IECEE OD-5014

Edition 1.0 2016-06-01

IECEE
OPERATIONAL DOCUMENT

IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE System)

Committee of Testing Laboratories (CTL)

Instrument Accuracy Limits

IECEE OD-5014:2016(EN)

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ELECTROTECHNICAL
COMMISSION

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FOREWORD

Document Owner

CTL

History of changes

Date	Brief summary of changes
2016-06-01	N/A, as first edition

Effective date	Target revision date
2016-06-01	2019-06-01

Background

The CTL decided in 2016 to convert the CTL Decision Sheet (DSH) 251 into the IECEE Operational Document (OD) structure. Editorial adjustments have been made where necessary.

1 Purpose

1.1 The purpose of this document is to provide default instrument accuracies for measurement ranges.

2 Scope

2.1 This Operational Document provides default instrument accuracy requirements where the test standard does not provide criteria.

3 Normative References

The following publication contains provisions which, through reference in this text, constitute modification or additions of this Operational Document.

ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories

4 Responsibility of the laboratory

4.1 The Laboratory shall assure instruments meet required accuracy.

5 Requirements

5.1 The default instrument accuracy requirements given below shall be applied when the standard does not provide criteria:

Instrument Accuracy Limits

Parameter	Range	Instrument accuracy of Range
Voltage		
≤ 1000 V	≤ 1 kHz	± 1,5%
	> 1kHz ≤ 5 kHz	± 2%
	> 5 kHz ≤ 20 kHz	± 3%
	> 20 kHz	± 5%
> 1000 V	dc ≤ 20 kHz	± 3%
	> 20 kHz	± 5%
Current		
≤ 5 A	dc ≤ 60 Hz	± 1,5%
	> 60 Hz ≤ 5 kHz	± 2,5%
	> 5 kHz ≤ 20 kHz	± 3,5%
	> 20 kHz	± 5%
> 5 A	dc ≤ 5 kHz	± 2,5%
	>5 kHz ≤ 20 kHz	± 3,5%
	> 20 kHz	± 5%
Leakage (Touch) current [1]	50 Hz ≤ 60 Hz	± 3,5%
	> 60 Hz ≤ 5 kHz	± 5%
	> 5 kHz ≤ 100 kHz	± 10%
	> 100 kHz ≤ 1 MHz	under consideration
Power (50/60 Hz)	≤ 3 kW	± 3%
	> 3 kW	± 5%
Power Factor	50 ≤ 60 Hz	± 0,05
Frequency	≤ 10 kHz	± 0,2%
Resistance	1 mΩ ≤ 100 mΩ	± 5%
	>1 MΩ ≤ 1 TΩ	± 5%
	> 1 TΩ	± 10%
	for all other cases	± 3%
Temperature [2, 3]	≥ -35°C < 100° C	± 2°C
	100° C ≤ 500° C	± 3**%**
	< -35°C	± 3°C

Instrument Accuracy Limits

Parameter	Range	Instrument accuracy of Range
Time	10 ms ≤ 200 ms	± 5%
	>200 ms ≤ 1 s	± 10 ms
	> 1 s	± 1%
Linear dimensions	≤ 1 mm	± 0,05 mm
	> 1 mm ≤ 25 mm	± 0,1 mm
	> 25 mm	± 0,5%
Mass	> 10 g ≤ 100 g	± 1%
	> 100 g ≤ 5 kg	± 2%
	> 5 kg	± 5%
Force	for all values	± 6%
Mechanical energy	for all values	± 10%
Torque	for all values	± 10%
Angles	for all values	± 1 degree
Relative humidity	30% ≤ 95% RH	± 6 %RH
Barometric air pressure	for all values	± 10 kPa

Gas & fluid pressure	for static measurement	± 5%

[1] The stated tolerances apply to the total tolerance of the leakage (touch) current circuit and metering instrument. Refer to IECEE CTL OD 5013 "Leakage (Touch) Current Measurement Instruments".

[2] Thermocouple not included in the Instrument accuracy of measuring range. Thermocouples type “K”, T” and “J”, premium grade, are recommended. Switching power supplies present an electrically noisy environment for test instrumentation. When measuring temperatures on and within switching power supplies, thermocouples are in the immediate vicinity or in intimate contact with component sources of the electrical noise. Type J thermocouples are made of material that is magnetic. Type K thermocouples are made of material that is slightly magnetic. Type T thermocouples are made of nonmagnetic materials. As a result Type T thermocouples are affected less by the high frequency magnetic fields present and give more accurate results.

[3] Not for measurements related to relative humidity.

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