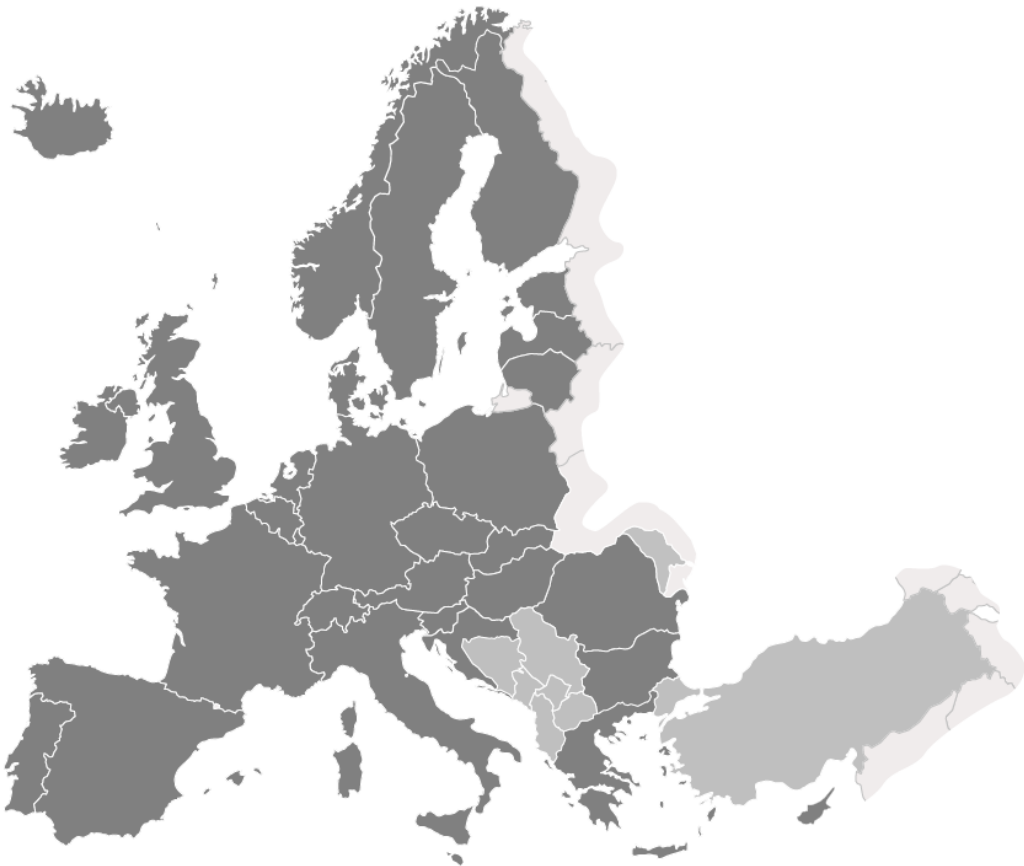


WELMEC

European Cooperation in Legal Metrology

Guide for Information in the Type Examination Certificate

(to be borne by and to be accompanied
(or provided) by the Markings on the Gas Meters)



For information:

This guide is available to the Working Group Measuring Instruments for future reference on the Europa Website.

WELMEC

European Cooperation in Legal Metrology

WELMEC is cooperation between the legal metrology authorities of the Member States of the European Union and EFTA.

This document is one of a number of Guides published by WELMEC to provide guidance to manufacturers of measuring instruments and to Notified Bodies responsible for conformity assessment of their products.

The Guides are purely advisory and do not themselves impose any restrictions or additional technical requirements beyond those contained in relevant EU Directives.

Alternative approaches may be acceptable, but the guidance provided in this document represents the considered view of WELMEC as to the best practice to be followed.

Published by:
WELMEC Secretariat

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1 Scope

For the benefit of manufacturers, and all other interested parties, e.g. Notified Bodies (designated under Annex II, module B, D, F and H1 of the MID), notifying authorities and market surveillance authorities, this document describes a best practise approach relating to the information in the TEC, and the information which is to be borne by and to accompany the Gas Meter that are considered necessary based on an interpretation of the essential requirements..

This guide does not cover markings necessary under other relevant European Directives, such as but not limited to the ATEX directive, the EMC directive, the low-voltage directive and so on.

Utility companies can also require markings on the Gas Meters to facilitate the management of Gas Meters installed within the network. This guide does not deal with such markings.

2 Definitions and abbreviations

In this document the following abbreviations and definitions apply:

MID	directive 2014/32/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of measuring instruments.
Measuring task	As specified under article 1 and 3 of the MID.
NB	Notified Body designated by a Member State in accordance with Article 23(1) of the MID.
TEC	An EU-type examination certificate under Annex II, module B or an EU design examination certificate under Annex II, module H1 of the MID.
EC	Evaluation certificate as specified by WELMEC guide 8.8.
PC	Parts certificate as specified by WELMEC guide 8.8

3 Markings and inscriptions on a Gas Meter with a measuring task

According to article 20 of the MID, the conformity of a Gas Meter with the MID shall bear the CE-marking and the supplementary metrology marking as specified in Article 21 of the MID following the general principle of article 30 of Regulation 765/2008 and article R11 of Decision (EC) No 768/2008.

In principle the CE-marking indicates the conformity of the product with all applicable directives.

According to article 8 of the MID, the manufacturer shall ensure “ [...] *that measuring instruments which they have placed on the market bear a type, batch or serial number or other element allowing their identification [...]*”.

According to point 6. article 8 of the MID, “*manufacturers shall indicate on the measuring instrument their name, registered trade name or registered trade mark and the postal address at which they can be contacted or, where that is not possible, in a document accompanying the measuring instrument and on the packaging, if any, in accordance with point 9.2 of Annex I. The address shall indicate a single point at which the manufacturer can be contacted. The contact details shall be in a language easily understood by end-users and market surveillance authorities*”.

Article 9.2 of Annex I of the MID states: “*An instrument of dimensions too small or of too sensitive a composition to allow it to bear the relevant information shall have its packaging, if any, and the accompanying documents required by the provisions of this Directive suitably marked*”.

Also guidance of chapter 4.2.2.1 of the blue guide¹ applies: “*The name and address must, as a rule, be affixed to the product. However, it may exceptionally be moved from the product if this rule cannot be followed. This would be justified where affixing it to the product was not possible under reasonable technical or economic conditions excluding however esthetical reasons. It is up to the manufacturer to make this assessment. This assessment has to be done according to the size or nature of the product*”

When a manufacturer cannot follow the rule to mark the instrument with his name and address, he shall however always be able to justify its decision and it will be up to the notified body to accept it or not.

In order to facilitate communication between economic operators, Member States should encourage economic operators to include a website address in addition to the postal address².

According to article 10 of the MID, importers shall indicate on the measuring instrument their name, registered trade name or registered trade mark and the postal address at which they can be contacted or, where that is not possible, in a document accompanying the measuring instrument and on its packaging, if any, in accordance with point 9.2 of Annex I.

The contact details shall be in a language easily understood by end-users and market surveillance authorities

¹ The ‘Blue Guide’ on the implementation of EU products rules 2016 (Text with EEA relevance) (2016/C 272/01)

² See Recital 17 of the MID.

The Blue Guide³ adds that only where it is not possible the identification and address of the importer may be indicated on the packaging and/or in a document accompanying the product. This may be the case when the importer would have to open the packaging to put his name and address on the instrument.

Manufacturers and notified bodies must be aware of the fact that any interpretation for MID might not be valid for other directives.

The TEC can also specify information to be inscribed on the instrument or which has to be provided by the instrument, for example but not limited to:

- Evaluation or Parts certificate numbers⁴
- Additional markings and inscriptions as specified by the TEC, Evaluation or Parts certificate.

or which has to be shown in the display of the instrument, for example but not limited to:

- Software version number and checksum⁵ (may be in a special mode provided the TEC describes how to get in the special mode⁶);
- Value of event counters⁷ or information about the status of other securing measures.

Article 9 of Annex I of the MID defines the information to be borne by and to accompany the instrument.

Article 9.5 of Annex I of the MID states that unless specified otherwise in an instrument-specific annex, the scale interval for a measured value shall be in the form 1×10^n , 2×10^n , or 5×10^n , where n is any integer or zero. The unit of measurement or its symbol shall be shown close to the numerical value.

Article 9.7 of Annex I of the MID states that the units of measurement used and their symbols shall be in accordance with the provisions of Union legislation on units of measurement and their symbols.

Specifically section 9.8 or article 9 of Annex I of the MID, further requires that all marks and inscriptions required under any requirement shall be clear, non-erasable, unambiguous and non-transferable.

Article 10.2 of Annex I of the MID states that the indication of any result shall be clear and unambiguous and accompanied by such marks and inscriptions necessary to inform the user of the significance of the result.

Easy reading of the presented result shall be permitted under normal conditions of use. Additional indications may be shown provided they cannot be confused with the metrology-controlled indications.

³ The 'Blue Guide' on the implementation of EU products rules 2016 (Text with EEA relevance) (2016/C 272/01)

⁴ See WELMEC guide 8.8 for guidance on the [General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring Instruments](#)

⁵ See WELMEC guide 7.2, [Software Guide \(Measuring Instruments Directive 2014/32/EU\)](#), for guidance on the software identifier and check of conformity, i.e. checksum or hash code and the presentation of these results, in particular the instrument specific annexes (Extension I) of guide 7.2 for utility meters.

⁶ Article 8.3 of Annex I of the MID states that the software identification shall be easily provided by the measuring instrument.

⁷ See for example WELMEC guide 7.2, [Software Guide \(Measuring Instruments Directive 2014/32/EU\)](#), for guidance for guidance on event counters, event loggers or other means of securing.

3.1 Conformity markings

According to article 20 and 21 MID, the conformity of gas meter with MID directive shall be indicated by presence on it of:

- CE mark + M + year of affixing + Number of NB

The marking shall be in accordance with the requirements mentioned in article 21 and 22 of the MID, see paragraph 5.1 for examples.

3.2 Required information

3.2.1 Information on the gas meter

According to article 9.1 of Annex I of the MID the following information shall be on the measuring instrument.

a) *manufacturer's name, registered trade name or registered trade mark;*

- Postal address of the manufacturer shall be on the instrument (see article 8.6 of the MID, unless the dimensions of the instrument are too small or too sensitive a composition to allow it to bear the relevant information. In that case that information shall be on its packaging, if any, and the accompanying documents required by the provisions of this Directive suitably marked).
- Name, registered trade name or registered trade mark and the postal address of the importer shall be on the instrument if the manufacturer is not located in the EU (article 10.3 of the MID), or if this is not possible the identification and address of the importer may be indicated on the packaging and/or in a document accompanying the product. This may be the case when the importer would have to open the packaging to put his name and address on the instrument (see blue guide).
- Manufacturer in this respect does not mean manufacturing site or country.
- Furthermore the data of the manufacturer and importer does not have to be on the same plate, this information needs to be on the instrument, not in the same place.

b) *information in respect of its accuracy;*

- The accuracy class.

(A gas meter may have been tested in accordance with OIML R137, class 0,5. However, in Annex IV of the MID only the accuracy classes 1 and 1,5 are mentioned. As a result it shall be clear that a meter is in conformity with one of those MID classes (1 or 1.5). An extra marking that the meter complies also with OIML R 137 class 0,5 is regarded as ambiguous and shall be avoided in order to avoid confusion (see article 9.8 of Annex I).)

and, where applicable:

c) *information in respect of the conditions of use;*

- Ambient temperature range, expressed as
$$t_m = \dots - \dots <\text{unit}>; \text{ }^{(12)}$$
- Gas temperature range if different from the ambient temperature, expressed as
$$t_g = \dots - \dots <\text{unit}>; \text{ }^{(8)}$$
- Gas pressure range, expressed as:
$$p_g = \dots - \dots <\text{unit}>. \text{ }^{(12)}$$
- The density range, if applicable, within which the errors shall comply with the limits of the maximum permissible error may be indicated, and shall be expressed as:

⁸ Alternatively, the markings could be made visible via the electronic indicating device in a clear and unambiguous manner provided that the TEC specifies how to obtain the values for these parameters, see 3.4 of this guide.

$$\rho = \dots - \dots \text{ <unit> }^{(12)}$$

- Maximum and minimum flow rates Q_{\max} and Q_{\min} respectively
 - Transitional flow rate Q_t if not clear by the appropriate harmonised standard or normative document
 - If applicable the value of the output pulses
 - In the case of volume at base conditions according to article 2.2 of Annex IV (MI-002):
 - The specified temperature t_{sp}
 - The base temperature t_b
 - The base pressure p_b
 - In case of applying a fixed input pressure p_{sp}
 - V or H if the meter can be operated only in the vertical or horizontal position
 - Indication of the flow direction, e.g. an arrow symbol, if not included in the design
 - Additional markings for gas meters with output drive shafts
 - a. Gas meters fitted with output drive shafts or other facilities for operating detachable additional devices shall have each drive shaft or other facility characterized by an indication of its constant (C) in the form “1 rev = ... <unit>” and the direction of rotation. “rev” is the abbreviation of the word “revolution”;
 - b. If there is only one drive shaft the maximum permissible torque shall be marked in the form “ $M_{\max} = \dots \text{ N.mm}$ ”;
 - c. If there are several drive shafts, each shaft shall be characterized by the letter M with a subscript in the form “ $M_1, M_2, \dots M_n$ ”;
 - Pulse values of HF and LF frequency outputs
 (imp/<unit>, pul/<unit>, <unit>/imp); ⁽⁹⁾

Note: The pulse value is given to at least six significant figures, unless it is equal to an integer multiple or decimal fraction of the used unit.
 - Additional markings for gas meters with electronic devices
 - a) For an external power supply: the nominal voltage and nominal frequency;
 - b) For a non-replaceable power source: the operational lifetime of the measuring device or, alternatively, the remaining battery capacity in units of time can be presented on the electronic indicating device;
 - c) For a replaceable power source, see 3.2.3.
 - d) Software identification, see 3.2.3.
 - If information is needed for correct operation a reference to the meter manual or the pictogram of a manual shall be on the meter.
- d) *measuring capacity;*
- Not applicable
- e) *measuring range;*
- Maximum and minimum flow rates Q_{\max} and Q_{\min} respectively.
- f) *identity marking;*
- type designation in accordance with the TEC, serial number or other element allowing their identification, year of production.
- g) *number of the EU-type examination certificate or the EU design examination certificate;*
- In the case of the voluntary modular approach, the modules which have an Evaluation or Parts certificate should be marked with the Evaluation or Parts certificate number.
- h) *information whether or not additional devices providing metrological results comply with the provisions of this Directive on legal metrological control.*
- Not applicable. Typically the metrological results are provided by a metrologically controlled display, see article 10,5 of Annex I the MID

⁹ Alternatively, this marking could be made visible via the electronic indicating device in a clear and unambiguous manner provided that the TEC specifies how to obtain the values for these parameters.

3.2.2 Information near or in the display

According to Article 10.2 of Annex I of the MID the following information shall be indicated or placed near the display:

- Indication of V or m or the label “Volume” or “Mass” respectively in case of the display of volume under measuring conditions or mass, according to paragraph 2.1 of Annex IV (MI-002) of the MID.
- Indication of V_b or a label “Volume at base conditions” in case of converted volume;
 - If the display can indicate both volume at metering conditions and volume at base conditions a special sign in the display has to indicate in which mode the gas meter is, i.e. indicating volume at base conditions or volume at metering conditions.

According to Article 6 of Annex IV (MI-002) of the MID the metered quantity shall be displayed in cubic metre, or in kilogram, which shall bear the relevant inscription or indication (either m^3 or kg) such that it is adjacent to the least significant digit of the display.

3.2.3 Information provided by the gas meter

- According to Article 8.3 of Annex I of the MID the software identification shall be easily provided by the measuring instrument¹⁰.
 - See WELMEC guide 7.2 for additional guidance regarding software identification, specifically concerning the conditions for the use of an imprint of the software identifier under certain conditions.

The software identification can either be permanently displayed or shown on demand, provided the TEC describes how to obtain this information.

In the case of software securing according to article 8.3 of Annex I of the MID, the measuring instrument shall show evidence of an intervention.

- In case of an event counter the current count shall be displayed on demand for comparison with the initial value of the counter that was registered before putting the measuring instrument into use or at the last official verification respectively and is indelibly labelled on the instrument.
- In case of an event logger the values shall be displayed on demand.
- In case the software is protected by means of a checksum, the checksum value shall be displayed on demand.

In all cases the TEC shall describe how to obtain this information.

Note: Although a checksum can also be used to identify software, it is common practice to provide both the version-number and checksum, making subsequent verification easier, by looking up the version reference in the TEC, then checking that the corresponding checksum value is the same. See WELMEC guide 7.2 for additional guidance regarding software identification and software securing.

- According to Article 5.2 of Annex II (MI-002) of the MID a dedicated power source shall have a lifetime of at least five years. After 90 % of its lifetime an appropriate warning shall be shown.

¹⁰ See WELMEC guide 7.2 for guidance on the software identifier and check of conformity, i.e. checksum or hash code and the presentation of these results, in particular the instrument specific annexes (Extension I) of guide 7.2 for gas meters.

3.2.4 Information accompanying the gas meter

According to Article 9.3 of Annex I of the MID the instrument shall be accompanied by information on its operation, unless the simplicity of the measuring instrument makes this unnecessary. Groups of identical measuring instruments used in the same location or used for utility measurements do not necessarily require individual instruction manuals, see article 9.4 of Annex I of the MID.

The Information shall be easily understandable

This means that the information is in a language easily understood by end-users and market surveillance authorities.

and shall include where relevant:

- Mechanical and electromagnetic environment classes
- Upper and lower temperature limit
- Ability to withstand condensation
- Open or closed location
- Indoors or outdoors
- Instruction for installation, maintenance, repairs, permissible adjustments
 - Battery replacement, battery type
 - Short description and instructions for consumers on method of obtaining the registered values that are used as a basis for the transaction and (if necessary) for checking the bill
- Instruction for correct operation and any special conditions of use
 - Gas family or characteristics of gas composition suitable for the meter
 - The suitability for an application with different gas and ambient temperatures
 - Requirements on installation.
 - If the meter is designed only to be installed in piping arrangements where only mild flow disturbances may occur, the length of the straight pipe line and any other information needed for the correct installation of the piping arrangements.
- Conditions for compatibility with interfaces, sub-assemblies or measuring instruments.

According to article 7.6 of Annex I of the MID 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.

If necessary, special equipment or software for this control shall be provided by the manufacturer. The test procedure shall be described in the operation manual.

3.2.5 Information required by the TEC

The type-examination or design examination certificate can also specify information to be inscribed on the instrument or which has to be provided by the instrument, for example but not limited to:

- Transitional flow rate (may be in a special mode provided the TEC describes how to get in the special mode)
- Software version number¹¹ and checksum¹² (may be in a special mode provided the TEC describes how to get in the special mode)
- Evaluation or Parts certificate numbers¹³
- Additional markings and inscriptions as specified by the TEC, Evaluation or Parts certificate.

If applicable markings are presented via the electronic indicating device in a clear and unambiguous manner, the TEC should specify how to obtain the values for these parameters.

The TEC and Evaluation or Parts certificates can also specify specific markings to be put on the parts. Typically, the following markings are placed on the parts¹⁰:

- Producers name
- Serial number
- Certificate number, if relevant
- Relevant characteristics (e.g. minimum pressure), if applicable
- Special product names, if applicable.

A tool to facilitate the putting on the market or market surveillance of the measuring instrument is the compatibility sheet¹⁴ that contains the technical characteristics of the Gas Meter when it was first placed on the market.

If the use of a compatibility sheet²³ is required then this is specified in the Welmec guide 11.6 for the modular approach of Gas Meters and / or in the TEC, Evaluation or Part certificate.

¹¹ Article 8.3 of Annex I of the MID states that the software identification shall be easily provided by the measuring instrument.

¹² See WELMEC guide 7.2 for guidance on the software identifier and check of conformity, i.e. checksum or hash code and the presentation of these results, in particular the instrument specific annexes (Extension I) of guide 7.2 for gas meters.

¹³ See WELMEC guide 8.8 for guidance on the [General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring Instruments](#)

¹⁴ See WELMEC guide 8.8, Chapter 6 Technical Aspects

4 Examples of markings and inscriptions on the gas meter with a measuring task

All marks and inscriptions required under any requirement shall be clear, non-erasable, unambiguous and non-transferable. It must also be indelible so that it cannot be removed under normal circumstances without leaving noticeable traces.

The notation "..." in the inscriptions of the parameters denote an example.

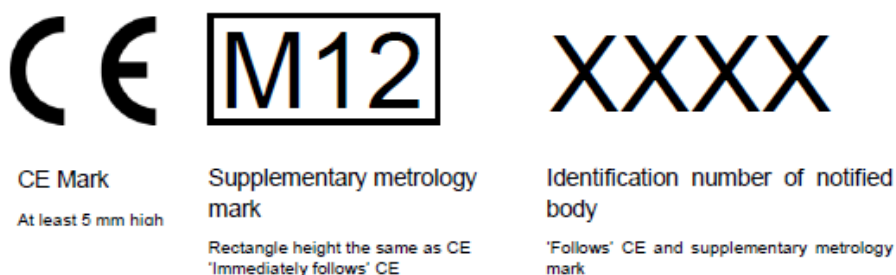
Other notations are allowed if they are given by the MID, the harmonised standards, normative documents or WELMEC guide issued by either working group 11 for electricity or gas meters and cited in the Official Journal of the European Union.

The notation t_m -25 40 °C for example could also be

- t_m -25 °C /. 40 °C or
- t_m -25 °C .. 40 °C or
- t_m -25 /. 40 °C or
- any other notation given by the MID, the harmonised standards, normative documents or WELMEC guides.

Instead of using indices to indicate subscript characters (for example the "m" sign as stated above), characters that are of a significantly lower size may be used.

4.1 Conformity Markings on the gas meter



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4.2 On the instrument

Logo		CE + M + year of affixing + Notified Body Number ¹⁶
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¹⁵ See WELMEC guide 8.21, issue 1, May 2012, article 1.1

manufacturer			
Type approval number		Other markings ¹⁷	EN 1359:1998 + A1:2006 or R137
Type	:	xxxxxxxxx	t _m : -25 / 40 °C
Serial number	:	123456789	t _g : -20 / 40 °C
Production year	:	yyyy	p _{e,max} : 500 mbar
Accuracy class	:	1,5	Q _{max} : 6 m ³ /h Q _{min} : 0.04 m ³ /h
Pulse value	:	0,01 m ³	
In the case of volume at base conditions			
t _{sp} : 20 °C	t _b : 0 °C	p _b : 1013,25 mbar	p _{sp} : 1035 mbar (see footnote ¹⁸)
19	<ul style="list-style-type: none"> • Manufacturer's name, registered trade name or trade mark and the postal address of the manufacturer at which the manufacturer can be contacted shall be on the instrument, unless the dimensions of the instrument is too small or of too sensitive a composition to allow it to bear the relevant information. Then that information shall be on its packaging, if any, and the accompanying documents required by the provisions of this Directive suitably marked; • If applicable, name, registered trade name or registered trade mark and the postal address of the importer shall be on the instrument if the instrument is imported, unless the dimensions of the instrument is too small or of too sensitive a composition to allow it to bear the relevant information. Then that information shall be on its packaging, if any, and the accompanying documents required by the provisions of this Directive suitably marked <p><i>see the relevant clauses of EU commission Blue Guide, rev 2016, and MID 2014/32/EU</i></p>		

¹⁶ Could be more than one Notified Body number on the date plate if other Notified Bodies are involved for the conformity assessment procedure under other relevant directive, for example EMC – directive, ATEX directive and so on.

¹⁷ Other markings that are required under other applicable European Directives than the MID.

¹⁸ In case the conversion is done with a fixed assumed pressure. This value may be shown in the display on request, as indicated in the manual.

¹⁹ National legislation might require a place for the national markings, however this is outside the scope of this document

4.3 Near or in the display

In case the volume at measuring conditions is displayed	In case of converted volume
V or label "Volume" M or label "mass"	V _b or the label "Volume at base conditions" (see footnote ²⁰)
immediately adjacent to the least significant digit of the display	
m ³ or kg	m ³ or kg

²⁰ If the display can indicate both volume at metering conditions and volume at base conditions a special sign in the display has to indicate in which mode the gas meter is, i.e. indicating volume at base conditions or volume at metering conditions

4.4 On the parts

This is only an example.

If required by the TEC, EC or PC, parts need to have marking and inscriptions, see WELMEC guide 8.8.

Example of marking on a calculator:

Producer ²¹	<input type="text" value="Name and address"/> <input type="text"/>
Type	<input type="text"/>
EC or PC No.	<input type="text" value="xxxxx"/>
Serial No.	<input type="text" value="yyyyy"/>
	<input type="text" value="22"/>

²¹ These markings are required under the MID as specified by the EC or PC. Other markings, such as manufacturers name and address might be required if the part is placed separately on the market. However, this guide does not cover markings necessary under other relevant European Directives, such as but not limited to the ATEX directive, the EMC directive and the low-voltage directive.

²² National legislation might require a place for the national markings, however this is outside the scope of this document.

4.5 Compatibility sheet

This is only an example.

	Calculator / indicator	Measuring part	Gas meter
Temperature range	-10 °C / +40 °C	-5 °C / +40 °C	-5 °C / +40 °C
Signal	Pulses Maximum pulses 3000/min	Pulses Maximum pulses 2000/min	Pulses Maximum pulses 2000/min