


Schedule of Accreditation

issued by

United Kingdom Accreditation Service

2 Pine Trees, Chertsey Lane, Staines-upon-Thames, TW18 3HR, UK

 2437 Accredited to ISO/IEC 17025:2017	Yadav Measurements Private Limited Issue No: 037 Issue date: 18 March 2025	
	Post Box 169 Plot No. F-373 - 375 Riico Bhamashah Industrial Area Kaladwas Udaipur 313 003 India	Contact: Mr B M Vyas Tel: .+91 294 265 0127 Fax: +91 294 265 0129 E-Mail: yadav.measurements@ymllabs.com Website: www.yadavmeasurements.com
Testing performed at the above address only		

Flexible Scope

The laboratory is accredited to ISO/IEC17025:2017 for testing activities in accordance with the standards listed in the schedule. This may also include tests on the same or similar product types against standards, or customer-specified methods that are not specifically listed in this Schedule, providing that:

- (1) The method or standard does not introduce new principles of measurement.
- (2) The method or standard does not require measurements to be made outside the parametric boundaries defined in this Schedule.

Information about flexible scopes of accreditation is available in UKAS document GEN-4 and EA document EA-2/05.



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DETAIL OF ACCREDITATION

Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Computers and Peripherals Domestic Appliances: Electrical Electrical/Electronic Components Electrical/Electronic Connectors Electrical/Electronic Products Electronic Products: Digital Electro-Mechanical Devices IT Equipment Luminaires Micro-electronic Circuits and Components Office Equipment: Electrical Printed Circuit Boards Electrical equipment for measurement, control and laboratory use Audio, Video and similar electronic apparatus Instruments: Indicating/ Recording Medical & Diagnostic Instruments Measuring Instruments – Electrical measuring transducers Flow/Gas meters	<p align="center"><u>1.0 EMC Tests</u></p> <p>1.1 Conducted Radio interference Emissions Measurement <i>Frequency Range</i> <i>0.15 MHz to 30 MHz</i> <i>0 dBμV to 137 dBμV</i></p> <p>1.2 Radiated Emissions <i>Frequency Range:</i> <i>30 MHz to 2.5GHz</i> <i>quite zone 2m x 2m x 2m</i> <i>2.5GHz to 6GHz</i> <i>quite zone 1.5m x 1.5m x 1.5m</i></p> <p>1.3 Immunity to Electrostatic Discharge</p> <p>1.4 Immunity to electromagnetic HF field <i>Frequency Range:</i> <i>80 MHz to 6 GHz</i> <i>Field strength: up to 30 V/m</i></p> <p>1.5 Immunity to electromagnetic HF field (GTEM) <i>Frequency Range:</i> <i>20 MHz to 3 GHz</i> <i>Field strength: up to 40 V/m</i></p> <p>1.6 Electrical fast transient burst test <i>0.5 kV to 4.0 kV</i></p> <p>1.7 Surge Immunity Test <i>0.5 kV to 12 kV</i></p>	<p>EN55022:2006 EN55022:2006 +A1:2008 CISPR 22 (1997/2006/2008) CISPR 16 -2-1:2008 CISPR 16 -2-1:2014 CISPR 32 (2015) + A1 (2019) EN55011:2007 EN55011:2009 EN55011:2016 + A1:2016 + A11:2020 + A2:2021 CISPR 11:2004 CISPR 11:2009</p> <p>EN55011:2007 EN55011:2009 EN55011:2016 + A1:2016 + A11:2020 + A2:2021 CISPR 11:2004 CISPR 11:2009 CISPR 32 (2015) CISPR 16 -2-3</p> <p>IEC 61000-4-2 (1995) IEC 61000-4-2 (2008) EN 61000-4-2 (1995/2009)</p> <p>IEC 61000-4-3 (2002' 2010) IEC 61000-4-3 (2006/2020) EN 61000-4-3 (2002/2006 +A1:2008 +A2:2010) BS EN 61000-4-3:2020</p> <p>IEC 61000-4-20:(2010, 2022) EN 61000-4-20:(2010, 2022)</p> <p>IEC 61000-4-4 (1995/2004/2012) EN 61000-4-4: 2012</p> <p>IEC 61000-4-5 (1995/2005/2014)+A1 2017 EN 61000-4-5: 2014+A1 2017</p>



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	<p align="center"><u>1.0 EMC Tests (Cont'd)</u></p> <p>1.8 Test of immunity to conducted disturbances, induced by radio frequency fields <i>Frequency range: 150 kHz to 80 MHz</i> <i>EMF: upto 10 V rms</i></p> <p>1.9 Immunity to power frequency magnetic fields of external origin</p> <p>1.10 Slow damped oscillatory wave immunity test Max Voltage: 2.5 kV Max Current: 25 A</p> <p>1.11 Conducted Disturbance Induced Current 2 kHz to 150 kHz 1 A and 2 A</p> <p>1.12 Voltage dips and Interruptions Max Voltage : 270 V Time period : 6 ms to 6 min Max current : 16 A</p> <p>1.13 Voltage dips, short interruptions and voltage variations Max Voltage : 190 V DC Max current : 21 A</p> <p>1.14 Ring wave test Max Voltage: 6 kV Max Current: 500 A</p>	<p>IEC 61000-4-6 (1996/2006/2008/2013/2023) EN 61000-4-6: 2014+COR 2015</p> <p>IEC 61000-4-8 (2001/2009) EN 61000-4-8 (2001) BS EN 61000-4-8:2010</p> <p>IEC 61000-4-12 (1995) IEC 61000-4-18: 2019 EN 61000-4-18:2019</p> <p>CLC/TR/50579: 2012 IEC 61000-4-19:2014 BS EN 61000-4-19:2014</p> <p>IEC 61000-4-11: 2004/2020 EN 61000-4-11:2020</p> <p>IEC 61000-4-29:2000 BS EN 61000-4-29:2001</p> <p>IEC 61000-4-12: 2017 EN 61000-4-12: 2017</p>
	<p>1.15 Impulse Magnetic Field Immunity test Peak current: 1111A</p>	<p>IEC 61000-4-9:2016 BS EN 61000-4-9:2016</p>



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	1.16 Harmonic Current Emissions Measurements up to 40th Harmonic	IEC 61000-3-2:2018+A1:2020 +A2:2024 BS EN 61000-3-2:2019+A1:2021 +A2:2024 IEC 61000-3-2:2014 BS EN 61000-3-2:2014 IEC 61000-3-2:2005+A1:2008 +A2:2009 BS EN 61000-3-2:2006+A1:2008 +A2:2009
	1.17 Voltage Changes, Voltage Fluctuations and Flicker Emissions A.C. Mains Up to 16 A	IEC 61000-3-3:2013+A1:2017 +A2:2021 BS EN 61000-3-3:2013+A1:2019 +A2:2021
	1.18 EMC Generic & product specific standards. These are accredited to the extent that the basic standards are included above	IEC 62055-31:2005 IEC 62055-31:2022 SANS 62055-31: 2023 IEC 62052-21:2004 EN 14236 (2007) and 2018 BS EN 14236 (2007) and 2018 EN 1359 (1999) Incorporating Amendment No. 1 BS EN 1359: 2017 EN 1359: 2017 BS EN 62052-21:2004



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	<u>2.0 Climatic Tests</u> 2.1 Dry Heat Test <i>Ambient to +120 °C</i> 2.2 Cold Test / resistance to storage temperature range <i>Ambient to - 40 °C and + 60 °C</i> 2.3 Damp Heat Cyclic / resistance to external humidity test <i>Temperature + 20 °C to + 60 °C</i> <i>Relative Humidity 30 % to 95 %</i> 2.4 Resistance to salt spray 2.5 Salt Mist	 IEC 60068-2-2 (1994) IEC 60068-2-2 (2007) IEC 60068-2-1 (1994) IEC 60068-2-1 (2007) IEC 60068-2-30 (1980) AMD1 (1985) IEC 60068-2-30:2005 BS EN 1359:2017 EN 1359:2017 BSEN 1359:1999 Incorporating Amendment No. 1 EN 1359:1998 + Amendment No. 1 Clause 6.3.2.1.5 & 6.3.2.2.2 ISO 7253:1984. BSEN ISO 7253:2001, EN ISO 9227:2012 EN ISO 9227:2017 EN 14236:2007 and 2018 BS EN 14236:2007 and 2018 Clause 6.3.2.5 & 6.3.3.2 IEC 62052-11:2020/2023 In house procedure TP-GASM-4.1 As above



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	<u>3.0 Mechanical Tests</u> 3.1 Vibration test <i>Sweep frequency: 10 Hz to 5 kHz</i> <i>Displacement: 20 mm p-p</i> <i>Capacity: 400 kgf</i> 3.2 Shock test <i>Peak acceleration: 50 g, Half sine pulse Time duration: 11 ms and 18 ms</i> 3.3 Protection against dust IP5X without suction, IP6X with suction 3.4 Protection against water IPX1, IPX2, IPX3 and IPX4, without suction. 3.5 Glow wire test/Resistance to heat and fire 3.6 Spring and Pendulum Hammer Test 3.7 Ingress of solid foreign objects – Finger IP2X	IEC 60068-2-6 (1995) IEC 60068-2-6 (2007) IEC 60068-2-27 (1987) IEC 60068-2-27 (2007) IS/IEC 60529: 2013 IEC60695-2-11:2000 IEC60068-2-75 (1997-05) IEC60068-2-75 (2014) IS/IEC 60529: 2013
	<u>4.0 High Voltage Tests</u> 4.1 AC Voltage test <i>1 kV to 6 kV</i> 4.2 Insulation Resistance Test <i>Up to 100 MΩ</i> <i>Test voltage 500V dc</i> 4.3 Impulse Voltage Test <i>0.5 kV to 12 kV</i>	IEC 61000-4-5 (1995/2005/2014) IEC 60060-1 (1989)



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The following tests are paragraph by paragraph from the relevant meter standards and demonstrate the comprehensive nature of the accreditation. In the main the test methods are covered in the basic standards in the previous sections.		
Static Watthour and VAR hour meters, including prepayment meters and smart meters	1. AC Voltage test <i>1 kV to 6 kV</i>	IEC62052-11 (2003) + A1:2016 IEC 62052-11:2020/2023 IEC 62053-21 (2003) + A1:2016
Power metering and monitoring devices (PMD)	2. Insulation Resistance Test <i>Up to 100 MΩ</i> <i>Test Voltage: 500 V dc</i>	AS 62053.21:2023 IEC 62053-21:2020
	3. Impulse Voltage Test <i>0.5 kV to 12 kV</i>	IEC 62053-22 (2003) + A1:2016 AS 62053.22:2023 IEC 62053-22:2020
	4. Limits of Errors	IEC 61000-4-5(1995) IEC 61000-4-5(2014)
	5. Meter Constant	IEC 60060-1 (1989) IEC 61000-4-5 (2005)
	6. Starting Conditions	IEC 62053-23(2003) + A1:2016 IEC 62053-23:2020
	7. Ambient Temperature Influence	IEC 62053-61: 1998 IEC 62052-21:2004
	8. Repeatability of errors test	IEC 60601-1-2: 2001 IEC62055- 31:2005 IEC62053- 23 (2003)
	9. Test of power consumption <i>(Upper limits are 100 VA for the current circuit and 10W or 50 VA for the voltage circuit)</i>	IEC 60695-2-10(2000) IEC 60695-2-11(2000) IEC 62059-32-1:2011 IEC 62053-24 (2014) + A1:2016
	10. Influence of Self Heating	AS 62053.24:2023 IEC 62053-24:2020
	11. Influence of Heating	IEC 62053-31 (2015) BS EN 62053 -21:2003
	12. Immunity to Earth Fault	AS 62053.22 (2005) BS EN 62053 -22:2003
	13. Test/abnormal voltage condition For test 4 to 13 <i>Single Phase: 0.04 W to 38.4kW</i> <i>Three Phase: 0.12 W to 115.2kW</i> <i>30 V to 320 V</i> <i>1 mA to 240 A</i>	BS EN 62053 -23:2003 BS EN 60687:1993 BS EN 61036:1997 BS EN 62052- 11:2003 BS EN 62052- 21:2004 BS EN 62054- 21:2004 IEC 60068-2-30 AMD1(1985)
	14. Start Up Test of energy meters <i>30 V to 320 V</i>	



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Static Watthour and VAR hour meters, including prepayment meters and smart meters, Power metering and monitoring devices (PMD) (cont'd)	15. No load condition <i>30 V to 320 V</i>	
	16. Short time over voltage test	
	17. Spring and pendulum hammer tests <i>0.20 Nm, 0.22 Nm, 0.35 Nm, 0.50 Nm, 0.70 Nm, 1.00 Nm</i>	AS 62053.23(2006) AS 62052-21:2006 AS 62052.11 (2005)
	18. Resistance to heat and fire <i>Up to 1000 °C</i>	AS 62053-22 (2005) AS 62054.21 (2006) AS 62053.21 (2005)
	19. Tests of effect of voltage dips and short interruptions / influence of supply voltage <i>At 63.5 V, 110 V and 240 V; 50Hz</i>	EN50470-1:2006 EN50470-1:2006 + A1 2018 EN50470-3:2006/2022 EN50470-3: 2006_A1:2018/2022 EN60068-2-75(1997)
	20. Interpretation of test results and adjustments	NMI M6 (2012) NMI-M6:2020/2022
	21. Test of influence quantities (a)Voltage variation, (b)Frequency Variation, (c)Reverse phase sequence, (d)Voltage unbalance, (e)Auxiliary voltage, (f)Harmonic components in current and voltage circuits, (g)10 percent of third harmonics, (h)Sub-harmonics in a.c. circuit (i)Continuous magnetic induction of external origin, (j)Continuous abnormal magnetic induction of external origin (k)Magnetic induction of external origin,(l)DC and even harmonics in AC circuit, (m)Odd harmonies in AC circuit, (n)Operation of accessories (o)Abnormal AC magnetic induction of external origin (<i>10mT, 200mT</i>) <i>Single Phase: 0.04 W to 38.4 kW</i> <i>Three Phase: 0.12 W to 115.2 kW</i>	OIMLR46-1/-2 Ed 2012 IEC 61000-4-11 :2004/2020 EN 61000-4-11:2020 IEC 61557-12 :2018



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Static Watthour and VAR hour meters, including prepayment meters and smart meters, Power metering and monitoring devices (PMD) (cont'd)	<p>22. Short time over current test <i>20 A to 7000 A</i> (1/2 cycle to 50 cycles) (1/2 cycle up to 12 kA peak</p> <p>23. Short time over current test <i>up to 1000 A for up to 25 cycles</i> <i>and up to 7000 A (½ cycles)</i></p> <p>24. Surge Immunity Test <i>0.5 kV to 12 kV</i></p> <p>25. Electrical fast transient burst test <i>0.5 kV to 4.0 kV</i></p> <p>26. General and constructional / Mechanical requirements (A)General: (a)Meter case (b)Display of measured values (c)Output device Optical output device characteristics. Irradiance and pulse parameters (d)Window (B)Terminal: (a)Terminal block(s) - Protective earth terminal, including heat deflection test (b)Terminal cover(s) (c)Clearance and Creepage distances (d)Insulating encased meter of protective class II</p> <p>27. Meter Marking and documentation</p> <p>28. Time keeping Accuracy</p> <p>29. Durability</p> <p>30.</p>	<p align="center">As listed on pages 6 & 7</p> <p>BS EN / EN 16314:2013</p>



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Static Watthour and VAR hour meters, including prepayment meters and smart meters, Power metering and monitoring devices (PMD) (cont'd)	31. Pulse outputs	BS EN / EN 16314:2013 (28 only)
	32. Electrical pulse inputs	
	33. Fast load Current Variation	
	34. Conducted Radio Interference Emissions Measurement <i>Frequency Range 0.15 MHz to 30 MHz 0 to 137 dBμV</i>	
	35. Test of immunity to conducted disturbances, induced by radio frequency fields <i>Frequency range 150 kHz to 80 MHz, EMF: up to 10 V rms</i>	
	36. Immunity to electromagnetic HF field <i>Frequency Range: 80 MHz to 6GHz Field strength: up to 30 V/m</i>	As listed on pages 6 & 7
	37. Radiated Emissions Measurement <i>Frequency Range: 30 MHz to 6GHz Range: 0 to 137 dBμV</i>	
	Damped oscillatory wave immunity test	
	38. Immunity to Electrostatic Discharge	
	39. Immunity to power frequency magnetic fields of external origin	
	40. Dry Heat Test <i>Ambient to +120 °C</i>	



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Static Watthour and VAR hour meters, including prepayment meters and smart meters, Power metering and monitoring devices (PMD) (cont'd)	<p>42. Cold Test <i>Ambient to - 40 °C</i></p> <p>43. Damp Heat Cyclic test <i>Temperature + 20 °C to + 70 °C</i> <i>Relative Humidity 30 % to 98 %</i></p> <p>Operation within the specified operation range</p> <p>44. Operation within the limit range of operation</p> <p>45. Storage and transport outside the limit range of operation</p> <p>46. load switching capability</p> <p>47. Token carrier interface</p> <p>48. Vibration test <i>Sweep frequency: 10 Hz to 3 kHz Displacement: 20 mm p-p Capacity 400 kgf</i></p> <p>50. Protection against dust and water <i>IPX1, IPX2, IPX3, IPX4 and IP5X without suction.</i></p> <p>51. Shock test <i>Peak acceleration: 50 g</i> <i>Half sine pulse</i> <i>Time duration: 11 ms and 18 ms</i></p> <p>Requirement of time keeping</p> <p>52. Test of keeping time</p> <p>53. Test of consumption based charging functions</p> <p>54. Test of time-based charging functions</p>	<p>As listed on pages 6 & 7</p>



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	<ul style="list-style-type: none">55. Functional requirements (a)General56. (b)Robustness of meter accounting processStability of meteorologicalCharacteristics by applying elevated temperature.57. High order Harmonics (Test of influence)58. Test of intrinsic uncertainty59. Tests of variation of uncertainty with influence quantities60. Measurement of voltage harmonics and THDu61. Measurement of current harmonics and THDi62. Test of compliance voltage and effect of variation of load63. Test of ripple content64. Tests of analog output response time65. Test of limit value of analog output66. Voltage dip and voltage swell measurements67. Voltage interruption measurements68. Voltage unbalance measurements69. Current unbalance measurements	



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Particular requirement for time switches (synchronized & crystal controlled)	1. Variation of the supply frequency <i>45 Hz to 65Hz</i> <i>Single phase: 0.04 W to 38.4 kW)</i> <i>Three Phase: 0.12 W to 115.2 kW)</i> 2. Immunity to DC magnetic fields <i>1000 AT, 67 mT to 0.27 T</i> 3. Immunity to AC magnetic fields <i>0.5 mT</i>	AS62052-21:2006 AS 62054.21(2006) IEC 61000-4-11:2004/2020 EN 61000-4-11:2020
	4. Voltage dips and short interruptions <i>6 ms to 6 min</i> 5. Tests of effects of supply interruptions on synchronous time switches <i>Voltage 270 V_{p-n}</i> 6. Long interruptions of supply voltage <i>Time up to 6 hours</i> <i>Voltage up to 320 V_{p-n}</i> 7. Operation reserves <i>Time up to 36 hours</i> <i>Voltage up to 320 V_{p-n}</i> Backup power supply replacement Time < 5 minutes 8. Functional requirements and test accuracy <i>(a)time setting and programming</i> <i>(b) time switches with mechanical analogic dials</i> 9. <i>(c)time switches with digital displays</i> 10. Time keeping accuracy <i>Time up to 30 days</i> <i>Voltage up to 320 V_{p-n}</i>	AS 62052-21:2006 AS 62054.21(2006) (cont'd)



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Particular requirement for time switches (synchronized & crystal controlled) (cont'd)	<p>11. Requirement for synchronous time and crystal switches - test of time keeping accuracy <i>(a) test of synchronous and crystal controlled time switches</i> <i>(b) test of synchronous and crystal controlled time switches on operation reserve</i></p> <p>12. Test of time keeping accuracy of crystal-controlled time switches with temperature <i>Frequency: 45 Hz to 65 Hz</i> <i>Single phase: 0.04 W to 38.4 kW</i> <i>Three Phase: 0.12 W to 115.2 kW</i> <i>Temperature -10 °C to + 40 °C</i></p> <p>13. Switching accuracy <i>time up to 168 hours</i> <i>(a) test on time switches with dials</i> <i>(b) test on time switches with digital displays</i> <i>(c) synchronization (time up to 1 minute)</i></p> <p>14. Test of influence of harmonics Single phase: 0.04 W to 38.4 kW Three Phase: 0.12 W to 115.2 kW Time up to 30 days</p>	
Tariff and load control equipment	<p>Electrical requirements and tests</p> <ol style="list-style-type: none"> Supply frequency range Output elements 	<p>AS62052-21:2006 EN 62059-32-1:2012</p>



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Measuring Instruments - Electrical measuring transducers	<ol style="list-style-type: none">1. Environmental condition test2. Variations due to Auxiliary Supply Voltage3. Variations due to Auxiliary Supply frequency4. Variations due to Ambient Temperature5. Variations due to the frequency of the input quantities6. Variations due to input Voltage7. Variations due to input Current8. Variations due to power factor9. Variations due to output load10. Variations due to distortion of the input quantities <p>Variation due to magnetic fields of external origin</p> <ol style="list-style-type: none">11. Variation due to unbalanced currents <ol style="list-style-type: none">12. Variation due to the interaction between measuring elements13. Variation due to self-heating14. Variation due to continuous operation15. Permissible excessive inputs16. Continuous excessive inputs17. Excessive inputs of short duration <ol style="list-style-type: none">18. Variation due to common mode interference19. Variation due to series mode interference20. Test of limits of Intrinsic Error21. Marking22. Test for temperature rise Limiting condition for storage and transport (up to 80 °C23. Response time (<i>up to 700 ms</i>)	IEC 60688 (2015} IEC 60688 (2021) IS 12784 part 1 (1989) IEC 60521 (1988) IEC 61000-4-12 (1995) IEC 61010-1(2001)



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Measuring Instruments - Electrical measuring transducers (cont'd)	Limiting value of output (0 V to 320 V, 0 A to 120 A) 24. Sealing verification 25. Ripple content of output (0 V to 320 V, 0 A to 120 A) 26. Over range of measurand (0 V to 320 V, 0 A to 120 A) 27. and other safety requirements 28. Impulse voltage tests 29. High frequency disturbance test 30. Voltage test, insulation tests	As listed on previous page



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Electricity Metering Equipment (AC)	Information and marking requirements (clause 5) General. Labels, signs and signals. Information for selection. Information for installation and commissioning. Information for use. Information for maintenance. Protection against electrical shock (clause 6) General requirements Determination of accessible parts. Limit values for accessible parts. Primary means of protection (protection against direct contact). Additional means of protection in case of single fault conditions (protection against indirect contact). Connection to external circuits. Insulation requirements. Insulation requirements between circuits and parts. Constructional requirements for protection against electric shock. Safety related electrical tests.	IEC 62052-31:2015/2024 AS 62052-31:2017 Clause 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 Annex A to K



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Electricity Metering Equipment (AC) (cont'd)	<p>Protection against mechanical hazards (7) General. Sharp edges. Provisions for lifting and carrying. Resistance to mechanical stresses (8) General. Spring hammer test.</p> <p>Protection against spread of fire (9) General. Eliminating or reducing the sources of ignition within the equipment. Containment of fire within the equipment, should it occur. Limited-energy circuit. Overcurrent protection</p> <p>Equipment temperature limits and resistance to heat (10) Surface temperature limits for protection against burns. Temperature rise limits for terminals. Temperature of internal parts. Temperature test. Resistance to heat.</p> <p>Protection against penetration of dust and water (11) Protection against liberated gases and substances explosion and implosion - Batteries and battery charging (12) Components and sub-assemblies (13) General. Mains transformers tested outside equipment. Printed wiring boards. Components bridging insulation. Circuits or components used as transient overvoltage limiting devices.</p> <p>Hazards resulting from application - Reasonably foreseeable misuse (14) Risk Assessment (15)</p>	<p>IEC 62052-31:2015 AS 62052-31:2017 Clause 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 Annex A to K</p>



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Electricity Metering Equipment (AC) (cont'd)	<p>Measuring circuits for touch Current (Annex A) Examples for insulation between Parts (Annex B) Examples for direct connected meters equipped with supply control and load control switches (Annex C) Test circuit diagram for the test of long term overvoltage withstand (Annex D) Test circuit diagram for short current test on the current circuit of direct connected meters (Annex E)</p> <p>Examples for voltage tests (Annex F) Additional a.c. voltage tests for electromechanical meters (Annex G) Test equipment for cable flexion and pull test (Annex H) Routine tests (Annex I) Examples of battery protection (Annex J) Rationale for specifying overvoltage category III (Annex K)</p>	



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Diaphragm, Ultrasonic and Thermal mass flow domestic gas meters	Metrological performance: Permissible errors of indication Carried out on air only from 0.016 m ³ /hour to 10 m ³ /hour Pressure absorption Starting flow rate Zero flow Metrological stability Overload flow rate Environment and humidity Influence of other devices attached to the meter Cyclic volume Gas — air relationship Immunity to contaminants in gas stream Installation effects Reverse flow Low and high flow registration Pulsed (unsteady) flow Flow disturbance tests Temperature sensitivity Reproducibility Repeatability Vibrations and shocks Test mode comparison	BS EN 1359:2017 EN 1359:2017 BS EN 14236:2018, EN 14236:2018, EN 16314:2013 BS EN 16314:2013, OIML R137-1&2:2012(E) Including Amendment 2014 EN 17526:2021 excluding 5.8.2.3 and 5.8.2.4 BS EN 1359:1999 Incorporating Amendment No. 1 (superseded) EN 1359:1998 + Amendment No. 1 (superseded) EN 14236:2007 (superseded) BS EN 14236:2007 (superseded)



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Diaphragm, Ultrasonic and Thermal mass flow domestic gas meters	Construction and material properties: Resistance to interference Robustness External leak tightness Resistance to internal pressure Meter case sealing Connections Resistance to vibration Resistance to impact Resistance to mishandling Corrosion protection Casework decorative finish Resistance to storage temperature Optional features Pressure measuring point Electrical insulating feet Magnetic index drive Devices to prevent the registration of reverse flow Devices to prevent reverse flow Resistance to high temperatures Resistance to external humidity Flame retardance of external surfaces Resistance to the effects of toluene/iso-octane vapour Resistance to water vapour Meters with temperature conversion Additional functionalities Ageing Ancillary devices	BS EN 1359:2017 EN 1359:2017 BS EN 14236:2018, EN 14236:2018, excluding 6.7 Protection against solar radiation EN 16314:2013 BS EN 16314:2013, OIML R137-1&2:2012(E) Including Amendment 2014 IEC 60068-2-1 IEC 60068-2-2 IEC 60068-2-30 IEC 60068-2-31 IEC 60068-2-47 IEC 60068-2-64, IEC 60068-2-78 EN 17526:2021 BS EN 1359:1999 Incorporating Amendment No. 1 (superseded) EN 1359:1998 + Amendment No. 1 (superseded) EN 14236:2007 (superseded) BS EN 14236:2007 (superseded)



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Diaphragm, Ultrasonic and Thermal mass flow domestic gas meters	Mechanical performance: Durability Meter error of indication at declared gas temperature limits Error of indication subject to declared ambient temperature limit Index Construction details Index windows and surround Diaphragms and components in the gas path Toluene/iso-octane vapour test Water vapour test Ageing Marking (all relevant type of meter and two pipe meter test) Durability and legibility of marking (all relevant type of meter and two pipe meter test) Ultraviolet exposure test Indelibility Adhesion Accompanying information Security Software Battery Voltage interruptions Minimum operating voltage Battery life Immunity to electromagnetic disturbances Electrostatic discharge Radio frequency electromagnetic field Electromagnetic induction (power frequency) Electromagnetic induction (pulsed field) Radio interference suppression DC mains voltage variation: influence test AC mains voltage variation: influence test AC mains voltage dips and short interruptions: disturbance test Low voltage of internal battery (not connected to the mains power): influence test	BS EN 1359:2017 EN 1359:2017 BS EN 14236:2018, EN 14236:2018, EN 16314:2013 BS EN 16314:2013, OIML R137-1&2:2012(E) Including Amendment 2014 EN 17526:2021 BS EN 1359:1999 Incorporating Amendment No. 1 (superseded) EN 1359:1998 + Amendment No. 1 (superseded) EN 14236:2007 (superseded) BS EN 14236:2007 (superseded) EN 17526:2021 IEC 61000-4-3 IEC 61000-4-6 IEC 61000-4-2 IEC 61000-4-4 IEC 61000-4-5 IEC 61000-4-9 IEC 60654-2 IEC/TR 61000-2-1 IEC 61000-4-11, EN 61000-4-11:2020 IEC 61000-6-1, IEC 61000-6-2 BS EN 61000-4-3:2020



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Materials/Products tested	Type of test/Properties measured/Range of measurement	Standard specifications/ Equipment/Techniques used
Diaphragm, Ultrasonic and Thermal mass flow domestic gas meters	Additional functionality Types of additional functionality devices AFD1, AFD2, AFD3 Climatic environments Closed location Safety requirements Expected lifetime Security Power system Display Diagnostics Metrological influence AFD connections Input to AFD & Output from AFD Data storage Time interval accuracy Energy Calculation within the meter/AFD Tariffs Display/Human interface Gas valve and System Design Quality Valve operation & performance Display of valve related information Valve closing & opening Electrical Safety Registers Prepayment System History of Consumption Memory Access profiles Non-volatile memory Water vapour Endurance Documentation Ageing Marking	EN 16314:2013
END		