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NOTE

From:	Presidency
On:	30 June 2025
To:	Delegations
Subject:	Proposal for a Directive of the European Parliament and of the Council amending Directive 2014/32/EU as regards electric vehicle supply equipment, compressed gas dispensers, and electricity, gas and thermal energy meters *- 3rd Presidency compromise text*

In view of the upcoming Working Party on Technical Harmonisation (Measuring Instruments) on 8 September 2025, delegations will find in Annex to this note, a marked version of the latest Presidency compromise text.

Changes in comparison to the previous Presidency compromise proposal, document ST 11021/25, are marked in **red bold underline** for additions and in ~~red strikethrough~~ for deletions.

Changes proposed in the previous compromise proposals, documents ST 11021/25, ST 6789/25 and ST 8432/25, in comparison to the Commission proposal, document ST 16426/24 + ADD 1, are marked in **bold** for additions and in ~~strikethrough~~ for deletions.

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

amending Directive 2014/32/EU as regards electric vehicle supply equipment, compressed gas dispensers, and electricity, gas and thermal energy meters

(Text with EEA relevance)

PUBLIC

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 114 thereof,

Having regard to the proposal from the European Commission,

After transmission of the draft legislative act to the national Parliaments,

Having regard to the opinion of the European Economic and Social Committee[1],

Acting in accordance with the ordinary legislative procedure,

[1] OJ C , , p. .

Whereas:

(1) One of the objectives of Directive 2014/32/EU of the European Parliament and of the Council[2] on measuring instruments is to guarantee the proper functioning of the internal market. Pursuant to Article 6 of Directive 2014/32/EU, measuring instruments falling within the scope of that Directive are to meet the essential requirements set out in Annex I and in the relevant instrument-specific Annexes.

(2) The scope and the associated essential requirements covered by Directive 2014/32/EU were ~~already~~ established by Directive 2004/22/EC[3], of which Directive 2014/32/EU is a recast. ~~Thus, they~~**Technical requirements** have remained unchanged for more than 20 years. In the meantime, new measuring instruments have appeared on the market that are not covered by Directive 2014/32/EU. That is notably the case for electric vehicle supply equipment and compressed gas dispensers, which are important for the successful rollout of clean mobility. Moreover, Directive 2014/32/EU does not cover **requirements for** thermal energy meters for cooling applications. In addition, as far as electricity and gas meters are concerned, Directive 2014/32/EU **is** neither **adapted to**~~covers~~ the use of **direct current,** hydrogen and other gases that can be used as alternatives to more traditional gases, nor enables to take full advantage of smart metering which plays an important role in achieving the Union climate objectives. Therefore, it is appropriate to amend the scope of Directive 2014/32/EU and the essential requirements set out in the Annexes to that Directive in order to take into account technological progress.

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2 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 (OJ L 96, 29.3.2014, p. 149, ELI: http://data.europa.eu/eli/dir/2014/32/oj).

3 Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on measuring instruments (OJ L 135, 30.4.2004, p. 1, ELI: http://data.europa.eu/eli/dir/2004/22/oj).

(3) Annexes I, IV, V and VI to Directive 2014/32/EU are no longer technology neutral as they do not provide essential requirements corresponding to new technologies, which provide improved protection to consumers, and should thus be amended.

(4) Annex I to Directive 2014/32/EU should be amended in order to take into account the roll out of smart gas and electricity meters and the new measuring instruments covered by the new instrument-specific Annexes.

(5) Annex IV to Directive 2014/32/EU should be amended to take into account the growing use of hydrogen and other **fuel** gases that can be used as alternatives to more traditional **fuel** gases and the roll-out of smart gas meters.

(6) Annex V to Directive 2014/32/EU should be amended to take account of the rollout of smart electricity meters **and to fit with the applications using direct current**.

(7) A new Annex Va to Directive 2014/32/EU should be inserted in order to address the need for harmonised essential requirements with regard to measuring systems for electric vehicle supply equipment.

(8) Annex VI to Directive 2014/32/EU should be amended to include thermal energy meters for cooling applications in order to avoid additional certification of such products at national level.

(9) The increased use of compressed gases, such as hydrogen and natural gas, requires the insertion of a new Annex VIIa to Directive 2014/32/EU on measuring systems for compressed gas dispensers.

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(10) Since the objective of this Directive, namely to ensure that measuring instruments on the market fulfil the requirements providing for a high level of protection of the public interests covered by this Directive while guaranteeing the functioning of the internal market, cannot be sufficiently achieved by the Member States but can rather, by reason of its scale and effects, be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve that objective.

(11) In order to enable distributors to supply stock of measuring instruments that have been placed on the market before the date of application of the national measures transposing this Directive, it is necessary to provide for reasonable transitional arrangements that allow the making available on the market and putting into use of measuring instruments that have already been placed on the market in accordance with Directive 2014/32/EU before the date of application of the national measures transposing this Directive.

(12) Moreover, in order to provide sufficient time for manufacturers to adapt their products to the essential requirements set out in the Annexes to this Directive, it is also necessary to provide for reasonable transitional arrangements that allow the making available on the market and putting into use of measuring instruments that have been placed on the market in accordance with national certificates or for which a certificate was issued under Directive 2014/32/EU before the date of application of the national measures transposing this Directive, and that will fall in the scope of Directive 2014/32/EU as of the date of entry into force of this Directive.

(13) Directive 2014/32/EU should therefore be amended accordingly,

HAVE ADOPTED THIS DIRECTIVE:

PUBLIC

Article 1

Directive 2014/32/EU is amended as follows:

(1) in Article 2, paragraph 1 is replaced by the following:

‘1. This Directive applies to the measuring instruments defined in the instrument-specific Annexes III to XII (‘instrument-specific Annexes’) concerning water meters (MI-001), gas meters~~,~~ **and** ~~and~~ conversion devices ~~**and gas calorific value determining devices**~~ (MI-002), active electrical energy meters (MI-003), measuring systems for electric vehicle supply equipment (MI-~~003a~~**011**), thermal energy meters (MI-004), measuring systems for continuous and dynamic measurement of quantities of liquids other than water (MI-005), measuring systems for compressed gas dispensers (MI-~~005a~~**012**), automatic weighing instruments (MI-006), taximeters (MI-007), material measures (MI-008), dimensional measuring instruments (MI-009) and exhaust gas analysers (MI-010).’;

(2) Annex I is amended in accordance with Annex I to this Directive;

(3) Annex IV is amended in accordance with Annex II to this Directive;

(4) Annex V is amended in accordance with Annex III to this Directive;

(5) Annex Va is inserted as set out in Annex IV to this Directive;

(6) Annex VI is amended in accordance with Annex V to this Directive;

(7) Annex VIIa is inserted as set out in Annex VI to this Directive.

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Article 2

1. By way of derogation from Article 7(2) of Directive 2014/32/EU, Member States shall not impede the making available on the market and putting into use of measuring instruments that are in conformity with **that** Directive ~~2014/32/EU in the version in force~~ on [*OP please insert the date = the date of 1 day before of entry into force of this Directive*] and that have been placed on the market before [*OP please insert the date = [27~~4~~ months] after the date of entry into force of this Directive*]**, or that are covered by certificates that are valid in accordance with paragraph 2 of this Article and that have been placed on the market before [*OP please insert the date = [27 months] after the date of entry into force of this Directive*]**.

2. By way of derogation from Article 7(2) of Directive 2014/32/EU, certificates issued under ~~**that**~~ Directive **2014/32/EU before [*OP please insert the date = date of entry into force of this amending Directive*]** ~~2014/32/EU **in the version in force on before [*OP please insert the date = date of entry into force of this amending Directive*]**~~ and national certificates~~,~~ covering measuring instruments **that fall** ~~that fall~~ **with**in the scope of ~~**that**~~ Directive **2014/32/EU, as amended on [*OP please insert the date = date of entry into force of this amending Directive*]** ~~2014/32/EU from **before that date** [*OP please insert the date = date of entry into force of this Directive*] and that have been placed on the market before [*OP please insert the date = 24 months after the date of entry into force of this Directive*]~~, shall remain valid until the expiry of their validity, and in any case no longer than until [*OP please insert the date = 12 years from the date of entry into force of this Directive]*.

Article 3

1. Member States shall adopt and publish, by *[Note to PO: insert exact date – [~~12~~ **15** months] after entry into force of this Directive]* ~~at the latest~~, the laws, regulations and administrative provisions necessary to comply with this Directive. They shall forthwith communicate to the Commission the text of those provisions.

   They shall apply those provisions from *[Note to PO: insert exact date – [~~24~~ **27** months] after entry into force of this Directive]*.

   When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Article 4

This Directive shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

Article 5

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament	*For the Council*
The President	The President

PUBLIC

ANNEX I

Annex I to Directive 2014/32/EU is amended as follows:

(1) in part 'DEFINITIONS', in the table, seventh row, second column, ~~of the table~~, ~~in the definition of 'Direct sales' is replaced by the following sentence is added at the end of the~~ third indent is replaced by the following:

~~'A trading transaction is direct sales if:~~

~~— the measurement result serves as the basis for the price to pay; and~~

~~— at least one of the parties involved in the transaction related to measurement is a consumer or any other party requiring a similar level of protection; and~~

—'— all the parties in the transaction accept the measurement result at that time and place; ~~.~~ **fFor measuring systems for compressed gas dispensers and for measuring systems for electric vehicle supply equipment,** all the parties in the transaction accept the measurement result at the time the measurement is concluded~~,~~';

~~(2) point 10.2. is replaced by the following:~~

~~'10.2. The indication of any result shall be clear and unambiguous, protected against accidental deletion, 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 metrologically controlled indications.';~~

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(2~~3~~) the following points ~~10.6., 10.7., and 10.8.~~ are added:

‘10.6. By way of derogation from points 10.1. and 10.5., for gas **meters** and electricity meters, ~~measuring systems for electric vehicle supply equipment (‘EVSE’) and measuring systems for compressed gas dispensers~~ the following shall apply:

Indication of ~~The measuring instruments shall use one or more of the following technical solutions to indicate~~ the measurement result **and other ~~relevant~~ data relevant to that result shall be accessible without tools by one or more of the following means**:

(a) ~~be fitted with~~ a metrologically controlled **local** display, ~~readout and/or~~ print **or ~~e~~record** ~~accessible without tools to present the relevant data~~;

(b) ~~present the relevant data on~~ a remote display ~~accessible without tools or on a device of the consumer or end-user~~.

By way of derogation from points 10.1. and 10.5., for measuring systems for electric vehicle supply equipment (‘EVSE’) and measuring systems for compressed gas dispensers, the following shall apply:

Indication of the measurement result and other ~~relevant~~ data relevant to this result shall be accessible without tools by one or more of the following means:

(a) a metrologically controlled local display, print or record;

(b) a remote display;

(c) a device of the consumer or end-user.

The presented **measurement** result~~s~~ shall be traceable to the measuring instrument under metrological control. Security measures shall provide evidence of tampering.

The **presented** measurement result ~~presented by the respective technical solution~~ shall serve as the basis for the price to pay, ~~when~~ **if** applicable.

~~The data may be made available, in addition, by means of metrologically controlled remote channel.~~

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~~10.7. By way of derogation from point 10.4., for measuring systems for EVSE and measuring systems for compressed gas dispensers, the measurement **results** and **other relevant** data shall be fully established in a device or a system so that it can be immediately presented to the consumer**securely stored and made available to the consumer immediately upon completion of the measurement process**.~~

~~10.8. By way of derogation from point 10.4., measuring systems for EVSE shall be designed to present the measurement result to all parties in the transaction when installed as intended.'.~~

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ANNEX II

Annex IV to Directive 2014/32/EU is amended as follows:

(1) the title is replaced by the following:

‘**GAS METERS~~,~~ AND ~~AND~~ CONVERSION DEVICES ~~AND GAS CALORIFIC VALUE DETERMINING DEVICES~~ (MI-002)**’;

(2) the first paragraph is replaced by the following:

‘The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to gas meters and conversion devices defined in this Annex, intended for residential, commercial and light industrial use.’;

(3) in part ‘**DEFINITIONS**’, the table is amended as follows:

(a) in the first row, the ~~definition of ‘Gas meter’~~**wording in the second column** is replaced by the following:

‘An instrument designed to measure **and~~,~~ to ensure the memorisation and display of** ~~memorise and display~~ the quantity of fuel gas (volume or mass) **that has passed through it** and~~/or~~**, if applicable, the quantity of its** energy ~~of that gas that has passed~~ **through** ~~it, and to ensure the recording and display of those quantities that have passed through it~~.’;

(b) in the second row, **the wording in the** first column~~, the term ‘Conversion device’~~ is replaced by the following:

‘Volume conversion device’;

(c) the following rows are added:

~~‘Associated measuring instrument~~	~~An instrument connected to the calculator for measuring certain quantities, which are characteristic of the gas, with a view to make a correction and/or conversion.~~
~~‘~~Gas calorific value determining device	An ~~associated measuring~~ instrument **connected to or integrated in the energy conversion device** for determining the calorific value of gas that has passed **through** it.
Energy conversion device	A device ~~which calculates, integrates and displays~~ **that converts the quantity measured to** energy using the mass or the volume at base conditions, and the superior~~/~~gross calorific value.

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Superior/gross calorific value	Amount of heat that would be released by the complete combustion with oxygen of a specified quantity of gas, in such a way that the pressure, p_1, at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature, t_1, equal to that of the reactants, all of those products being in the gaseous state except for water, which is condensed to the liquid state at t_1.’;

(4) Part I is amended as follows:

(a) point 1.1. is replaced by the following:

‘The flowrate range of the gas shall fulfil at least the following conditions:

Class	Q_{max}/Q_{min}	Q_{max}/Q_t	Q_r/Q_{max}
1,5	≥ 150	≥ 10	1,2
1,0	≥ 10	≥ 5	1,2

If a gas meter has multiple gas application-dependent flow rate ranges, all ~~of those~~**such flow rate ranges** shall be inscribed on the meter, accompanied by a clear description of the gas application.’;

(b) ~~the introductory sentence of~~ **in** point 3.1.1.**, the introductory sentence** is replaced by the following:

‘The effect of an electromagnetic disturbance on a gas meter, conversion device or gas calorific value determining device shall be such that:’;

(c) in point 6, the following paragraph is added :

‘Quantity of energy shall be displayed in joules or in watt-hours **or their decimal multiples**.’;

(5) Part II is amended as follows:

(a) the title is replaced by the following:

‘SPECIFIC REQUIREMENTS

CONVERSION DEVICES’;

(b) the first **and second** paragraph**s** ~~and the introductory sentence of the second paragraph~~ are replaced by the following:

‘A conversion device constitutes a sub-assembly when it is together with a measuring instrument with which it is compatible.

For a conversion device, the essential requirements for the gas meter shall apply, if applicable. **In addition, the following requirements shall apply:**’;

(c) point 8 is amended as follows:

(i) the title is replaced by the following:

‘**MPE for volume conversions~~ devices~~’**;

(ii) the note to point 8 is replaced by the following:

‘Note:

The errors of the gas meter and, if applicable, of the gas calorific value determining device are not taken into account.

The conversion device shall not exploit the MPEs or systematically favour any party.’;

(d) the following point is inserted:

‘8a. MPE for energy conversion devices

The MPE~~, positive or negative,~~ of the conversion calculation of energy~~,~~ is equal to 0,05 %.’;

(6) the following Part IIa is inserted:

‘**PART IIa**

SPECIFIC REQUIREMENTS

GAS CALORIFIC VALUE DETERMINING DEVICES

A gas calorific value determining device **sends, locally or remotely, signals to the energy conversion device**~~is either of the following:~~

~~(a) it is locally installed and sends signals directly to the energy conversion device; **or**~~

~~(b) it is not locally installed and is considered as an external transducer~~.

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For a gas calorific value determining device, the essential requirements for the gas meter shall apply, where applicable. In addition, the following requirements shall apply:

9a. Base conditions ~~for converted quantities~~for converted quantities

The manufacturer shall specify the following:

– the range for gas chemical composition;

– the base conditions for calorific value and ~~**relevant** converted~~ **converted** quantities.

9b. MPE

Class	0,5	1,0
MPE	0,5 %	1**,0** %

The gas calorific value determining device shall not exploit the MPEs or systematically favour any party.

9c. Permissible effect of disturbances

The critical change value is the greater of the two following values:

– one fifth of the magnitude of the MPE for the calorific value;

– two scale intervals of the gas calorific value determining device.

9d. Durability

After an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following two criteria shall be satisfied:

– the variation of the measurement result after the durability test when compared with the initial measurement result shall not exceed half of the magnitude of the MPE; **and**

– the error of indication after the durability test shall not exceed the MPE.

9e. Suitability

A gas calorific value determining device shall be capable of detecting when it is operating outside the operating ranges stated by the manufacturer for parameters that shall be registered for

measurement accuracy. In such a case, the gas calorific value determining device shall register the following:

(a) that the gas calorific value is not relevant;

(b) that the gas calorific value determining device operates outside the operating range.

9f. Units

Calorific value shall be displayed in joules and/or watt-hours**, or their decimal multiples,** per unit of mass or volume at base conditions.’.

PUBLIC

ANNEX III

Annex V to Directive 2014/32/EU is amended as follows:

(1) in part '**DEFINITIONS**', the introductory sentence is replaced by the following:

'An active electrical energy meter is an instrument ~~which measures~~**designed to measure and to ensure the memorisation and display of** the active electrical energy consumed in a circuit or transferred between circuits.';

(2) in part '**DEFINITIONS**', in the table, **row three and four, and** the last three rows are replaced by the following:

Ist	**=**	**the lowest declared value of I at which the meter registers active electrical energy, and, for AC, at unity power factor (polyphase measuring systems with balanced load);**
Imin	**=**	**the value of I above which the error lies within maximum permissible errors (MPEs) (for AC, polyphase meters measuring systems with balanced load);**
'f	=	the frequency of the voltage supplied to the meter, for alternating current ('AC') electrical energy meters;
f_n	=	the specified reference frequency, for AC electrical energy meters;
PF	=	power factor = cosφ = the cosine of the phase difference φ between I and U, for AC electrical energy meters.';

(3) in point 2, the last two paragraphs are replaced by the following:

'The **MPE requirements that the meter shall satisfy depending on the** operating ranges ~~within which the meter shall satisfy the MPE requirements~~ are specified in Table 2.

For AC electrical energy meters, the voltage, frequency and power factor ranges shall be ~~**at least**~~:

– $0{,}9 \cdot U_n \leq U \leq 1{,}1 \cdot U_n$;

– $0{,}98 \cdot f_n \leq f \leq 1{,}02 \cdot f_n$;

– $0{,}5\ inductive \leq PF \leq \mathbf{1}$ ***and*** $0{,}8\ capacitive \leq \boldsymbol{PF} \leq \mathbf{1}$.

For direct current ('DC') electrical energy meters, the voltage range shall be ~~**at least**~~ between the lowest and the highest ~~output~~ voltage **of the meter**.';

(4) in point 3, the second paragraph is replaced by the following:

‘When the meter is operating within rated operating conditions, the percentage errors shall not exceed the limits given in Table 2.’;

(4a) in table 2, in the fifth row, the wording ‘Single phase meter; polyphase meter if operating with balanced loads’ is replaced by ‘Single phase meter; polyphase meter if operating with balanced loads; DC electrical energy meter’;

(5) in Table 2, in the third row, fifth column, the wording ‘– 40 °C … – 25 °C or + 55 °C … + 70 °C’ is replaced by the following:

‘below – 25 °C or above + 55 °C’;

(6) in point 4.1., ~~the~~**first and** second ~~and third~~ paragraph~~s~~ ~~are~~ ~~is~~ **are** replaced by the following:

‘**As electrical energy meters are directly connected to the electrical supply and as current is also one of the measurands, a special electromagnetic environment is used for electrical energy meters.**

The meter shall comply with the electromagnetic environment E2 for AC **electrical energy meters and DC** electrical energy meters ~~and E1 for DC electrical energy meters~~, as well as with the additional requirements **set out** in points 4.2. and 4.3.**’;**

~~The electromagnetic environment and permissible effects reflect the situation that there are disturbances which shall not affect the accuracy beyond the critical change values and transient disturbances, which may cause a temporary degradation or loss of function or performance but from which the meter shall recover and shall not affect the accuracy beyond the critical change values’;~~

(7) point 4.2. is amended as follows:

(a) in the fifth row, first column, of Table 3, the wording ‘Harmonic contents in the current circuits (^{2})’ is replaced by the following:

‘Harmonic contents in the current circuits (^{2}), for ~~alternating current (‘~~AC’~~)~~ electrical energy meters’;

(b) in the sixth row, first column, of Table 3, the wording ‘DC and harmonics in the current circuit (^{2})’ is replaced by the following:

'DC and harmonics in the current circuit ([2]), for ~~alternating current (~~'AC'~~)~~ electrical energy meters';

(ba) in the third row, first column, of Table 3, the wording 'Reversed phase sequence' is replaced by the following:

'Reversed phase sequence, for AC electrical energy meters';

(8) points 5.4. and 5.5. are replaced by the following:

'**5.4.** ***Running with no load***

When the voltage is applied without any current flowing in the current circuit, the meter shall not register any energy.

5.5. ***Starting***

The meter shall start and continue to register at a rate of change of energy equal to the product of the smallest voltage within the rated operating conditions and I_{st}.'.

PUBLIC

ANNEX IV

'ANNEX Va

MEASURING SYSTEMS FOR ELECTRIC VEHICLE SUPPLY EQUIPMENT (MI-~~003a~~011)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to measuring systems for EVSE ~~intended for residential, commercial and light industrial use~~.

~~**By way of derogation from point 10.4. of Annex I, measuring systems for EVSE shall be designed to present the measurement result to all parties in the transaction when installed as intended.**~~

DEFINITIONS

A measuring system for EVSE means a system that includes all relevant metrological functions related to the **conductive** transfer (either ~~way~~**direction**), at a specified transfer point, of **active** electrical energy between EVSE (such as charging stations for electric vehicles) and electric vehicles **(such as motor vehicles, rail engines, boats, vessels and aircraft)**.

~~However, by way of derogation from Annex I, s~~**S**uch measuring systems shall not be considered as utility measuring instruments **as defined in Annex I**.

The metrological functions in a m~~M~~easuring system~~s~~ for EVSE can also **be** ~~have their basic metrology~~ provided by **an active electrical energy meter for which a conformity assessment procedure has been successfully completed in accordance with this Directive** ~~a separately type approved meter which has been tested for compliance with a recognised metering standard with equal or more stringent requirements~~.

I	=	the electrical current flowing through the measuring system for EVSE at the transfer point;
I_{st}	=	the lowest declared value of I at which the measuring system for EVSE registers electrical energy**, and, for AC,** ~~-~~ at unity power factor (polyphase measuring systems with balanced load);
I_{min}	=	the value of I above which the error lies within **base** maximum permissible errors (**B**MPEs) (**for AC,** polyphase ~~meters~~ **measuring systems** with balanced load);

I_{tr}	=	the value of I above which the error lies within the smallest **B**MPE corresponding to the class index of the measuring system for EVSE;
I_{max}	=	the maximum value of I for which the error lies within the **B**MPEs;
U	=	for AC, root mean square (RMS) value of the electrical voltage ~~sua~~applied to or from the measuring system for EVSE at the transfer point; for DC, value of the electrical voltage supplied to or from the measuring system for EVSE at the transfer point;
U_n	=	the specified reference voltage(s);
~~F~~**f**	=	the frequency of the voltage supplied to or from the measuring system for EVSE, for AC measuring systems;
f_n	=	the specified reference frequency, for AC measuring systems;
PF	=	power factor = cosφ = the cosine of the phase difference φ between I and U, for AC measuring systems;
~~ripple~~	~~=~~	~~peak-to-peak deviation from the nominal voltage signal expressed as a percentage of the reference value, for DC measuring systems;~~
harmonic	=	part of a signal that has a frequency that is an integer multiple of the fundamental frequency of the power input to the measuring system for EVSE, the fundamental frequency being, generally, the nominal frequency, f_{nom}, for AC measuring systems;
~~D~~**d**	=	distortion factor which is the ratio of the RMS value of the harmonic content ~~(obtained by subtracting the fundamental term from a non-sinusoidal alternating quantity)~~ to the RMS value of the fundamental term, and which is equal to the total harmonic distortion using the fundamental as the reference ~~(denominator)~~**, for AC measuring systems**;
MMQ	=	minimum measured quantity of energy delivered in a transaction for which the manufacturer specifies that the measuring system for EVSE will meet the MPE of the measuring system for EVSE's accuracy class;
transfer point	=	point at which an electric vehicle is connected to the **measuring system of the** EVSE ~~(i.e. the charging station for electric vehicle)~~.
~~**installer**~~	~~=~~	~~**a natural or legal person designated or authorised to install the cable in accordance with national legislation.**~~

PUBLIC

critical fault	**=**	**failure of the device when subjected to a disturbance in which the device appears to function correctly, but where the legally relevant data is incorrect or the shift in the accuracy measurements exceeds that specified in the tests. ~~Ceasing to function is not a critical fault.~~**
Base Maximum Permissible Error (BMPE)	**=**	**extreme values of the error (of indication) of an EVSE, when the current is varied (AC and DC EVSE) and voltage (DC EVSE) within the intervals given by the rated operating conditions, and when the EVSE is otherwise operated at reference conditions**

SPECIFIC REQUIREMENTS

1. Accuracy

The manufacturer shall specify the class index of the measuring system for EVSE. The class indices are defined as: Class A, B and C.

Accuracy shall be determined at the transfer point.

If energy exchanged at the transfer point is in the form of DC, then DC energy shall be the measurand; if AC energy is exchanged at the transfer point, then AC **active** energy shall be the measurand.

2. Rated operating conditions

The manufacturer shall specify the rated operating conditions of the measuring system for EVSE, in particular, the values of f_n, U_n, I_{st}, I_{min}, I_{tr} and I_{max}**, the temperature range, and, for DC measuring systems, the output voltage range ~~for DC measuring systems~~** ~~that apply to the measuring system for EVSE~~.

For the current values specified, the measuring system for EVSE shall fulfil the conditions given in Table 1:

Table 1

	AC	**AC**	**DC**	**DC**
I_{min}	$\leq I_{tr}$	$\leq I_{tr}$	$\leq I_{tr}$	$\leq I_{tr}$
I_{tr}	$\leq 5\ A$	$\leq 0{,}1 \cdot I_{max}$	$\leq 25\ A$	$\leq 0{,}1 \cdot I_{max}$

I_{max}	$\leq 80\ A$	$> 80\ A$	$\leq 500\ A$	$> 500\ A$

The voltage, frequency and power factor ranges within which the measuring system for EVSE shall satisfy the **B**MPE requirements are specified in Table 2.

For AC measuring systems, the following shall apply:

– the voltage range shall be: $0{,}9 \cdot U_n \leq U \leq 1{,}1 \cdot U_n$;

– the frequency range shall be: $0{,}98 \cdot f_n \leq f \leq 1{,}02 \cdot f_n$;

– the power factor range shall be: $PF \geq 0{,}9$;

– the measuring system for EVSE shall operate correctly when the supply voltage distortion is less than 10 % and the load current distortion is less than 3 % at all harmonics indices;

– the MMQ range shall be: $MMQ \leq 0{,}1\ kWh$.

For DC measuring systems, the following shall apply:

– the **output** voltage range -shall be between the lowest and the highest **rated** output voltage **of the EVSE measuring system**;

~~– while the measuring system for EVSE shall only measure energy having frequencies up to 2 kHz, the ripple produced on the output of the measuring system for EVSE shall not exceed:~~

~~– 1,5 A below 10 Hz, 6 A below 5 kHz, and 9 A below 150 kHz at maximum rated power and maximum rated current or where the output voltage and current correspond to the maximum current ripple for current; and~~

~~– ±5 V in normal operation for voltage, while the measuring system for EVSE shall only measure energy having frequencies up to 2 kHz;~~

– the MMQ range shall be: $MMQ \leq 1\ kWh$.

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3. Base MPEs (BMPEs)

When **current (AC and DC measuring systems) and voltage (DC measuring systems) is varied within the intervals given by the rated operating conditions, and when** the measuring system for EVSE is **otherwise** operate**d**~~ing~~ **at** ~~under rated operating~~ **reference** conditions, the percentage errors shall not exceed the limits given in Table 2 for the specified class index.

Table 2

		BMPEs in percent at ~~rated operating~~ reference conditions and defined load current levels		
Current	**Power factor (only for AC)**	**A (2 %)**	**B (1 %)**	**C (0,5 %)**
$I_{st} \leq I < I_{min}$	*> 0,9*	*± 25*	*± 15*	*± 10*
$I_{min} \leq I < I_{tr}$	*> 0,9*	*± 2,5*	*± 1,5*	*± 1*
$I_{tr} \leq I < I_{max}$	*> 0,9*	*± 2*	*± 1*	*± 0,5*

The measuring system for EVSE shall not exploit the BMPEs or systematically favour any party.

4. Operating requirements

For~~A~~ measuring system**s** for EVSE ~~that applies corrections to compensate for energy loss introduced by parts comprising~~ **including** a cable and connector mounted between the ~~position~~ **point** at which the energy is measured and the transfer point**,**~~ shall do~~ either of the following **shall apply**:

(a) ~~ensure that~~ those ~~parts~~ **cable and connector** are not replaceable and ~~that they~~ are secured by an appropriate hardware seal; **or**

(b) if those ~~parts~~ **cable and connector** are intended to be replaceable while the measuring system for EVSE is under seal, ~~ensure, that~~ they ~~are~~**shall be**:

– identified in the **relevant conformity assessment** ~~type approval certificate~~ as ~~replaceable~~**interchangeable and that interchangeability shall not affect compliance with the BMPEs of the declared accuracy class at the transfer point throughout the rated operating conditions**;

– marked with ~~information about~~ the**ir** ~~cable~~ characteristics and~~/or that they bear a~~ unique identification; **and their replacement units shall also bear such marking; and**

– sealed separately ~~with an installer seal~~ **in such a way that the replacement does not require access to, or breaking of, the metrologically sealed parts of the measuring system**.

5. Permissible effects of disturbances

5.1. *General*

Measuring system for EVSE shall be designed and manufactured in such a way that when exposed to disturbances critical faults do not occur **and shifts in accuracy do not exceed the values given in 5.2 and 5.3**.

When there is a foreseeable high risk due to lightning or where overhead supply networks are predominant, the metrological characteristics of the measuring system for EVSE shall be protected.

5.2. *Effect of disturbances*

In case of disturbances, the legally relevant data shall be correct or the shift in the accuracy measurements shall not exceed 1,0 BMPE even if the measuring system for EVSE appears to function correctly. Ceasing to function is not a critical fault. If a disturbance interrupts a transaction, either of the following shall apply:

(a) the transaction is ~~cancelled~~ **concluded when the disturbance occurs**;

(b) the transaction **continues** ~~is completed correctly~~ when the disturbance is removed.

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5.3. *Effect of influence quantities*

When the load current is held constant at a point within the rated operating range with the measuring system for EVSE otherwise operated at reference conditions, and when any single influence quantity is varied from its value at reference conditions to its extreme values defined in Tables 3 and 4, the variation of error shall be such that the additional percentage error is not outside the values for error shift specified in Table**s 3 and** 4. The measuring system for EVSE shall continue to function after the completion of each of those tests.

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Table 3

Influence quantity	**Current**	**Limits for temperature coefficient (%/K) for measuring system for EVSE of class**			**Type of Current**
		A (2 %)	**B (1 %)**	**C (0,5 %)**	
Temperature coefficient, c, over any interval of the temperature range, which is not less than 15 K and not greater than 23 K (i)	$I_{tr} \leq I \leq I_{max}$	±0,1	±0,05	±0,03	AC and DC

Table 4

Influence quantity	**Value**	**Current**	**Maximum permissible error shift (%) for measuring system for EVSE of class**			**Type of Current**
			A (2 %)	**B (1 %)**	**C (0,5 %)**	
Self-heating	Continuous current at I_{max}	I_{max}	±1	±0,5	±0,25	AC and DC
Conducted disturbances, low frequency	2 kHz – 150 kHz	$I_{tr} \leq I \leq I_{max}$	±3	±2	±2	AC and DC
Continuous (DC) magnetic	200 mT at 30 mm from	$I_{tr} \leq I \leq I_{max}$	±3	±1,5	±0,75	AC and DC

induction of external origin	magnetic core surface					
Magnetic field (AC, power frequency) of external origin (ii)	400 A/m	$I_{tr} \leq I \leq I_{max}$	±2,5	±1,3	±0,5	AC and DC
Radiated, RF, electromagnetic fields	f = 80 MHz – 6000 MHz, Field strength ≤ 10 V/m	$I_{tr} \leq I \leq I_{max}$	±3	±2	±1	AC and DC
Conducted disturbances, induced by radio frequency fields (ii)	f = 0,15 MHz – 80 MHz, Amplitude ≤ 10 V	$I_{tr} \leq I \leq I_{max}$	±3	±2	±1	AC and DC
Operation of ancillary devices	Ancillary devices operated with $I = I_{tr}$ and I_{max}	$I_{tr} \leq I \leq I_{max}$	±0,7	±0,3	±0,15	AC and DC
Voltage variation (ii)	0,9 × U_n to 1,1 × highest U_n	$I_{tr} \leq I \leq I_{max}$	±1	±0,7	±0,2	AC
Frequency variation of mains (ii)	Each f_n ± 2 %	$I_{tr} \leq I \leq I_{max}$	±0,8	±0,5	±0,2	AC
Harmonics in voltage and current circuits (ii)	d < 5 % I d < 10 % U	$I_{tr} \leq I \leq I_{max}$	±1	±0,6	±0,3	AC
Reversed phase sequence (AC 3-phase only) (ii)	Any two phases interchanged	$I_{tr} \leq I \leq I_{max}$	±1,5	±1,5	±0,1	AC

Table notes:

(i) In case of a measuring system for EVSE with **an active electrical energy meter for which a conformity assessment procedure has been successfully completed in accordance with this Directive**~~a separately type approved meter~~, the temperature test can be limited to a check of correct functioning at the extreme temperatures foreseen in the measuring system for EVSE enclosure.

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(ii) Not required for **a** measuring **system** for EVSE ~~system~~ with **an active electrical energy meter for which a conformity assessment procedure has been successfully completed in accordance with this Directive** ~~separately type approved meter~~ if the ~~type approval~~ specifications meet or exceed those of the accuracy class specified by the manufacturer.

6. Units

The electrical energy measured shall be displayed in kilowatt-hours or ~~in megawatt hours~~**their decimal multiples**.

7. Putting into use

The Member State shall ensure that the intended use determines the foreseen and foreseeable practical working conditions, namely the rated operating conditions, so that the measuring system for EVSE is suitable for its use.

Where a Member State imposes measurement of publicly accessible EVSE such measurement shall be performed by minimum Class B.

Where a Member State imposes measurement of rail engines, boats, vessels and aircraft such measurements shall be performed by Class C.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:

B + F or B + D **or G** or H1.

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ANNEX V

Annex VI to Directive 2014/32/EU is amended as follows:

(1) the part '**DEFINITIONS**' is amended as follows:

(a) the first paragraph is replaced by the following:

'A thermal energy meter is an instrument designed to measure the energy which in a heat-exchange circuit is absorbed (cooling) and/or given up (heating) by a liquid called the thermal energy-conveying liquid.';

(b) in the table, the fourth row is replaced by the following:

'$\Delta\theta$	=	the temperature difference θ_{in} - θ_{out} with $\Delta\theta \geq 0$ for heating and $\Delta\theta \leq 0$ for cooling';

(2) point 1.1. is replaced by the following:

'1.1. For the temperature of the liquid: θ_{max}, θ_{min},

— for the temperature differences: $\Delta\theta_{max}$, $\Delta\theta_{min}$, subject to the following restrictions:

$\Delta\theta_{max} / \Delta\theta_{min} \geq 10$ with the exception of cooling applications;

$\Delta\theta_{min}$ is a whole number in the range of 1 K and 10 K';

(3) point 1.3. is replaced by the following:

'1.3. For the flow rates of the liquid: q_s, q_p, q_i, where the values of q_p and q_i are subject to the following restriction: $q_p / q_i \geq 5$'.

ANNEX VI

'ANNEX VIIa

MEASURING SYSTEMS FOR COMPRESSED GAS DISPENSERS (MI-~~005a~~012)

The relevant requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in this Annex apply to measuring systems intended for the continuous and dynamic measurement of quantities (mass ~~or~~ **and, if applicable,** energy) of compressed gas.

~~However, by way of derogation from Annex I, s~~**S**uch measuring systems shall not be considered as utility measuring instruments **as defined in Annex I**.

DEFINITIONS

Meter	An instrument designed to measure continuously **and to ensure the memorisation and display of**~~, memorise and display~~ the quantity **of gas,** at metering conditions**,** ~~of gas~~ flowing through the measurement transducer in a closed, fully charged conduit.
Calculator	A part of a meter that receives the output signals from the measurement transducers and possibly, from associated measuring instruments and displays the measurement results.
Associated measuring instrument	An instrument connected to the calculator for measuring certain quantities, which are characteristic of the gas, with a view to make a correction and/or conversion.
Conversion device	A part of the calculator, which by taking into account the characteristics of the gas, automatically converts the mass of the gas into the amount of energy delivered or received.
Measuring system	A system that comprises, in addition to the meter itself, a transfer point, gas piping and all devices required to ensure correct measurement or intended to facilitate the measuring operations.
Compressed gas ('CG') dispenser	A measuring system intended for the fuelling of ~~road~~ **motor** vehicles, rail engines, boats, vessels and aircraft with compressed gaseous fuel.
Transfer point	Physical location at which the gas is defined as being delivered or received.
~~Self-service arrangement~~	~~An arrangement that allows customers to use a measuring system for the purpose of obtaining gas for their own use.~~
Self-service arrangement	**An arrangement that allows customers to use a measuring system for the purpose of obtaining gas for their own use.**
~~Self-service device~~	~~A specific device that is part of a self-service arrangement and which allows one or more measuring systems to perform in that self-service arrangement.~~

Self-service device	**A specific device that is part of a self-service arrangement and that allows one or more measuring systems to perform in that self-service arrangement.**
Minimum measured quantity ('MMQ')	The smallest quantity of gas for which the measurement is metrologically acceptable for the measuring system.
Direct indication	The indication of mass ~~or~~**and, if applicable**, energy, corresponding to the measure and that the meter is physically capable of measuring. Note: The direct indication may be converted into another quantity using a conversion device.
Interruptible	A measuring system is considered as interruptible when the gas flow can be stopped easily and rapidly.
Non-interruptible	A measuring system is considered as non-interruptible when the gas flow cannot be stopped easily and rapidly.
Flowrate range	The range between the minimum flowrate (Q_{min}) and maximum flowrate (Q_{max}).

SPECIFIC REQUIREMENTS

1. Rated operating conditions

The manufacturer shall specify the rated operating conditions for the instrument, in particular:

1.1. The flowrate range

The flowrate range is subject to the following conditions:

(a) the flowrate range of a measuring system shall be within the flowrate range of each of its elements, in particular the meter**; and**

(b) ~~for CG dispensers,~~ the ratio between the minimum and maximum flow rate shall be no less than 10.

1.2. The properties of the gas to be measured by the instrument by specifying the name, the type or the following relevant characteristics of that gas**,** such as:

(a) temperature range;

(b) pressure range;

(c) **the calorific value of the gas;**~~heating value of the gas~~;

(d) the nature and characteristics of the gas to be measured.

1.3. The nominal value of the AC voltage supply and/or limits of the DC voltage supply.

2. Accuracy classification and MPEs

2.1. The MPE on the indication of measured or converted amounts transferred at the transfer point is set out in Table 1.

Table 1

Type of compressed gas measuring systems	Accuracy Class (MPE [% of measured value])
Compressed hydrogen measuring systems	2**,0**
Other compressed gas measuring systems	1,5

The MPE on the MMQ equals twice the value stated in Table 1.

2.2. The MMQ of a measuring system shall have the form 1×10^n, 2×10^n, or 5×10^n authorised units of mass or energy, where n is a positive or negative whole number, or zero.

The MMQ shall satisfy the conditions of use of the measuring system; except in exceptional cases, the measuring system shall not be used for measuring quantities less than that MMQ.

2.3. The measuring system shall not exploit the MPEs or systematically favour any party.

3. Maximum permissible effect of disturbances

3.1. The effect of an electromagnetic disturbance on a measuring system shall be one of the following:

(a) the change in the measurement result is not greater than the critical change value pursuant to point 3.2;

(b) the indication of the measurement result shows a momentary variation that cannot be interpreted, memorised or transmitted as a measurement result; furthermore, in the case of an interruptible system, that can also mean the impossibility to perform any measurement; **or**

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(c) the change in the measurement result is greater than the critical change value pursuant to point 3.2, in which case the measuring system shall permit the retrieval of the measurement result just before the critical change value occurred and cut off the flow.

3.2. The critical change value is the greater of the following values:

— ~~one tenth~~**10 %** of the MPE;

— ~~three times~~**3 % of** the MMQ ~~divided by 100~~; in the case of a failure of the main power source, the critical change value shall be increased by 5 % of the MMQ.

4. Durability

For systems fitted with meters with moving parts, after an appropriate test, taking into account the period of time estimated by the manufacturer, has been performed, the following criterion shall be satisfied:

The variation of the measurement result after the durability test, when compared with the initial measurement result, shall not exceed two fifths of the MPE.

5. Suitability

5.1. For any measured quantity relating to the same measurement, the indications and, if applicable, printouts provided by **various devices**~~various devices~~ ~~**the measuring system,**~~ **including the ones that are part of a self-service arrangement,** shall have the same scale interval and the results shall not deviate one from another.

The scale interval of a CG measuring system shall not exceed ~~one and a half times~~**1,5 % of** the MMQ ~~divided by 100~~.

5.2. It shall not be possible to divert the measured quantity in normal conditions of use unless it is readily apparent.

5.3. During the warm-up time of the CG measuring system, no measurements shall take place.

5.4. ***Instruments for direct sales***

5.4.1. A measuring system for direct sales shall be provided with means for resetting the display to zero.

It shall not be possible to divert measured gas downstream of the meter during a filling operation.

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5.4.2. The display of the quantity on which the transaction is based shall be permanent until all parties in the transaction have accepted the measurement result.

5.4.3. Measuring systems for direct sales shall be interruptible.

5.4.4. Measuring systems for direct sales shall display either in units of mass ~~or~~ **and, if applicable,** energy.

5.5. ~~***CG Dispensers***~~ ***Additional requirements for the display***

5.5.1. It shall not be possible to reset displays on CG dispensers to zero during a measurement.

5.5.2. The start of a new measurement shall be inhibited until the display has been reset to zero.

5.5.3. Where a measuring system is fitted with a price display, the difference between the indicated price and the price calculated from the unit price and the indicated quantity shall not exceed the smallest currency unit. However, that difference need not be less than the smallest monetary value.

6. Power supply failure

A measuring system shall either be provided with an emergency power supply device that will safeguard all measuring functions during the failure of the main power supply device or be equipped with means to save and display the data present in order to permit the conclusion of the transaction in progress and with means to stop the flow of gas at the moment of failure of the main power supply device.

7. Units of measurement

The metered quantity shall be displayed in **kilo**grams, **or their decimal multiples or submultiples,** ~~kilograms,~~ **and, if applicable, in** ~~kilo~~joules~~,~~ ~~megajoules~~ or ~~kilo~~watt-hours**, or their decimal multiples**.

CONFORMITY ASSESSMENT

The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are: B + F or B + D or H1 or G.'.

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