



Brussels, 20<sup>th</sup> October 2005  
**M/374 EN**

## **MANDATE TO CEN AND CENELEC FOR STANDARDISATION IN THE FIELD OF MEASURING INSTRUMENTS**

### **1. MOTIVATION**

This mandate relates to the Directive 2004/22/EC of the European Parliament and of the Council on measuring instruments of 31 March 2004 (OJ L 135 of 30 April 2004). The Directive applies to the design, manufacture and conformity assessment of measuring instruments that Member States may prescribe the use of for measuring tasks. The purpose of the Directive is principally to deal with precision, reliability and security of measurement.

Article 6 of the Directive lays down that a measuring instrument falling within the scope of the Directive must meet the essential requirements applicable to it before it can be placed on the market; these essential requirements are specified in Annex I the relevant instrument specific MI-00x annexes of the Directive. Article 13 lays down that a measuring instrument shall be presumed to comply with the essential requirements when it complies with national standards transposing harmonized standards.

On 19 March 2004 a programming mandate (M/347) was addressed to CEN, CENELEC and ETSI for the development of a work programme related to measuring instruments. CEN and CENELEC responded jointly on 23 March 2005 with a programme of standards for water, gas, electricity and heat meters.

The purpose of this mandate is to invite CEN and CENELEC to draw up standards for measuring instruments, as described in their response to the programming mandate.

### **2. DESCRIPTION OF THE MANDATED WORK**

The Commission hereby requests CEN and CENELEC to draw up standards that are necessary and indispensable for the operation of the Directive mentioned above, as described in their response to the programming mandate. The standards shall cover the general requirements in Annex I and the relevant instrument specific MI-00x annexes of the measuring instruments Directive.

In carrying out the mandated work, CEN and CENELEC will take account of international standardisation initiatives in OIML, ISO and IEC.

Additions to the work programme can be proposed by CEN and CENELEC and incorporated into the mandate by addendum, which shall first be consulted with the Committee on Standards and Technical Regulations. Standards under this mandate shall meet the following requirements:

1. Standards shall, as far as possible, be formulated in such a way as to be self-sufficient, i.e., so as to be applied, and to give presumption of conformity with essential requirements.
2. Standards shall not reproduce the essential requirements of the Directive to which nothing is added, nor attempt to express the content of an essential requirement in other terms.
3. Standards shall, as far as possible, cover all aspects relevant to the instrument concerned regarding measurement dealt with by the Directive.
4. Each harmonised standard should include an annex providing information with regard to the relationship between its clauses and the essential requirements of the Directive. This indication should allow the users of the standard to establish to what extent it provides for a presumption of conformity with the essential requirements.
5. Co-operation shall be established and maintained by CEN as necessary with CENELEC on aspects of electromagnetic compatibility.

### **3. EXECUTION OF THE MANDATE**

1. The European Standards (EN) shall be adopted by the target dates specified. At these dates, the three linguistic versions (German, English, French) shall be available as well as the correct titles in the other European Union languages.
2. The European standards adopted shall be transposed into national standards and differing national standards shall be withdrawn from the catalogues of the national standards organizations in the Member States within six months of their adoption.
3. Acceptance by CEN and CENELEC of this mandate starts the standstill period referred to in Article 7 of Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 (OJ N° L 204 of 21.7.1998).

## **ANNEX A**

### **RESPONSE BY CEN and CENELEC TO THE PROGRAMMING MANDATE M/347.**



**CENELEC and CEN Proposed Work Program  
to develop new EN standards  
in support of the Measuring Instruments Directive  
8th September 2004**

## **1 Introduction**

The Directive 2004/22/EC of the European Parliament and of the Council on Measuring Instruments (MID) has been published in the OJ on 30<sup>th</sup> April 2004.

The Enterprise Directorate-General has issued a draft programming Mandate M/347 to CEN, CENELEC and ETSI on 21<sup>st</sup> January and confirmed it on 11th March 2004. CEN and CENELEC have both already positively responded in its letter of 10th March 2004 for CENELEC, and letter of 2004-03-19 which have been acknowledged by both the CEN and CENELEC Technical Board. The CENELEC BT at its March meeting in Budapest, see BT0119/DG5687/MTG. ETSI has not communicated to CEN and CENELEC the actual position and response it has or intends to

The present document contains the work programme proposed by

- CENELEC TC 13, *Equipment for electrical energy measurement and load control*, the Technical Committee responsible for establishing European standards for electricity metering equipment.
- CEN TC 092, *Water meters* the Technical Committee responsible for European Standardization for meters to measure volume flow of cold potable water and heated water enclosed in full conduits, irrespective of technology applied
- CEN TC 273, *Gas meters* the Technical Committee responsible for European Standardization for the construction, performance and safety of gas meters requirements, including diaphragm, rotary displacement and turbine and electronic gas meters, and all associated conversion devices.
- CEN TC 176, *Heat meters Standardization in the field of heat meters, including requirements for accuracy, construction and testing. The scope includes recommendations for installation, commissioning and operation. All types, sizes and working principles are included.*

## **2 Need for standardisation for CENELEC and CEN**

Annex MI-003 of the MID covers energy meters for active electrical energy, intended for residential, commercial, and light industrial use. Meters for such applications fall under legal metrology control in most member states.



Annex MI-001, MI-002, MI-004 of the MID cover water meters, gas meters and volume conversion devices heat meters and.

Meters for such applications fall under legal metrology control in most member states.

To ease the task of proving conformity with the essential requirements of the MID and to enable conformity to be assessed, it is desirable to have harmonised standards (Item (11) of the Preamble to the MID).

### 3 CEN & CENELEC Status of standardisation

#### 3.1 CENELEC

Global standards for electricity metering equipment are established by IEC TC 13 *Equipment for electrical energy measurement and load control*, with the participation of experts delegated by utilities, manufacturers, and legal metrology bodies, from European member states and from other countries. The whole range of IEC electricity metering standards has been in wide use internationally for many years and these standards are regularly reviewed and revised when needed.

Note: Markets of North America, parts of South America and Asia follow standards developed by ANSI. The differences between IEC and ANSI standards are mainly rooted in the different electrical network conditions and installation practices.

Standards for electricity metering equipment, established by the IEC are - based on the agreement between the IEC and CENELEC - also adopted as European Standards, generally without any changes. This process ensures that the European market for electricity meters is based on globally accepted standards.

IEC TC 13 has established a new series of standards in 2003, covering active electrical energy meters falling under the Scope of MID Annex MI-003. These new standards have been also adopted as EN-s:

- IEC/EN 62052-11:2003, *Electricity metering equipment (AC) – General requirements, test and test conditions – Part 11: Metering equipment*
- IEC/EN 62053-11:2003, *Electricity metering equipment (AC) – Particular requirements – Part 11: Electromechanical meters for active energy (classes 0,5, 1 and 2)*
- IEC/EN 62053-21:2003, *Electricity metering equipment (AC) – Particular requirements – Part 21: Static meters for active energy (classes 1 and 2)*

During the development of these standards, IEC TC 13 has continuously monitored the progress of the development of the MID. Its experts from European member countries have provided input both to the work of IEC TC 13 and to the development of the MID.

Consequently, the above standards provide a solid basis to establish the harmonised standards in support of the MID in due time.

An important advantage of basing the new harmonised standards on these recently published IEC/EN standards is, that a large portion of the work can be re-used and divergence between global and European standards, and a potential market split can be avoided.

The most important differences between the MID and recent IEC/EN standards are in the area of defining accuracy classes / class indexes.

According to Annex MI-003 of the MID, *assessment* of conformity of electricity meters for active energy can be performed using modules B+F, B+D or H1.



The use of Module B, *Type examination* and Module H1, *Declaration of conformity based on full quality assurance plus design examination* may require the use of Harmonised Standards or Normative Documents specifying requirements and type test methods. Such requirements and types test methods are specified in the IEC/EN 62052/62053 series mentioned above, which can be the basis of the new EN standards.

The use of module F, *Declaration of conformity to type based on product verification* may require applying statistical methods to verify that manufactured instruments are in conformity with the type approved and with the appropriate requirements of the Directives. Such statistical methods are described in the standards IEC/EN 60514 *Acceptance inspection of class 2 alternating-current watt-hour meters*, and IEC/EN 61358 *Acceptance inspection for direct connected alternating current static watt-hour meters for active energy (classes 1 and 2)*. These standards are currently under revision by IEC TC 13 and the new publications, under the reference IEC 62058, will be suitable to support module F.

Item 12) of the preamble to the MID offers an alternative to use internationally agreed normative documents instead of harmonised standards, which, under specific conditions, may also give rise to a presumption of conformity. One of such documents may be the OIML International Recommendation 46, *Electricity meters*. The revision of this document has been started and it is currently in the CD 1 stage. IEC TC 13 has been invited to delegate an expert to this work, with the objective to avoid duplication of work and contradictory requirements.

### 3.2 CEN

CEN is not only cooperating closely at international level with ISO under the Vienna agreement but also produces some pure European standards which often are taken over by the ISO corresponding technical committees whenever existing to be offered globally.

As mentioned in the present document's paragraph two, a number of Technical committees in CEN were identified as having developed or currently developing/revising standardization documents addressing fully or partially the essential requirements given in the corresponding annexes developed in the measuring instruments directive

Under the current circumstances, all standards developed or revised by the corresponding CEN technical committees proposing some document to support the essential requirements of the corresponding annexes in the Measuring Instrument Directive in the framework of the programming mandate were formally developed regionally. Hence there is no fully equivalent International document being published by ISO or OIML. Though some documents being developed either by ISO under the ISO TC 30 "*Measurement of fluid flow in closed conduits*" might be considered for transposition as by the currently dormant CEN TC 244 *Measurement of fluid flow in closed conduits* in the future as NEN is looking for the necessary funding to revitalize it to possibly take over the ISO standards as European documents to provide support to the MID

About conformity assessment, annex MI-001, MI-002 and MI-003 of the MID, *assessment of conformity of electricity meters for active energy* can be performed using modules B+F, B+D or H1.

The CEN TC 237 did communicate its intention to propose standards documents compatible with full quality assurance model type as Module H1, *Declaration of conformity based on full quality assurance plus design examination* which may require the use of Harmonised Standards or Normative Documents specifying requirements and type test methods. The use of cross reference to The EN ISO 9001 is apparent in their documents



Other CEN TC providing candidate supporting document did not specify yet their interpretation and opinion about the specific type of conformity assessment recommended and associated with their proposed standards.

## 4 CEN and CENELEC Standardisation program

### 4.1 CENELEC Summary

Based on the above, CENELEC TC 13 proposes the following work program:

Standards to be developed by CENELEC TC 13:

- EN 62052-12: *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 12: Metering equipment (class indexes A, B and C)*;
- EN 62053-12: *Electricity metering equipment (AC) – Particular requirements – Part 12: Electromechanical meters for active energy (class indexes A and B)*;
- EN 62053-26: *Electricity metering equipment (AC) – Particular requirements – Part 26: Static meters for active energy (class indexes A, B and C)*.

Note: The essential requirements of the MID are technology neutral. Therefore, in the supporting type test standards most of the requirements and tests have to be and can be formulated in a technology neutral manner. On the other hand, there are some areas, like mechanical requirements and tests, power consumption, effects of EMC, calibration etc. where requirements and tests must take into account the specifics of the technology applied. This is the reason justifying the structure proposed above, which is also in line of the structure of current IEC/EN standards.

Standards to be developed in co-operation with IEC TC 13:

- IEC/EN 62058-11, *Electricity metering equipment (AC) – Acceptance inspection- Part 11: General test procedures*;
- EN 62058-22, *Electricity metering equipment (AC) – Acceptance inspection – Part 22: Particular test procedures for electromechanical watt-hour meters for active energy (classes A and B)*;
- IEC/EN 62058-32, *Electricity metering equipment (AC) – Acceptance inspection – Part 32: Particular test procedures for static watt-hour meters for active energy (classes A, B and C)*.

### 4.2 CEN Summary

After having launched a general call for candidate standard to support the MID, CEN management centre received the following standard reference to present in the frame work of the Mandate M/347

#### CEN TC 92

EN 14154 parts -1, -2 & -3 Water meters:

- -1: General Requirements
- -2: Installation and conditions of use
- -3: Test methods and equipment

#### CEN TC 237



EN 1359 *Gas meters – Diaphragm gas meters*

EN 12480 *Gas meters – Rotary displacement gas meters*

EN 12261:2002 *Gas meters – Turbine gas meters*

EN 12405-1:200X *Gas meters – Conversion devices – Part 1: Volume Conversion*

EN 14236:200X *Gas meters – Ultrasonic domestic gas meters*

## TC 176

prEN 1434 parts -1,-2,-4,-5 & -6

- -1: General requirements
- -2: Constructional requirements
- -4: Pattern approval tests
- -5: Initial verification tests
- -6: Installation, commissioning, operational monitoring and maintenance

### **4.3 CENELEC Detailed standardisation program**

#### **4.3.1 EN 62052-12 General requirements**

Title: *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 12: Metering equipment (class indexes A, B and C)*

Scope: general requirements and type tests for electricity meters for active energy (class indexes A, B and C), based on the essential and specific requirements of the MID

Essential requirements covered: mechanical, climatic and EMC environments, suitability, protection against corruption, information to be borne, indication of result, permissible effect of disturbances

Outline of contents: terms and definitions, standard electrical values and operating ranges, mechanical requirements and tests, clearance/creepage distances, display of measured values, output device, marking, documentation, climatic conditions requirements and tests, electrical requirements and tests, insulation requirements and tests, EMC requirements and tests (disturbances, immunity and radio interference), type test conditions, test schedule

Note: Some of these requirements cover safety aspects, not covered by the MID (the current LVD does not apply to electricity metering equipment).

Reference documents: IEC/EN 62052-11:2003

The project consists of adapting the above referenced standard to the requirements of the MID.

Timetable: Given the short time, the UAP (Unique Acceptance Procedure) will be followed. First draft: 2004-12, Voting result 2005-09, Ratification 2006-03, Application 2006-09.



Responsible organisation: CENELEC TC 13

Priority: 1

Other mandate for standardisation: None

#### **4.3.2 EN 62053-12, Particular requirements for electromechanical meters for active energy (class index A)**

Title: *Electricity metering equipment (AC) – Particular requirements – Part 12: Electromechanical meters for active energy (class indexes A and B)*

Scope: particular requirements for electromechanical meters for active energy (class indexes A and B)

Essential requirements covered: allowable errors, reproducibility, repeatability, discrimination and sensitivity, suitability

Outline of contents: power consumption, AC voltage tests, accuracy requirements and tests, allowable effect of influence quantities, starting, running with no load, accuracy test conditions, interpretation of test results, adjustment

Reference documents: IEC/EN 62053-11:2003

The project consists of adapting the above referenced standard to the requirements of the MID.

Timetable: Same as for EN 62052-12

Responsible organisation: CENELEC TC 13

Priority: 1

Other mandate for standardisation: None

#### **4.3.3 EN 62053-26, Particular requirements for static meters for active energy (class indexes A, B and C)**

Title: *Electricity metering equipment (AC) – Particular requirements – Part 26: Static meters for active energy (class indexes A, B and C)*

Scope: particular requirements for static meters for active energy (class indexes A, B and C)

Essential requirements covered: allowable errors, reproducibility, repeatability, discrimination and sensitivity, suitability

Outline of contents: power consumption, AC voltage tests, accuracy requirements and tests, allowable effect of influence quantities, starting, running with no load, accuracy test conditions, interpretation of test results, adjustment

Reference documents: IEC/EN 62053-21:2003

The project consists of adapting the above referenced standard to the requirements of the MID.





Timetable: Same as for EN 62052-12

Responsible organisation: CENELEC TC 13

Priority: 1

Other mandate for standardisation: None

#### **4.3.4 IEC/EN 62058-11, Acceptance inspection, general test procedures**

Title: *Electricity metering equipment – Acceptance inspection- Part 11: General test procedures*

Scope: General acceptance inspection procedures for electricity meters for active energy

Essential requirements covered: conformity assessment Module F.

Outline of contents: terms and definitions, acceptance conditions for batches, test conditions, general inspection and test procedures, requirements corresponding to different inspection procedures (100% inspection, sampling inspection based on attributes and based on variables)

Reference document: IEC 60514, IEC 61358

Timetable: (IEC) CD 2005-03, CDV 2005-09, FDIS 2006-03, publication 2006-06.

Responsible organisations: CENELEC TC 13, in co-operation with IEC TC13

The document is established by IEC TC 13 and will go for parallel IEC/CENELEC voting.

Priority: 1

Other mandate for standardisation: None

#### **4.3.5 IEC/EN 62058-22, Acceptance inspection, particular test procedures for electromechanical meters for active energy (classes A and B)**

Title: *Electricity metering equipment – Acceptance inspection- Part 22: Particular test procedures for electromechanical meters for active energy (classes A and B)*

Scope: Particular acceptance inspection procedures for electromechanical meters for active energy

Essential requirements covered: conformity assessment Module F

Reference document: IEC 60514, draft IEC 62058-21

Timetable: Same as for IEC/EN 52058-11

Responsible organisations: CENELEC TC 13, in co-operation with IEC TC13

draft IEC 62058-21 will be adapted to MID class indexes by CENELEC TC 13.



Priority: 1

Other mandate for standardisation: None

#### **4.3.6 IEC/EN 62058-32, Acceptance inspection, particular test procedures for static meters for active energy**

Title: *Electricity metering equipment – Acceptance inspection- Part 32: Particular test procedures for static meters for active energy (classes 0,5, 1 and 2)*

Scope: Particular acceptance inspection procedures for static meters for active energy

Essential requirements covered: conformity assessment Module F

Reference document: IEC 61358, draft IEC 62058-31

Timetable: Same as for IEC/EN 52058-11

Responsible organisations: CENELEC TC 13, in co-operation with IEC TC13

draft IEC 62058-31 will be adapted to MID class indexes by CENELEC TC 13.

Priority: 1

Other mandate for standardisation: None

#### **4.4. CEN Detailed standardisation program**

**Please refer to the appropriate tables provided in annex xx**

#### **5. Cooperation with other organisations**

CEN/CENELEC did communicate and devised a document which clearly identified the repartition of work avoiding any overlap between both standardization programme of work

CENELC sent copy of this work program is sent for information to IEC TC 13, *Equipment for Electrical energy measurement and load control*, to OIML TC 12, *Instruments for measuring electrical quantities*, to WELMEC WG 8, *Measuring Instruments Directive* and WELMEC WG 11, *Utility meters*.

CEN provided OIML with a copy of its programme of work proposal designed as a reply to the Mandate M/347

BIML 04 N° 123/JFM

13 January 2005

#### **OIML Publications, status and links with the European Directives**

<b>OIML publication</b>	<b>Subject</b>	<b>Status / date</b>	<b>Reference in EU Directives</b>	<b>Comments</b>
R 6	General provisions for gas volume meters	1989, Combined revision of R 6, R 31 and R 32 in process	MID, annex MI-002	Applicable



**WATER METERS**

**CEN TC 92 List of standards proposed to EC in the framework of programming mandate M/347**

**RMK & legend:**

1. \*Status

Under development (not yet published) = UDeV  
 Published and to being revised (to align with MID Essential Requirements) = PuB&ReV

2. Priority stage

Priority scale	Associated code number
First Priority	1
Very Important	2
Important	3

1. Water meters

Standard reference	Standard title	Scope	Status (*)	(Target) for document draft (CEN stage code: 30.99)	(Target) date for closure formal Vote (CEN stage code: 50.60)	Target Date for document available (CEN stage code: 60.60)	CEN Member in charge	Priority allocated to development	Mandate to CEN
EN 14154-1	Water meters - Part 1: General Requirements	See remarks under table	UDeV	2002-11	2004-07	2005-01	AFNOR	1	M/347
EN 14154-2	Water meters – Part 2 Installation and conditions of use	See remarks under table	UDeV	2002-11	2004-07	2005-01	AFNOR	1	M/347
EN 14154-3	Water meters –	See remarks	UDeV	2002-11	2004-07	2005-01	AFNOR	1	M/347

	Part 3: Test methods and equipment	under table							
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Remarks:

This Standard applies to water meters intended for residential, commercial, light industrial and industrial use, and specifies the requirements and certification procedures for water meters, irrespective of the design technologies used to meter the actual volume of clean cold potable water or heated water, flowing through a fully charged, closed conduit. These water meters shall incorporate devices, which indicate the integrated volume.

**Relations between CEN TC 92 standards candidate to support MID and MID's Essential Requirements**

Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
1	Allowable errors under rated operating conditions	
1.1	Within MPE – no disturbance (See Annex MI-001)	YES
1.2	Within MPE – disturbance (See Annex MI-001)	YES
1.3	Specify climatic, mechanical and EM environment	YES
1.3.1	Climatic environments	YES
1.3.2	Mechanical environments	YES
1.3.3	Electromagnetic environments	YES
1.3.4	Other influence quantities	YES
1.4.1	Basic rules	YES
1.4.2	Ambient humidity	YES
2	Reproducibility	YES
3	Repeatability	NO
4	Discrimination and sensitivity appropriate for measurement task	YES
5	Sufficient durability for intended task	YES
6	Reliability	YES
7	Suitability	YES
	Design discourages fraudulent use and minimises unintentional misuse.	YES
7.1		
7.2	Designed to be suitable for its intended use and working conditions. User friendly.	YES
7.3	The errors of a utility measuring instrument at flows or currents outside the controlled range shall not be unduly biased.	YES

Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
7.4	Where a measuring instrument is designed for the measurement of values of the measurand that are constant over time, the measuring instrument shall be insensitive to small fluctuations of the value of the measurand, or shall take appropriate action.	N/A
7.5	Robust and materials suitable for intended use	YES
7.6	A measuring instrument shall be designed so as to allow the control of the measuring tasks after the instrument has been placed on the market and put into use.	YES
8	Protection Against Corruption	
8.1	Measurement cannot be affected by feature of instrument, connection of external or communicating device.	YES
8.2	Critical hardware components secure or tampering is evident.	YES
8.3	Critical software shall be identified and secure. Identification readily available. Tampering evidenced for 'reasonable' time.	YES
8.4	Data and critical parameters protected against corruption.	YES
8.5	Display cannot be reset during use.	YES
9	Information on/accompanying	

Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
9.1	Shall bear manufacturers mark or name and information in respect of its accuracy. Where applicable data on conditions of use, identity marking, number of type examination certificate.	YES
9.2	If too small, information placed on packaging	YES
9.3	Accompanied by information on rated operating conditions, climatic, mechanical and EM environment classes. instruction operation and maintenance etc.	YES
9.4	Utility meters do not require individual instruction manuals.	N/A
9.5	Decimal scale interval	YES
9.6	Material measure	N/A
9.7	Units of measure	YES
9.8	Durability of marking	YES
10	Indication of result	
10.1	Display	YES
10.2	Clear indication	YES
10.3	Hard copy	NO
10.4	Direct trading	NO
10.5	Indicator required	YES
11	Processing of data	
11.1	Durable record	N/A
11.2	Durable proof	N/A
12	Conformity evaluation	YES
Annex MI-001		
water meters		
1	<b>Rated Operating Conditions</b>	
	Values of flow rate range	YES



Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
2	Temperature range of the water	YES
3	Relative pressure of the water	YES
4	For power supply nominal value of AC voltage supply and limits of DC supply	YES
	<b>Maximum Permissible Error (MPE)</b>	
5	MPE $\pm 2\%$ for water temperature $\leq 30^\circ\text{C}$ for flow rate between $Q_2$ (included) and $Q_4$ .	YES
6	MPE $\pm 3\%$ for water temperature $> 30^\circ\text{C}$ for flow rate between $Q_2$ (included) and $Q_4$ .	YES
	MPE $\pm 5\%$ for any water temperature for flow rate between $Q_1$ and $Q_2$ (excluded)	YES
7	<b>Permissible effect of disturbances</b>	
7.1	Electromagnetic immunity	
7.1.1	Effect of disturbance is such that <ul style="list-style-type: none"> <li>- change of measurement result not greater than critical change value</li> <li>- Indication of measurement result cannot be interpreted as valid result (i.e. momentary variation)</li> </ul>	YES  YES
7.1.2	After electromagnetic disturbance the meters shall <ul style="list-style-type: none"> <li>- recover to operate within MPE</li> <li>- have all measurement results safeguarded</li> <li>- Allow recovery of all measurement data before</li> </ul>	YES YES YES

Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
	disturbance	
7.1.3	Critical change value	
7.2	Durability After appropriate test the following criteria shall be satisfied compared to initial measurement	
7.2.1	Variation of measurement result - 3 % of the metered volume between Q <sub>1</sub> included and Q <sub>2</sub> excluded - 1,5 % of the metered volume between Q <sub>2</sub> included and Q <sub>4</sub> included.	YES  YES
7.2.2	Error of indication for volume measured - $\pm 6$ % of the metered volume between Q <sub>1</sub> included and Q <sub>2</sub> excluded; - $\pm 2,5$ % of the metered volume between Q <sub>2</sub> included and Q <sub>4</sub> included for water meters intended to meter water with a temperature between 0,1 °C and 30 °C, - $\pm 3,5$ % of the metered volume between Q <sub>2</sub> included and Q <sub>4</sub> included for water meters intended to meter water with a temperature between 30 °C and 90 °C.	YES  YES  YES
8	<b>Suitability</b>	
8.1	Meter able to be installed in any	YES

OIML publication	Subject	Status / date	Reference in EU Directives	Comments
R 21	Taximeters	1973, being revised as "Electronic taximeters"	MID, annex MI-007	Outdated. CENELEC is working on it
R 29	Capacity serving measures	1973(FR), 1979(EN)	MID, annex MI-008	Applicable
R 31	Diaphragm Gas Meters and	R 31: 1995	MID, annex MI-002	Applicable
R 32	Rotary piston gas meters and turbine gas meters	R 32: 1989 Combined revision of R 6, R 31 and R 32 in process		
R 35	Material Measures of length for general use	1985	MID, annex MI-008	Applicable
R 46	Electricity meters	Withdrawn in 1997 Revision in liaison with the IEC.	MID, annex MI-003	Outdated. IEC Standards are also outdated.
R 49	Cold water meters	2003-2004 Combined revision of R 49 and R 72 in process	MID, annex MI-001	Applicable, together with R 72
R 50	Continuous Totalizing Automatic Instruments	1997	MID, annex MI-006	Applicable
R 51	Automatic catchweighing instruments	1996	MID, annex MI-006	Applicable
R 52	Hexagonal weights	2004 Revision in progress	Directive 71/317/CEE, Old Approach	
R 60	Load Cells	2000	Directive 90/384 and MID annex MI-006	Applicable for a part of Annex MI-006
R 61	Automatic gravimetric filling instruments (revision)	2004	MID, annex MI-006	Applicable
R 66	Length measuring instruments	1985	MID, annex MI-009	
R 72	Hot water meters	1985, Combined revision with R 49 in process	MID, annex MI-001	Applicable together with R 49
R 75	Heat Meters	2002	MID, annex MI-004	Applicable
R 76	NAWIs	1992-1993 Revision in process	Directive 90/384	Applicable (EN 45501)
R 81	Dynamic measuring devices and systems for cryogenic liquids	1998	MID, annex MI-005	Applicable
R 87	Net content in prepackages (revision)	2004	Directives n° 75/106/CEE and n° 76/211/CEE	
R 99	Exhaust gas analysers (revision)	2000 Joint publication with ISO (ISO 3930)	MID, annex MI-010	Applicable
R 105	Direct mass flow measuring systems for quantities of liquids	1993 Combined revision with R	MID, annex MI-005	Applicable



OIML publication	Subject	Status / date	Reference in EU Directives	Comments
		117 and R 118 in process		
R 106	Automatic rail weighbridges	1997	MID, annex MI-006	Applicable
R 107	Discontinuous totalizing automatic weighing instruments	1997	MID, annex MI-006	Applicable
R 111	Weights (revision)	2005	Directive 71/317/CEE, Old Approach	
R 117	Measuring Systems for liquids other than water and	1995 Combined revision with R 105 and R 118 in process	MID, annex MI-005	Applicable
R 118	Fuel dispensers, testing procedures and test report format	1995 Combined revision with R 105 and R 117 in process		
R 126	Breath Analysers	being revised.	future additions to MID	
R 129	Multi-dimensional measuring instruments	2000	MID, annex MI-009	Applicable
R 136	Instruments for measuring the area of leathers	2005	MID, annex MI-009	
D 11	General requirements for electronic measuring instruments	2005	MID, annex I	Applicable in support of Annex I
Software	General requirements for software controlled measuring instruments	Work on software in measuring instruments is progressing in TC 5/SC 2	MID, annex I	

Essential Requirement	Subject	PrEN 14154
ANNEX I		YES or NO or N/A (Not applicable)
	position unless clearly marked otherwise	
8.2	<p>Meter is designed to measure reverse flow</p> <ul style="list-style-type: none"> <li>- reverse flow volume subtracted from cumulated volume or separately recorded</li> </ul> <p>Meter is not designed to measure reverse flow shall either</p> <ul style="list-style-type: none"> <li>- prevent reverse flow or</li> <li>- able to withstand accidental reverse flow</li> </ul>	YES
	<b>Units of measurement</b>	
	Cubic meter	YES
	<b>Putting into Use</b>	
	Member state responsibility	NO



## GAS Meters

### CEN TC 237 List of standards proposed to EC in the framework of programming mandate M/347

#### RMK & legend:

3. \*Status

Under development (not yet published) = UDeV  
 Published and to being revised (to align with MID Essential Requirements) = PuB&ReV  
 Published and to being amended (to align with MID Essential Requirements) = PuB&AMD

4. Priority stage

Priority scale	Associated code number
First Priority	1
Very Important	2
Important	3

These standards are displayed as references and appending required details into tables which are sorted by gas meter type category and are showing only CEN standards published or under development.

Standard reference	Standard title	Scope	Status (*)	Target date for document draft (CEN stage code: 30.99)	Target date for formal Vote (CEN stage code: 50.60)	Target Date for document available (CEN stage code: 60.60)	CEN Member in charge	Priority allocated to development	Mandate to CEN
EN 1359	Gas meters – Diaphragm gas meters	See remarks under table	PuB&AMD	2005-05	2005-11	2006-02	BSI	1	M/347
EN 12480	Gas meters – Rotary displacement	See remarks under	PuB&AMD	2005-05	2005-11	2006-02	BSI	1	M/347

Standard reference	Standard title	Scope	Status (*)	Target date for First document draft (CEN stage code: 30.99)	Target date for formal Vote (CEN stage code: 50.60)	Target Date for document available (CEN stage code: 60.60)	CEN Member in charge	Priority allocated to development	Mandate to CEN
EN 12405-1	Gas meters – Conversion devices – Part1 Volume conversion	See remarks under table	UDeV	2005-05	2005-11	2006-02	BSI	1	M/347
EN 14236	Gas meters – Ultrasonic domestic gas meters	See remarks under table	UDeV	2005-10	2006-04	2006-07	BSI	1	M/347
EN 12261	Gas meters – Turbine gas meters	See remarks under table	PuB&AMD	2005-05	2005-11	2006-02	BSI	1	M/347

Remarks:

**EN 1359:1998** Gas meters - Diaphragm gas meters

**Scope:**

This European Standard specifies the requirements and tests for the construction, performance and safety of diaphragm gas meters (hereinafter referred to as meters) having co-axial single pipe, or two pipe connections, used to measure volumes of fuel gases of the 1st, 2nd and 3rd families according to EN 437, at maximum working pressures of up to 1,0 bar and maximum actual flow rates of up to 160 m<sup>3</sup>/h over a minimum ambient and gas temperature range of -5 °C to + 35 °C.

Unless otherwise stated, all pressures given in this document are gauge pressure.

Clauses 1 to 9 and annexes B and C are for design and type testing only.



NOTE: see annex A for production requirements.

**EN 12480:2002** Gas meters – Rotary displacement gas meters

**Scope:**

This European Standard specifies ranges, construction, performances, output characteristics and testing of rotary displacement gas meters for residential and industrial applications (hereinafter referred to as RD meters or simply meters) for gas volume measurement.

This European Standard applies to rotary displacement gas meters used to measure the volume of fuel gases of the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> gas families, the composition of which is specified in EN 437, at a maximum operating pressure up to and including 16 bar over a gas temperature range of at least – 10 °C to + 40 °C.

Unless otherwise specified in this standard, all pressures used are gauge pressures.

**EN 12261:2002** Gas meters – Turbine gas meters

**Scope:**

This European Standard specifies the measuring conditions, requirements and tests for the construction, performance and safety of axial and radial turbine gas meters with mechanical indicating devices, herein after referred to as a meter(s), having in-line pipe connections for gas flow measurement.

This European Standard applies to turbine gas meters used to measure the volume of fuel gases of the 1st and 2nd gas families, the composition of which is specified in EN 437, at maximum working pressures up to 420 bar, actual flow rates up to 25 000 m<sup>3</sup>/h over a gas temperature range of at least –10 °C to +40 °C.

Unless otherwise specified in this standard, all pressures used are gauge.

Clauses 1 to 7 and annex B are for design and type testing only, with the exception of 6.2.2.3, 6.2.3.3, 6.6.1.1.2 and 6.6.2.2.2. Annex C may be used to provide guidance on periodic tests during use. Clause 8 and annexes D and E are for each meter prior to dispatch. Annex A shall be used for both type and individual testing.

**EN 12405-1:200X** Gas meters – Conversion devices – Part 1: Volume Conversion

**Scope:**

Part 1 of European Standard EN 12405 specifies the requirements and tests for the construction, performance, safety and conformity of gas-volume electronic conversion devices associated to gas meters, used to measure volumes of fuel gases of the 1st and 2nd families according to EN 437.

Part 1 of this standard is intended for type testing, the detailed relevant provisions of which are given in Annex A.

Only three kinds of conversion are treated in Part 1 of this standard:

- conversion as a function of temperature only (called T conversion);
- conversion as a function of the pressure and of the temperature with constant compression factor (called PT conversion);
- conversion as a function of the pressure, the temperature and taking into account the compression factor (called PTZ conversion).

Part 2 of this standard for energy conversion is in preparation.

Gas-volume conversion devices consist of a calculator and a temperature transducer or a calculator, a temperature transducer and a pressure transducer locally installed.

For application of Part 1 of this standard, a conversion device may be, as a choice of the manufacturer, considered as a complete instrument (Type 1) or made of separate elements (Type 2), according to the definitions given in 3.1.18.1 and 3.1.18.2.

In this last case, the provisions concerning pressure transducers, temperature sensors and temperature transducers are given in annexes B, C and D respectively.

Any conversion device can provide an error curve correction for a gas meter.

**NOTE** When rendering an account to an end user the readings from the conversion device can be used in conjunction with the readings from a gas meter conforming to EN 1359, EN 12480, or EN 12261, as appropriate, or to any other appropriate and relevant international or national standard for gas meters, without prejudice of national regulations.

**EN 14236:200X** Gas meters – Ultrasonic domestic gas meters

**Scope:**

This European Standard specifies requirements and tests for the construction, performance and safety of battery powered ultrasonic gas meters (hereinafter referred to as meters), having co-axial single pipe, or two pipe connections, used to measure volumes of distributed fuel gases of the first and/or second and/or third family, as given in EN 437, at maximum working pressures of up to 0,5 bar<sup>1)</sup> and maximum actual flow rates of up to 10 m<sup>3</sup>/h over a minimum ambient and gas temperature range of -10 °C to +40 °C, for domestic applications. This standard applies to meters where the measuring element and the register(s) are enclosed in the same case. Unless otherwise stated, all pressures given in this document are gauge pressures. Clauses 1 to 15 and annex B are for design and type testing only.

**NOTE** See annex A for production requirements.

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1) 1 bar = 1 000 mbar = 10<sup>5</sup> Pa.

**Relations between CEN TC 237 standards candidate to support MID and MID's Essential Requirements**

Essential Requirement	Subject	EN 1359 YES or NO or N/A (Not applicable)	EN 12480 YES or NO or N/A (Not applicable)	EN 12261 YES or NO or N/A (Not applicable)	EN 12405-1 YES or NO or N/A (Not applicable)	prEN 14236 YES or NO or N/A (Not applicable)
1	Allowable errors under rated operating conditions					
1.1	Within MPE – no disturbance	YES	YES	YES	YES	YES
1.2	Within MPE - disturbance	YES	YES	YES	YES	YES
1.3	Specify climatic, mechanical and EM environment	YES	YES	YES	YES	YES
1.3.1	Climatic environments	YES	YES	YES	YES	YES
1.3.2	Mechanical environments	YES	YES	YES	YES	YES
1.3.3	Electromagnetic environments	YES	YES	YES	YES	YES
1.3.4	Other influence quantities	N/A	YES	YES	YES	YES
1.4.1	Basic rules	YES	YES	YES	YES	YES
1.4.2	Ambient humidity	YES	YES	YES	YES	YES
2	Reproducibility	N/A	N/A	N/A	N/A	N/A
3	Repeatability	YES	YES	YES	YES	YES
4	Discrimination and sensitivity appropriate for measurement task	YES	YES	YES	YES	YES
5	Sufficient durability for intended task (see....)	YES	YES	YES	YES	YES
6	Reliability	YES	YES	YES	YES	YES
7	Suitability					
7.1	Design discourages fraudulent use and minimises unintentional misuse.	YES	YES	YES	YES	YES

7.2	Designed to be suitable for its intended use and working conditions. User friendly.	YES	YES	YES	YES	YES	YES
7.3	The errors of a utility measuring instrument at flows or currents outside the controlled range shall not be unduly biased.	N/A	N/A	N/A	N/A	N/A	YES
7.4	Where a measuring instrument is designed for the measurement of values of the measurand that are constant over time, the measuring instrument shall be insensitive to small fluctuations of the value of the measurand, or shall take appropriate action.	N/A	N/A	N/A	N/A	N/A	N/A
7.5	Robust and materials suitable for intended use	YES	YES	YES	YES	YES	YES
7.6	A measuring instrument shall be designed so as to allow the control of the measuring tasks after the instrument has been placed on the market and put into use.	YES	YES	YES	YES	YES	YES
8	Protection Against Corruption						
8.1	Measurement cannot be affected by feature of instrument, connection of	YES	YES	YES	YES	YES	YES

		external or communicating device.	YES		YES		YES		YES
8.2		Critical hardware components secure or tampering is evident.	YES		YES		YES		YES
8.3		Critical software shall be identified and secure. Identification readily available. Tampering evidenced for 'reasonable' time.	NO	N/A	N/A		YES		YES
8.4		Data and critical parameters protected against corruption.	NO	N/A	YES		YES		YES
8.5		Display cannot be reset during use.	YES	YES	YES		YES		YES
9		Information on/accompanying							
9.1		Shall bear manufacturers mark or name and information in respect of its accuracy. Where applicable data on conditions of use, identity marking, number of type examination certificate.	YES	YES	YES		YES		YES
9.2		If too small, information placed on packaging	YES	YES	YES		YES		YES
9.3		Accompanied by information on rated operating conditions, climatic, mechanical and EM environment classes. instruction operation and maintenance etc.	YES	YES	YES		YES		YES
9.4		Utility meters do not require individual instruction manuals.	YES	YES	YES		YES		YES







## Heat Meters

### CEN TC 176 List of standards proposed to EC in the framework of programming mandate M/347

**RMK & legend:**

5. \*Status

Under development (not yet published) = UDeV  
 Published and to being revised (to align with MID Essential Requirements) = PuB&ReV  
 Published and to being amended (to align with MID Essential Requirements) = PuB&AMD

6. Priority stage

Priority scale	Associated code number
First Priority	1
Very Important	2
Important	3

These standards are displayed as references and appending required details into tables which are sorted by gas meter type category and are showing only CEN standards published or under development.

Standard reference	Standard title	Scope	Status (*)	Target date for document draft (CEN stage code: 30.99)	Target date for closure formal Vote (CEN stage code: 50.60)	Target Date for document available (CEN stage code: 60.60)	CEN Member in charge	Priority allocated to development
prEN 1434-1	Heat meters - Part 1: General requirements	See remarks under table	PuB&AMD	2004-07	2007-04	2007-07	DS	1

prEN 1434-2	Heat meters - Part 2: Constructional requirements	See remarks under table	PuB&AMD	2004-07	2007-04	2007-07	DS	1	
prEN 1434-5	Heat meters - Part 5: Initial verification tests	See remarks under table	PuB&AMD	2004-07	2007-04	2007-07	DS	1	
<b>Standard reference</b>	<b>Standard title</b>	<b>Scope</b>	<b>Status (*)</b>	<b>Target date for First document draft (CEN stage code: 30.99)</b>	<b>Target date for closure formal Vote (CEN stage code: 50.60)</b>	<b>Target Date for document available (CEN stage code: 60.60)</b>	<b>CEN Member in charge</b>	<b>Priority allocated to development</b>	
prEN 1434-6	Heat Meters - Part 6: Installation, commissioning, operational monitoring and maintenance	See remarks under table	PuB&AMD	2004-07	2007-04	2007-07	DS	1	
prEN 1434-4	Heat Meters - Part 4: Pattern approval tests	See remarks under table	PuB&AMD	2004-07	2007-04	2007-07	DS	1	

Remarks

**Scope:**

These European Standards apply to heat meters, that is to say, instruments intended for measuring the heat which, in a heat-exchange circuit, is absorbed or given up by a liquid called the heat-conveying liquid. The heat meter indicates the quantity of heat in legal units. Electrical safety requirements are not covered by these European Standards. Pressure safety requirements are not covered by these European Standards. Surface mounted sensors are not covered by these European Standards.

**prEN 1434-1** Heat meters - Part 1: General requirements

**prEN 1434-2** Heat meters - Part 2: Constructional requirements

**prEN 1434-4** Heat Meters - Part 4: Pattern approval tests

**prEN 1434-5** Heat meters - Part 5: Initial verification tests

**prEN 1434-6** Heat Meters - Part 6: Installation, commissioning, operational monitoring and maintenance

**Relations between CEN TC 176 standards candidate to support MID and MID's Essential Requirements**

Essential Requirement	Subject	prEN 1434-1 to -6 all together (prEN 1434-3 excluded)
ANNEX I	Relations with MID ERs	Possible answers : YES or NO or N/A (Not applicable)
1	Allowable errors under rated operating conditions	
1.1	Within MPE – no disturbance	YES
1.2	Within MPE - disturbance	
1.3	Specify climatic, mechanical and EM environment	YES
1.3.1	Climatic environments	YES
1.3.2	Mechanical environments	YES
1.3.3	Electromagnetic environments	YES
1.3.4	Other influence quantities	YES
1.4.1	Basic rules	YES
1.4.2	Ambient humidity	YES
2	Reproducibility	YES
3	Repeatability	YES
4	Discrimination and sensitivity appropriate for measurement task	YES
5	Sufficient durability for intended task (see....)	YES
6	Reliability	YES
7	Suitability	
7.1	Design discourages fraudulent use and minimises unintentional misuse.	YES
7.2	Designed to be suitable	YES

		for its intended use and working conditions. User friendly.	
	7.3	The errors of a utility measuring instrument at flows or currents outside the controlled range shall not be unduly biased.	N/A
	7.4	Where a measuring instrument is designed for the measurement of values of the measurand that are constant over time, the measuring instrument shall be insensitive to small fluctuations of the value of the measurand, or shall take appropriate action.	N/A
	7.5	Robust and materials suitable for intended use	YES
	7.6	A measuring instrument shall be designed so as to allow the control of the measuring tasks after the instrument has been placed on the market and put into use.	N/A
8		Putting into use	
	8.1	Measurement cannot be affected by feature of instrument, connection of external or communicating device.	YES

	8.2	Critical hardware components secure or tampering is evident.	YES	
	8.3	Critical software shall be identified and secure. Identification readily available. Tampering evidenced for 'reasonable' time.	N/A	
	8.4	Data and critical parameters protected against corruption.	YES	
	8.5	Display cannot be reset during use.	YES	
9		Information on/accompanying		
	9.1	Shall bear manufacturers mark or name and information in respect of its accuracy. Where applicable data on conditions of use, identity marking, number of type examination certificate.	YES	
	9.2	If too small, information placed on packaging	YES	
	9.3	Accompanied by information on rated operating conditions, climatic, mechanical and EM environment classes. Instruction operation and maintenance etc.	YES	
	9.4	Utility meters do not require individual instruction manuals.	YES	
	9.5	Decimal scale interval	YES	
	9.6	Material measure	N/A	

	9.7	Units of measure	YES
	9.8	Durability of marking	YES
10		Indication of result	
	10.1	Display	YES
	10.2	Clear indication	YES
	10.3	Hard copy	N/A
	10.4	Direct trading	N/A
	10.5	Indicator required	YES
11			
	11.1	Durable record	N/A
	11.2	Durable proof	N/A
12		Conformity evaluation	YES
	Annex MI002		
Part I		Specific requirements heat meters	
1	1.1	Rated operating conditions for the temperature of the liquid: $\theta_{max}$ , $\theta_{min}$ , differences : $\Delta\theta_{max}$ , $\Delta\theta_{min}$ ,	YES
	1.2	For the pressure of the liquid:	YES
	1.3	For the flow rates of the liquid:	YES
	1.4	For the thermal power: Ps.	YES
2		Accuracy classes	YES
3		Maximum permissible errors to complete instruments	YES
4		Permissible influences of electromagnetic disturbances	YES
	4.2	The influence of an electromagnetic disturbance	YES

5	4.3	The critical change value	YES
		Durability	YES
	5.1	Flow sensors:	YES
	5.2	Temperature sensors:	YES
6		Inscriptions on a heat meter:	YES
7		Sub-assemblies:	YES
	7.1	The relative maximum permissible error of the flow sensor, expressed in %, for accuracy classes:	
	7.2	The relative maximum permissible error of the temperature sensor pair, expressed in %:	NO
	7.3	The relative maximum permissible error of the calculator, expressed in %:	YES
	7.4	The critical change value	YES
	7.5	Inscriptions on the subassemblies	YES
8		Putting into use	?
9		Conformity assessment	?