4 V to         index         0.00 %         0.03 %         0.03 %           6.4         Variation due to         Input requency = 55 Hz         0.00 % of class         0.03 %         0.03 %           6.4         Variation due to         Input requency = 45 Hz         0.00 % of class         0.03 %         0.03 %           6.4         Variation due to	Reference         Test Parameter         Test Condition         Requirement         Observation           4.1         Intrinsic error         Auxiliary power supply: 48 VDC.         Class index         Op 1         Observation           4.2         Intrinsic error         Auxiliary power supply: 48 VDC.         (0.2 %)         0.01 %         0.01 %           6.2         Variation due to         b) Input frequency = 55 Hz         0.05 %         0.03 %         0.03 %           6.2         Variation due to         Input voltage = 110 V AC         50 % of class         0.06 %         0.03 %         0.03 %           6.4         Variation due to         Input voltage = 110 V AC         50 % of class         0.09 %         0.03 %         0.03 %           6.4         Variation due to         Input voltage = 110 V AC         50 % of class         0.09 %         0.03 %         0.03 %           6.5         Variation due to         Input voltage = 110 V AC         50 % of class         0.09 %         0.03 %         0.03 %           6.6         Variation due to         Input voltage = 110 V AC         6.0 % of class         0.09 %         0.03 %         0.03 %           6.7         Variation due to         Input voltage = 110 V AC         50 % of class         0.09 %         0.03 %	Reference Clause No.         Test Condition         Requirement         Obj 1         Obj 1         Obj 2           4.2         Intrinsic error         Auxiliary power supply: 48 V DC.         Class index         0p 1         0p 2           4.2         Intrinsic error         Auxiliary power supply: 48 V DC.         Class index         001 %         001 %           4.2         Intrinsic error         Auxiliary power supply: 48 V DC.         Class index         0.01 %         0.01 %           6.2         Variation due to voltage         10 put frequency = 51 Hz         0.05 %         0.03 %         0.03 %           6.4         Variation due to voltage         10 V AC         100 %         0.01 %         0.03 %           6.5         Variation due to hout voltage         510 V AC         100 %         0.03 %         0.03 %           6.6         Variation due to hout voltage         100 V AC         100 %         0.03 %         0.03 %           6.6         Variation due to the hout voltage         100 V AC         100 %         0.03 %         0.03 %           6.6         Variation due to the hout voltage         Auxiliary power supply : 48 V DC         100 %         0.03 %         0.03 %           6.9         Variation due to the hout voltage         Auxiliary power supply : 48	<b>Fest</b>	Results						
Values No.     Op 1     Op 1     Op 2       4.2     Intrinsic error     Input voltage = 110 V AC     (0.2 %)     0.01 %     0.01 %       6.2     Variation due to     Input frequency = 55 Hz     0.05 %     0.01 %     0.01 %       6.2     Variation due to     Input frequency = 55 Hz     0.01 %     0.01 %     0.01 %       6.3     Variation due to     Input voltage = 110 V AC     50 % of class     0.06 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     50 % of class     0.06 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.5     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.6     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.6     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.7     Variation due to     Input voltage = 110 V AC     index     0.09 %     0.03 %       6.9	Cuature Proc.     Op 1     Op 1     Op 2       4.2     Intrinsic error     Input voltage = 110 V AC     (0.2 %)     0.01 %     0.01 %       6.2     Input frequency = 45 Hz     0.01 %     0.01 %     0.01 %     0.01 %       6.2     Variation due to     Input frequency = 54 Hz     0.03 %     0.01 %     0.03 %       6.2     Variation due to     Input frequency = 54 Hz     0.01 %     0.03 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     50 % of class     0.06 %     0.03 %       6.4     Variation due to     Input voltage = 110 V AC     50 % of class     0.09 %     0.03 %       6.5     Variation due to     Input voltage = 110 V AC     50 % of class     0.09 %     0.03 %       6.4     Variation due to     Auxiliary power supply: 48 V DC     index     0.09 %     0.03 %       6.6     Variation due to the     Auxiliary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       6.6     Variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       7.6     Variation due to the     Auxiliary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       7.6     Variation due to the     Auxiliary power supply: 48 V DC     100 % o	Orane FNO         Untrinsic error         Maxiliary power supply : 48 V DC.         Class index         Op1         Op2           4.2         Intrinsic error         Input voltage = 110 V AC.         (0.2 %)         0.05 %         0.01 %         0.01 %           6.2         Variation due to         Diput frequency = 55 Hz         0.01 %         0	0	Reference	Test/Parameter	Test Condition	Requirement	Observ	ation	Remark
Input voltage100 VAC0.01 %0.01 %a) Input frequency = 55 Hzb) Input frequency = 55 Hz0.05 %0.01 %b) Input frequency = 55 Hzc) Input frequency = 55 Hz0.05 %0.01 %b) Input frequency = 55 Hzc) Input frequency = 55 Hz0.00 %0.01 %b) Input frequency = 55 Hzb) Input voltage110 V AC50 % of class0.00 %b) Nax VoltageAux Voltage varied from 38.4 V to50 % of class0.06 %0.03 %voltageAuxiliary supply48 V DC100 % of class0.09 %0.03 %Variation due toAuxiliary power supply : 48 V DCindex0.09 %0.03 %Variation due toInput voltage110 V ACindex0.09 %0.03 %Variation due to theAuxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due to theAuxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due to theAuxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due toAuxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due toAuxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due toInput voltage110 V ACindex0.01 %0.01 %Output loadOutput loadOutput load0.01 %0.01 %0.01 %Output loadOutput loadOutput load0.01 %0.01 %0.01 %	Anjour voltage = 110 V AC     0.05 %     0.01 %       0 Input frequency = 55 Hz     0.005 %     0.01 %       0 Input frequency = 55 Hz     0.01 %     0.03 %     0.03 %       0 Input frequency = 55 Hz     0.01 %     0.03 %     0.03 %       0 Narvaliary supply     55 Hz     50 % of class     0.05 %     0.03 %       0 Narvaliary supply     55 Hz     50 % of class     0.06 %     0.03 %       0 Narvaliary supply     57.6 V     Aux voltage varied from 38.4 Vto     index     0.05 %     0.03 %       1 Partation due to     Aux voltage varied from 0 deg. C to     Aux voltage = 110 V AC     index     0.09 %     0.03 %       1 Partation due to     Auxilary power supply : 48 V DC     index     0.09 %     0.03 %       1 St deg C     10 V AC     index     100 % of class     0.01 %       1 St deg C     10 V AC     index     100 %     0.03 %       1 St deg C     10 V AC     index     100 %     0.03 %       1 St deg C     10 V AC     index     100 %     0.03 %       1 St deg C     0 St % of class     0.09 %     0.03 %       1 St deg C     0 Outper     10 V AC     100 %     0.03 %       1 St deg C     0 Outper     10 V AC     0.01 %     0.01 %       <	Input frequency = 45 Hz     0.05 %     0.01 %       b)     Input frequency = 54 Hz     0.05 %     0.01 %       b)     Input frequency = 54 Hz     0.01 %     0.03 %       c)     Input frequency = 54 Hz     0.01 %     0.03 %       variation due to     Input voltage     51 Hz     0.01 %     0.03 %       variation due to     Input voltage     57 s V     0.01 %     0.03 %       voltage     75 s V     50 % of class     0.09 %     0.03 %       voltage     75 s V     Index     0.09 %     0.03 %       voltage     10 V Acianto due to     Aux. Voltage varied from 38.4 V to     index     0.09 %     0.03 %       voltage     10 V Acianto due to     Aux. Voltage varied from 38.4 V to     index     0.09 %     0.03 %       voltage     10 V Acianto due to     Aux. Voltage varied from 6.8 V to     index     0.09 %     0.03 %       variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.01 %       Variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.01 %       Variation due to     Input voltage 110 V AC     Output     0.01 %       Output     O		4.2	Intrinsic error	Auxiliary power supply : 48 V DC.	Class index	0/p 1	0/p 2	Complied
6.2     Variation due to auxiliary supply     -y, unput trequency = 3.5 HZ     50 % of class     0.01 %     0.01 %       6.2     Variation due to voltage     Input voltage varied from 38.4 V to auxiliary supply     50 % of class     0.06 %     0.03 %       6.4     Variation due to ambient temp.     Aux. Voltage varied from 38.4 V to anticiary supply     100 % of class     0.09 %     0.03 %       6.4     Variation due to ambient temp.     Auxiliary power supply     48 V DC     100 % of class     0.09 %     0.03 %       6.6     Variation due to the input voltage.     Auxiliary power supply     48 V DC     50 % of class     0.09 %     0.03 %       6.9     Variation due to input voltage.     132 V at 45 Hz and 55 Hz.     50 % of class     0.09 %     0.03 %       6.9     Variation due to Input voltage     110 V AC     50 % of class     0.01 %     0.03 %       6.9     Variation due to     Auxiliary power supply : 48 V DC     50 % of class     0.01 %     0.03 %       6.9     Variation due to     Auxiliary power supply : 48 V DC     50 % of class     0.01 %     0.03 %       7     0.01 wtotage = 110 V AC     50 % of class     0.01 %     0.01 %       7     0.01 mtotage     0.01 %     0.01 %     0.01 %	6.2     Variation due to auxiliary supply     b) uppu trequency = 33 HZ     0.01 %     0.01 %     0.01 %       6.4     Variation due to nuclease     57.6 V     50 % of class     0.06 %     0.03 %       6.4     Variation due to nuclease     Aux Voltage varied from 38.4 V to Aux Voltage     100 % of class     0.09 %     0.03 %       6.4     Variation due to Input voltage     Auxiliary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       7.5 6     Variation due to the input voltage     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       6.6     Variation due to the input voltage.     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       6.9     Variation due to Input voltage     110 V AC     50 % of class     0.01 %     0.01 %       6.9     Variation due to     Auxiliary power supply: 48 V DC     50 % of class     0.01 %     0.01 %       7.1     Output load     Duput voltage     110 V AC     50 % of class     0.01 %       6.9     Variation due to     Auxiliary power supply: 48 V DC     50 % of class     0.01 %       7.1     Output load     Output load     0.01 %     0.01 %       7.1     Output load     Output load     0.01 %       0.01 %     Output load     0.01	6.2     Variation due to auxiliary supply     0.01 % but voltage = 110 V AC     0.01 % but voltage = 110 V AC     0.01 % but voltage     0.01 % 0.03 %       6.4     Variation due to voltage     Aux voltage varied from 33.4 V to anvitary supply     57.6 V     0.00 % 0.03 %     0.03 %       6.4     Variation due to index     Auxiliary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       6.6     Variation due to imput voltage     110 V AC     index     0.09 %     0.03 %       7.5     Variation due to imput voltage     110 V AC     index     0.09 %     0.03 %       6.6     Variation due to imput voltage     132 V at 45 Hz     50 % of class     0.09 %     0.03 %       6.9     Variation due to imput voltage     132 V at 45 Hz     50 % of class     0.01 %     0.01 %       0.9     Output load     Output load     Output load     0.01 %     0.01 %       0.00 tut     Output load     Output load     0.01 %     0.01 %				5	(0.7%)	0.05 %	0.01 % 0.05 %	
Variation due to     Auxiliary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       ambient temp.     Input voltage = 110 V AC     index     0.09 %     0.03 %       ambient temp.     Temp. varied from 0 deg. C to     45 deg. C     0.09 %     0.03 %       Variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Input voltage.     Input voltage varied from 88 V to     index     0.09 %     0.03 %       Variation due to the     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Input voltage.     132 V at 45 Hz and 55 Hz.     50 % of class     0.09 %     0.03 %       Variation due to     Auxiliary power supply: 48 V DC     50 % of class     0.01 %     0.01 %       Output load     Output 1     Output 1     0.01 %     0.01 %	Variation due to ambient temp.Auxiliary power supply : 48 V DC100 % of class0.09 %0.03 %Input voltage = 110 V AC Temp. varied from 0 deg. C to 45 deg. CTemp. varied from 0 deg. C to 45 deg. C50 % of class0.09 %0.03 %Variation due to the input voltage.Auxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due to the input voltage.Auxiliary power supply : 48 V DC50 % of class0.09 %0.03 %Variation due to input voltage.Input voltage varied from 88 V to indexindex0.09 %0.03 %Uvariation due to input voltage.Auxiliary power supply : 48 V DC50 % of class0.01 %0.03 %Uvariation due to input voltageAuxiliary power supply : 48 V DC50 % of class0.01 %0.01 %Uput loadOutput loadDuput load110 V ACindex0.01 %0.01 %Output loadOutput load0.010 %0.01 %0.01 %0.01 %Output loadOutput load0.010 %0.01 %0.01 %Output load0.010 form.0.01 form0.01 %0.01 %	Variation due to ambient temp.     Auxtilary power supply: 48 V DC     100 % of class     0.09 %     0.03 %       Imput voltage = 110 V AC     Temp. varied from 0 deg. C to     45 deg. C     50 % of class     0.09 %     0.03 %       Variation due to the input voltage.     Auxtilary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Variation due to the input voltage.     Auxtilary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Variation due to the input voltage.     Auxtilary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       Variation due to     Auxtilary power supply: 48 V DC     50 % of class     0.01 %     0.01 %       Output load     Dutput load     Output 1     0.01 %     0.01 %       Output load     Dutput load     0.01 %     0.01 %	-	6.2	Variation due to auxiliary supply voltage	b) Input trequency = 33 ftz Input voltage = 110 V AC Aux. Voltage varied from 38.4 V to 57.6 V	50 % of class index	0.01 %	0.01 % 0.03 %	Complied
6.6     Variation due to the Auxiliary power supply : 48 V DC     50 % of class     0.09 %     0.03 %       input voltage.     Input voltage varied from 88 V to index     132 V at 45 Hz and 55 Hz.     50 % of class     0.09 %     0.03 %       6.9     Variation due to hout load     Auxiliary power supply : 48 V DC     50 % of class     0.01 %     0.01 %       0.01 voltage     110 V AC     index     index     0.01 %     0.01 %	6.6     Variation due to the input voltage.     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       6.9     Variation due to input voltage.     Input voltage varied from 88 V to index     index     0.09 %     0.03 %       6.9     Variation due to input voltage     I 32 V at 45 Hz and 55 Hz.     50 % of class     0.01 %       0.01 voltage     I 0 V AC     Index     Index     0.01 %       0.01 voltage     0 output load     Output 1     0.01 %       0.01 voltage     0 output load     0.01 %     0.01 %       0.01 voltage     0 ohm to 500 ohm.     0.01 %     0.01 %	6.6     Variation due to the input voltage.     Auxiliary power supply: 48 V DC     50 % of class     0.09 %     0.03 %       6.9     Variation due to nput voltage.     I32 V at 45 Hz and 55 Hz.     50 % of class     0.09 %     0.03 %       6.9     Variation due to nput voltage     Auxiliary power supply: 48 V DC     50 % of class     0.01 %     0.01 %       0.01 voltage     Output load     Input voltage     110 V AC     index     0.01 %       0.01 voltage     Output load     Output load     0.01 %     0.01 %       0.01 voltage     Output load     Output load     0.01 %		6.4	Variation due to ambient temp.	Auxiliary power supply : 48 V DC Input voltage = 110 V AC Temp. varied from 0 deg. C to 45 deg. C	100 % of class index	% 60.0	0.03 %	Complied
Variation due to     Auxiliary power supply : 48 V DC     50 % of class       Variation due to     Input voltage = 110 V AC     50 % of class       Input voltage = 110 V AC     index       Output 1     0.01 %       Output 2     0.01 %	Variation due to     Auxiliary power supply: 48 V DC     50 % of class       output load     Input voltage = 110 V AC     50 % of class       output load     Input voltage = 110 V AC     index       Output 1     Output 1     0.01 %       Output 2     Output load     0.01 %       Output load     0.01 %     0.01 %	Variation due to     Auxiliary power supply: 48 V DC     50 % of class       output load     Input voltage = 110 V AC     50 % of class       Output 1     Output 1       Output 1     Output 1       Output 2     0.01 %       Output 2     0.01 %       Output 2     0.01 %		6.6	Variation due to the input voltage.	Auxiliary power supply : 48 V DC Input voltage varied from 88 V to 132 V at 45 Hz and 55 Hz.	50 % of class index	% 60.0	0.03 %	Complied
				6.9	Variation due to output load	Auxiliary power supply : 48 V DC Input voltage = 110 V AC Output 1 Output load resistance varied from 0 ohm to 1000 ohm. Output2 Output 2	50 % of class index	0.01 %	% 10.0	Complied

	OF	2		Remark	Complied		Complied		Complied		Complied		Complied			
)/2003 E&S 27	PAGE			ation	0/p 2 0.02 %		0.01 %		0.04 %		0.04 %		0.01 %	TEST LAD		1 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
REPORT NO. ERTL (W)/2003 E&S 27	DATE	9 MAY 2003		Observation	0/p 1 0.02 %		0.01 %		0.03 %		0.01 %		0.0%	THOUSE A	Release	
REI				Requirement	200 % of Class	шаех	Class index		Class index		Continue to comply the	accuracy class	Class index			
TORY (WEST) OLOGY	NSDUCER			Test Condition	Auxiliary power supply : 48 V DC	I/p with 20% 3 <sup>rd</sup> harmonics	Auxiliary power supply : 48 V DC Input voltage = 110 V AC	Magnetic field of 0,4 kA/m	Auxiliary power supply : 48 V DC Input voltage = 110 V AC	Test duration: 35 min.	Auxiliary power supply : 48 V DC Input voltage = 110 V AC	Test duration: 6 h	Auxiliary power supply : 48 V DC Input voltage = 110 V AC	Wih 100 Vrms at 45 Hz to 65 Hz applied between either output terminal and earth.		
ELECTRONICS REGIONAL TEST LABORATORY (WEST) DEPARTMENT OF INFORMATION TECHNOLOGY	SUBJECT: TESTING OF FREQUENCY TRANSDUCER		:	Test/Parameter	Variation due to distortion of immut	quantities	Variation due to magnetic field of	external origin	Variation due to self heating		Variation due to continuous operation		Variation due to common mode interference		- -	
RONICS REG RTMENT OF II	CT: TESTING			Reference	6.10		6.11		6.14		6.15		6.16			
ELECT DEPAR	SUBJE			Sr.No	2.5		2.6		2.7		2.8		2.9			

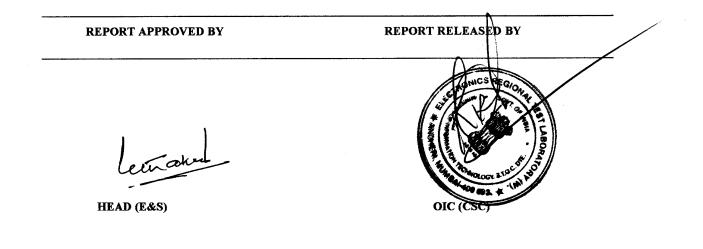
E&S 27	PAGE OF	4 7	Remark	O/p 2 0.01 % Complied		Complied Complied	Complied	rved. Complied
REPORT NO. ERTL (W)/2003 E&S 27	DATE	9 MAY 2003	Observation	0.01 % 0.01 % 0.0		Complied Con	Complied Con	No breakdown observed
KEP			Requirement	Class index		Continue to comply the accuracy class after test	Continue to comply the accuracy class after test	No breakdown
TORY (WEST) OLOGY	NSDUCER		Test Condition	Auxiliary power supply : 48 V DC Input voltage = 110 V AC With 1 V rms at 45 Hz to 65 Hz applied in series with output signal		Auxiliary power supply : 48 V DC Apply 120 % of nominal upper value on aux. Supply, voltage inputs and current inputs.	<ul> <li>a) For voltage inputs: 200 % of the nominal value of the measured voltage applied for 1 s and repeated 10 times at 10 s interval.</li> <li>b) For current inputs: 20 times the nominal value of the measured current applied for 1 s and repeated 5 times at 300 s interval</li> </ul>	At 3 kV AC for 1 min. between a) Input & output b) Aux. & output c) Aux. & input
ELECTRONICS REGIONAL TEST LABORATORY (WEST) DEPARTMENT OF INFORMATION TECHNOLOGY	SUBJECT: TESTING OF FREQUENCY TRANSDUCER		Test/Parameter	Variation due to series mode interference	Permissive excessive inputs	Continuous excessive inputs	Excessive inputs of short duration	Voltage test,
RONICS REC	T: TESTING		Reference	6.17	6.18	6.18.1	6.18.2	6.20
ELECTF DEPAR	SUBJEC		Sr.No.	2.10	2.11	2.11.1	2.11.2	2.12

<u></u>	OF	2	Remark	 	Complied	Complied	Complied	Complied	Complied	
)/2003 E&S 27	PAGE		ttion	Output 2		-0.05 % 0.16 % 0.11 %	Complied	-0.03 % 0.05 % 0.16 %	Not discernible	
KEPUKI NU. EKIL (W)/2003 E&S 27	DATE	9 MAY 2003	Observation	Output 1		0.03 % 0.04 % 0.03 %	Complied	-0.03 % 0.06 % 0.03 %	Not discernible	
			Requirement		After completion of the test the DUT shall comply with the requirement appropriate to its class index.	Class index (0.2 %)	The variation due to the effect of disturbance shall not be twice of class index.	Class index (0.2 %)	For input circuits: 60 k For exterior surface: 25 k	
HNOLOGY	RANSDUCER	~	Test Condition		h g the ais	<b>r</b> )	inals of the		Current circuit loaded at 110 % for 2 h Voltage circuit loaded at 120 % for 2 h	
DEPARTMENT OF INFORMATION TECHNOLOGY	SUBJECT: TESTING OF FREQUENCY TRANSDUCER		Test/Parameter		Impulse voltage tests	Intrinsic error	High frequency disturbance test	Intrinsic error	Test for temp. rise	
DEPARTMENT OF INFORMATION TECHNO	CT: TESTING (		Reference	Clause No.					6.22	
DEPAR	SUBJEC		Sr.No.		2.13	2.13.1	2.14	2.14.1	2.15	

SUBJECT: TESTING OF FREQUENCY TRANSDUCER     DATE     PAGE     0       Show     Test Condition     Test Condition     Comparison     6     7       Show     Test Partin     Test Condition     Test Condition     Comparison     0     7       Show     Test Partin     Test Condition     Test Condition     Requirement     Observation     Remark       2.16     6.23     Vitration Test Partin     Stockes     10,033     0.033     7       2.17     6.23     Stockes     0.034     0.033     0.033     7       2.17     6.23     Stockes     0.034     0.033     0.033     0.033     0.033       2.18     6.23     Stockes     0.034     0.033     0.033     0.033     0.033     0.033       2.11     4.2     Intrinsic error     10 partines     0.034     0.033     0.	ELECT	RONICS RE UTMENT OF	ELECTRONICS REGIONAL TEST LABORAT DEPARTMENT OF INFORMATION TECHNO	ELECTRONICS REGIONAL TEST LABORATORY (WEST) DEPARTMENT OF INFORMATION TECHNOLOGY	REPORT NO	REPORT NO. ERTL (W)/2003 E&S 27	<b>13 E&amp;S 27</b>	
2     6     SEP 2003     6       set/Parameter     Test Condition     Conditioned     Output I       freation Test     Frequ. 10 - 55 - 10Hz     Output I     Output I       freation Test     5 systes, 1 cearewinin. Axis: Vertical     Output I     Output I       freation Test     5 systes, 1 cearewinin. Axis: Vertical     Output I     Output I       5     5 systes, 1 cearewinin. Axis: Vertical     Conditioned     Output I       5     5 systes, 1 cearewinin. Axis: Vertical     Conditioned     Output I       5     5 systes, 1 cearewinin. Axis: Vertical     Conditioned     Output I       5     5 systes, 1 test - 5 Hz     Class index     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I       fination test - 5 Hz     Class index     Output I     Output I    <	SUBJE	CT: TESTING	G OF FREQUED	NCY TRANSDUCER	Ď	ATE	PAGE	OF
eol/Purameter         Test Condition         Requirement         Othervation           freation Test         Freq. : 10 - 55 - 10 Hz. Amplitude: 0.15 mm.         Condutioned         Output           freation Test         5 yoles, 1 cetroromin. Asis: Vertical         Conditioned         0.03 %         0.03 %           frinsic error         9) input freq = 35 Hz         Cubervation.         Conditioned         0.03 %         0.03 %           book Test         10 input freq = 35 Hz         Cubervation.         0.03 %         0.03 %         0.03 %           book Test         10 input freq = 35 Hz         Cubes index         0.03 %         0.03 %         0.03 %           book transitioned         10 input freq = 45 Hz         Cubes index         0.03 %         0.03 %         0.03 %           book transitioned         10 input freq = 45 Hz         0.23 %)         0.03 %         0.03 %         0.00 %           contitioned         0.01 we tapp         5 fifth         0.23 %)         0.03 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %         0.00 %					2 6 SEP	2003	9	7
exPlanater         Test Condition         Requirement         Observation           Thration Tiest         Freq. : 10 - 55 - 10 Hz. Amplitude: 0.15 mm.         Conditioned         Output 1         Output 1         Output 1           5 systes, 1 octavorinin. Axis: Vertical         5 systes, 1 octavorini. Axis: Vertical         Conditioned         -0.03 %         -0.03 %           trinsic error         b) input freq = 45 Hz         (0.2 %)         0.00 %								
Thration Test     Freq. : 10 - 55 - 10 Hz. Amplitude: 0.15 mm.     Conditioned     Output       5     5 cycles, 1 octavium. Axis: Vertical     Conditioned     0.03 %     0.03 %       frinsic error     b) Input freq. = 55 Hz     (0.2 %)     0.007 %     0.003 %       finds     15 spices, 1 octavium. Axis: Vertical     0.013 %     0.003 %     0.003 %       finds     15 spices, 1 octavium. Axis: Vertical     0.013 %     0.003 %     0.003 %       finds     15 spices, 1 octavium. Axis: Vertical     0.013 %     0.003 %     0.003 %       finds     15 spices, 1 octavium. Axis: Vertical     0.013 %     0.003 %     0.003 %       finds     5 Hz     (0.2 %)     0.03 %     0.003 %     0.003 %       finds     15 Hz     (0.2 %)     0.03 %     0.003 %     0.003 %       finds     5 Hz     (0.2 %)     0.03 %     0.003 %     0.003 %       finds     5 Hz     (0.2 %)     0.03 %     0.003 %     0.003 %       finds     for uptic     5 Hz     (0.2 %)     0.03 %     0.003 %       finds     6 No totak     6 No totak     0.03 %     0.003 %     0.003 %       finds     6 No totak     8 N DC     (0.2 %)     0.03 %     0.01 %       finds     10 Hut totak	Sr.No.	Reference	Test/Parameter	Test Condition	Requirement	Observ	ation	Remark
Trinsic error and the first in the conditioned for a conditioned for the conditioned for the conditioned for the conditioned in this shocks on each sense. (2.2 %) (0.03 % (0.		Clause No.	·			Output 1	Output 2	
trinsic error a) linput freq. = 45 ft/s = 003 % = 003 % = 003 % = 0005 % =	2.16	6.23	Vibration lest	55 - 10 Hz. octave/min.		Conditioned		ł
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2.16.1	4.2	Intrinsic error	a) Input freq. = 45 Hz	Class index	-0.03 %	-0.03 %	Complied
Inck Test     15g. 5 sine. 11 ms. 3 shocks on each sense.     Conditioned       Total 18 shocks.     Total 18 shocks.       turinsic error     b) input freq. = 55 Hz     0.03 %     0.03 %     0.00 %       c) lipput freq. = 55 Hz     0.013 %     0.03 %     0.06 %       c) lipput freq. = 55 Hz     0.03 %     0.03 %     0.06 %       c) lipput freq. = 55 Hz     0.03 %     0.03 %     0.06 %       c) lipput freq. = 55 Hz     0.03 %     0.03 %     0.09 %       c) no one other adds     control of arrow address     0.03 %     0.01 %       container     0.11 put freq. = 55 Hz     0.03 %     0.03 %     0.01 %       container     0.11 put freq. = 55 Hz     0.03 %     0.03 %     0.03 %     0.03 %       phon circuit     Auxiliary power supply: 48 V DC     Not exceed twice of class index     0.37 %     0.33 %     0.03 %       phon freq. = 55 Hz     0.12 %     Not exceed twice of class index     0.37 %     0.14 %       dipple     Auxiliary power supply: 48 V DC     Not exceed twice of class index     0.37 %     0.14 %       dipple     Auxiliary power supply: 48 V DC     Not exceed twice of class index     0.37 %     0.14 %       dipple     Auxiliary power supply: 48 V DC     Not exceed twice of class index     0.37 %     0.14 %				b) Input freq = 50 Hz c) Input freq. = 55 Hz	(0.2 %)	0.07 % 0.06 %	0.03 % 0.02 %	
trinsic error a) Input freq = 45 Hz = 0.03 % = -0.03 % = 0.03 % = 0.05 % = 0.03 % = 0.05 % = 0.03 % = 0.05 % = 0.03 % = 0.05 % = 0.03 % = 0.05 % = 0.03 % = 0.05 % = 0.03 % = 0.01 % = 0.03 % = 0.00 % = 0.05 % = 0.01 \% = 0.01 \% =	2.17	6.23	Shock Test	15g, $\frac{1}{2}$ sine, 11 ms, 3 shocks on each sense. Total 18 shocks.		Conditioned		
Prop & topple     Drop height: 25 mm, one drop about each of cet.     Conditioned       icur bottom edges.     Conditioned       icur bottom edges.     Conditioned       icur bottom edges.     0.03 %       itrinsic error     Auxiliary power supply: 48 V DC       b) Input freq = 55 Hz     0.01 %       b) Input freq = 55 Hz     0.03 %       cipple     Auxiliary power supply: 48 V DC       Auxiliary power supply: 48 V DC     Not exceed twice of class index       diage     Auxiliary power supply: 48 V DC       Input freq = 55 Hz     Not exceed twice of class index       ipple     Auxiliary power supply: 48 V DC       Input freq = 55 Hz     Input freq = 55 Hz       ipple     Auxiliary power supply: 48 V DC       Input frequency switched from 45 to 55 Hz     Interectured for output signal       Input frequency switched from 45 to 55 Hz     Interectured for output signal       Input frequency switched from 45 to 55 Hz     Interectured for output signal       Input frequency switched from 45 to 55 Hz     Interectured for output signal       Input frequency switched from 45 to 55 Hz     Interectured for output signal       Input frequency switched from 45 to 55 Hz     Interectured for output signal <td>2.17.1</td> <td>4.2</td> <td>Intrinsic error</td> <td>a) Input freq. = 45 Hz b) Input freq = 50 Hz c) Input freq. = 55 Hz</td> <td>Class index (0.2 %)</td> <td>-0.04 % -0.03 % 0.03 %</td> <td>-0.02 % 0.02 % 0.06 %</td> <td>Complied</td>	2.17.1	4.2	Intrinsic error	a) Input freq. = 45 Hz b) Input freq = 50 Hz c) Input freq. = 55 Hz	Class index (0.2 %)	-0.04 % -0.03 % 0.03 %	-0.02 % 0.02 % 0.06 %	Complied
trinsic error Anxiliary power supply: 48 V DC Class index -003 % -001 % -001 % 001 % 003 % 000 % 003 %	2.18	6.23	Drop & topple Test.	Drop height: 25 mm, one drop about each of four bottom edges. One topple about each of four bottom edges.		Conditioned		1
a) Input freq = 45 Hz     -0.03 %     -0.01 %       b) Input freq = 50 Hz     0.03 %     -0.01 %       b) Input freq = 50 Hz     0.03 %     0.01 %       b) Input freq = 55 Hz     0.03 %     0.01 %       tipple     Auxiliary power supply: 48 V DC     -     14.71 V     14.92 V       tipple     Auxiliary power supply: 48 V DC     -     -     14.71 V     14.92 V       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Auxiliary power supply: 48 V DC     Interced twice of class index     0.37 %     0.24 %       tipple     Input frequerey switched from 45 to 55 Hz <t< td=""><td>2.18.1</td><td>4.2</td><td>Intrinsic error</td><td>Auxiliary power supply : 48 V DC</td><td>Class index</td><td></td><td></td><td>Complied</td></t<>	2.18.1	4.2	Intrinsic error	Auxiliary power supply : 48 V DC	Class index			Complied
c) Input freq. = 55 Hz				a) Input freq. = 45 Hz	(0.2 %)	-0.03 %	-0.01 %	
Phen circuit     Auxiliary power supply : 48 V DC     Input freq. = 55 Hz     14.71 V     14.92 V       Lipple     Auxiliary power supply : 48 V DC     Not exceed twice of class index     0.37 %     0.24 %       Lipple     Auxiliary power supply : 48 V DC     Not exceed twice of class index     0.37 %     0.24 %       Lipple     Auxiliary power supply : 48 V DC     Time required for output signal     132 ms     147 ms       Lipput frequency switched from 45 to 55 Hz     Inducial value shall be reported     132 ms     147 ms       Lipput frequency switched from 45 to 55 Hz     Addendum Released by     OCC,CSC)     OCC,CSC)       OIC,CSC)     OIC,CSC)     Addendum Released by     OCC,CSC)       OIC,CSC)     OIC,CSC)     OIC,CSC)     OIC,CSC)				b) input ireq = 20 Hz c) Input freq. = 55 Hz		-0.03 %	0.01 % 0.05 %	
Lipple     Auxiliary power supply: 48 V DC     Not exceed twice of class index     0.37 %     0.24 %       Input freq. = 55 Hz     Input freq. = 55 Hz     Time required for output signal     132 ms     147 ms       Response time     Auxiliary power supply: 48 V DC     Time required for output signal     132 ms     147 ms       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     132 ms     147 ms       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     100 model     100 model       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     100 model     100 model       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     100 model     100 model       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     100 model     100 model       Input frequency switched from 45 to 55 Hz     fiducial value shall be reported     100 model     100 model	2.19	5.2.3	Open circuit voltage	Auxiliary power supply : 48 V DC Input freq. = 55 Hz		14.71 V	14.92 V	
tesponse time Auxiliary power supply: 48 V DC Input voltage = 110 V AC Input frequency switched from 45 to 55 Hz Addendum Released by Addendum Released by COIC,CSC) (OIC,	2.20	5.4	Ripple	Auxiliary power supply : 48 V DC Input freq. = 55 Hz	Not exceed twice of class index	0.37 %	0.24 %	Complied
ion of Page No. 06 of 07 of Report No. ERTL (W)/2003E&S27 issued on 9 <sup>th</sup> May, 2003.	2.21	5.5	Response time	Auxiliary power supply : 48 V DC Input voltage = 110 V AC Input formerory statched from 45 to 55 Hz	Time required for output signal to reach 99 % from 0 % of fidheid when shall be served		147 ms	1
(OIC,CSC) (OIC,CSC) (OIC, CSC) (OIC,CSC) (OIC,	Addendi	ung Approved t	by		- 55			
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3.0 General Remarks : Nil.



### OUR ACCREDITATION STATUS

ERTL (W) set up under the STQC Directorate, Ministry of Communications & Information Technology, Govt. of India has been accreditated under number of national / international systems as follows :

SYSTEM	AREA	STATUS
IECQ (International Electro-technical Commission on Quality Assessment System for Electronic Components)	Component Testing <ul> <li>Resistors (Fixed)</li> <li>Capacitors (Fixed)</li> </ul>	Accreditated as ITL (Independent Test Laboratory)
NABL (C), India National Accreditational Board for Test & Calibration laboratories (Calibration System)	<b>Calibration</b> • Electro-technical discipline • Thermal discipline • Mechanical discipline	Accreditated Calibration Laboratory
NABL(T), India National Accreditational Board for Test & Calibration laboratories (Testing System)	Electronic & Electrical Testing	Accreditated Test Laboratory
IECEE-CE-Scheme	<ul> <li>Mains Operated Electronic Consumer Products</li> </ul>	Approved as a CB test Laboratory
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