

DIN EN 14154-1:2011-06 (E)

Water meters - Part 1: General requirements (includes Amendment A2:2011)

Contents		Page
Foreword		4
1	Scope	5
2	Normative references	5
3	Terms and definitions	5
4	Technical characteristics	12
4.1	Meter size and overall dimensions	12
4.1.1	Meter size	12
4.1.2	Dimensions of in-line meters	12
4.1.3	Dimensions of concentric meters	15
4.1.4	#Dimensions of cartridge meters\$	16
4.1.5	#Dimensions of exchangeable metrological units\$	16
4.2	#Meter end connections\$	23
4.2.1	Connections interfaces	23
4.2.2	Threaded end connections	23
4.2.3	Flanged connection	23
4.2.4	Connection for bolting in between flanges	24
4.2.5	Dimensions for manifold(s) for concentric meters	24
4.3	Indicating device	24
4.3.1	General requirements	24
4.3.2	Types of indicating device	26
4.3.3	Verification devices - First element - Verification scale interval	26
4.4	Water meters which utilise electronic devices	27
4.4.1	Checking facilities	27
4.4.2	Power supply	27
4.4.3	Correction device	29
4.4.4	Calculator	29
4.4.5	Ancillary device	29
4.5	Materials and construction	29
4.6	Protection against solid particles	30
4.7	Reverse flow	30
4.8	Meter security and protection against fraud	30
4.8.1	Mechanical protection devices	30
4.8.2	Electronic sealing devices	30
5	Meter classification	31
5.1	Meter pressure classes	31
5.1.1	Admissible water pressure	31
5.1.2	Internal pressure	31
5.1.3	Concentric meters	32
5.2	Meter temperature classes	32
5.3	Flow profile sensitivity classes	32
5.4	Pressure loss	33
6	Marking	34
7	Metrological characteristics	35
7.1	Permanent flowrate (Q3)	35
7.2	Measuring range	35

7.3	Relationship between permanent flowrate (Q3) and overload flowrate (Q4)	36
7.4	The relationship between transitional flowrate (Q2) and minimum flowrate (Q1)	36
7.5	Reference flowrate	36
7.6	Maximum permissible error	36
7.6.1	Sign of the error	36
7.6.2	Relative error,	36
7.6.3	MPE lower flow range	36
7.6.4	MPE upper flow range	37
7.6.5	Maximum permissible errors in service	37
7.6.6	Absence of flow	37
7.7	Meters with subassemblies	37
8	Meter performance requirements	38
8.1	Measurement error tests	38
8.2	#Interchange error tests\$	38
8.3	Pressure tests	38
8.4	Pressure loss tests	38
8.5	Overload temperature tests	38
8.6	Climatic and mechanical environment	38
8.7	Electromagnetic environment	39
8.8	Static magnetic field	39
8.9	Endurance	40
9	Metrological control	40
9.1	Pattern approval	40
9.1.1	Extent of pattern approval	40
9.1.2	Objective of pattern approval	40
9.1.3	Number of meters to be tested	41
9.1.4	Test verdict	41
9.2	Initial verification	41
9.2.1	General	41
9.2.2	Static pressure test	41
9.2.3	Error (of indication) measurements	41
9.2.4	Water temperature of tests	42
Annex A (normative) Checking facilities		43
A.1	Action of checking facilities	43
A.2	Checking facilities for the measurement transducer	43
A.2.1	Pulse input solutions	43
A.2.2	Other technologies	44
A.3	Checking facilities for the calculator	44
A.3.1	Checking of correct functioning	44
A.3.2	Checking of the validity of calculations	45
A.4	Checking facility for the indicating device	45
A.4.1	First possibility	45
A.4.2	Second possibility	46
A.5	Checking facilities for ancillary devices	46
A.6	Checking facilities for the associated measuring instruments	46
Annex B (normative) In-line meter dimensions (including alternative lengths)		47
Annex C (informative) Table of rated operating, limiting and references conditions		50
Annex D (informative) Test program		52
Annex ZA (informative) !Relationship between this European Standard and the Essential Requirements of EU Directive 22/2004/EC on Measuring Instruments"		53
Bibliography		63