

ISO 4064-2:2014-06 (E)

Water meters for cold potable water and hot water - Part 2: Test methods

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Reference conditions	2
5	Symbols, units and equations	3
6	External examination	3
6.1	General.....	3
6.2	Object of the examination.....	3
6.3	Preparation.....	3
6.4	Examination procedures.....	4
7	Performance tests for all water meters	8
7.1	General.....	8
7.2	Required conditions for all tests.....	8
7.3	Static pressure test (ISO 4064-1:2014 OIML R 49-1:2013, 4.2.10).....	9
7.4	Determination of intrinsic errors (of indication) (ISO 4064-1:2014 OIML R 49-1:2013, 7.2.3).....	10
7.5	Water temperature test (ISO 4064-1:2014 OIML R 49-1:2013, 4.2.8).....	18
7.6	Overload water temperature test (ISO 4064-1:2014 OIML R 49-1:2013, 7.2.5).....	18
7.7	Water pressure test (ISO 4064-1:2014 OIML R 49-1:2013, 4.2.8).....	19
7.8	Reverse flow test (ISO 4064-1:2014 OIML R 49-1:2013, 4.2.7).....	19
7.9	Pressure loss test (ISO 4064-1:2014 OIML R 49-1:2013, 6.5).....	21
7.10	Flow disturbance tests (ISO 4064-1:2014 OIML R 49-1:2013, 6.3.4).....	25
7.11	Durability tests (ISO 4064-1:2014 OIML R 49-1:2013, 7.2.6).....	26
7.12	Magnetic field testing.....	31
7.13	Tests on ancillary devices of a water meter.....	31
7.14	Environmental testing.....	32
8	Performance tests related to influence factors and disturbances	32
8.1	General requirements (ISO 4064-1:2014 OIML R 49-1:2013, A.1).....	32
8.2	Dry heat (non-condensing) (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	36
8.3	Cold (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	37
8.4	Damp heat, cyclic (condensing) (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	38
8.5	Power supply variation (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	39
8.6	Vibration (random) (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	42
8.7	Mechanical shock (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	43
8.8	AC mains voltage dips, short interruptions and voltage variations (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	44
8.9	Bursts on signal lines (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	45
8.10	Bursts (transients) on AC and DC mains (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	47
8.11	Electrostatic discharge (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	48
8.12	Radiated electromagnetic fields (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	49
8.13	Conducted electromagnetic fields (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	51
8.14	Surges on signal, data and control lines (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	53
8.15	Surges on AC and DC mains power lines (ISO 4064-1:2014 OIML R 49-1:2013, A.5).....	54
8.16	Static magnetic field (ISO 4064-1:2014 OIML R 49-1:2013, 7.2.8).....	55
8.17	Absence of flow test.....	56
9	Test program for type evaluation	57
9.1	Number of samples required.....	57
9.2	Performance test applicable to all water meters.....	57
9.3	Performance tests applicable to electronic water meters, mechanical water meters fitted with electronic devices, and their separable parts.....	58

9.4	Type evaluation of separable parts of a water meter	58
9.5	Families of water meters	59
10	Tests for initial verification	59
10.1	Initial verification of complete and combined water meters	59
10.2	Initial verification of separable parts of a water meter	60
11	Presentation of results	61
11.1	Object of the reports	61
11.2	Identification and test data to be included in records	61
Annex A (normative) Type examination and testing of checking facilities of electronic devices		63
Annex B (normative) Calculating the relative error (of indication) of a water meter		69
Annex C (normative) Installation requirements for flow disturbance tests		75
Annex D (normative) Type evaluation of a family of water meters		77
Annex E (informative) Examples of methods and components used for testing concentric water meters		79
Annex F (informative) Determining the density of water		82
Annex G (informative) Maximum uncertainties in the measurement of influence factors and disturbances		84
Annex H (informative) Pressure loss test pressure tappings, hole and slot details		87
Annex I (normative) Flow disturbers		90
Bibliography		101