Translation conformal to original text in Italian. In case of any discrepancies, the Italian version shall prevail

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CERTIFICATE

Evaluation Certificate

This Evaluation Certificate is granted to the Organization:

PIUSI S.p.A.

Registered Headquarters
Via Pacinotti, 16/A – 46029 Suzzara (MN) – Italy

Applicable requirements:
- Guide Welmec 8.8 "Guide on the General and Administrative Aspects of the Voluntary System of Modular Evaluation of Measuring instruments" – 2017
- Recommendation OIML R 117-1 "Dynamic measuring systems for liquids other than water" – 2019

Component of the measuring system:
Measuring transducer for volumetric flow meters, intended to be used as part of a dynamic measuring system for liquids other than water

Type:
MK325 5-XX

Accuracy class:
0.5

This Evaluation Certificate is subject to compliance with Kiwa Cermet Italia contractual requirements and is valid only for the component of measuring systems identified above. The main characteristics and conditions of approval are specified in the Technical Annex which is an integral part of this Evaluation Certificate.
Compliance with other applicable directives falls under the responsibility of the manufacturer.
This Evaluation Certificate withdraws and replaces the Evaluation Certificate MID 128_EC_1 rev. 00.
This Evaluation Certificate cannot be reproduced, if not in its integral form.

Industry Division Manager
Maurizio Lorenzon

Digitally signed by: LORENZON MAURIZIO
Date: 20/05/2024 14:03:59

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Technical annex to the Evaluation Certificate

0.1 History of the revisions

Revision	Date of issuance	List of modifications
00	2017-12-20	First issue
01	2024-05-20	Addition of the code F00476 X20 (variant 2) of the measuring transducer

1. General information on the measuring transducer

All the characteristics of the measuring transducer object of this Evaluation Certificate, explicitly or implicitly reported, shall not be in contrast with the applicable legal provisions.

This Evaluation Certificate represents the positive outcome of the application of the voluntary, modular approach, for a component of a measuring instrument, as described in WELMEC guide 8.8.

The complete measuring instrument, in which the device here described is installed, must be included in a suitable certificate of conformity with reference to the applicable regulation.

This Evaluation Certificate describes a range of oval gears measuring transducers with pulse train emission (two square waves 90° out of phase), without display and power supply, intended to be used as components of measuring systems specifically dedicated to the flushing of AUS32 volumes. The transducer is marketed in 2 versions, identified respectively by the codes F00476 X0A (variant 1) and F00476 X20 (variant 2). The appearance of both variants is illustrated in Pict. 1.

1.1. Essential parts

The measuring transducer is placed on the market under the PIUSI brand.

The essential components of the measuring transducer are the following:

- Measuring sensor: oval gear meter, in which the passage of the fluid to be measured rotates two oval gears (90° out of phase) which, in turn, rotating, isolate known volumes of liquid. The measured fluid passes from inlet to outlet through sealed mobile chambers. To identify the number of rotations of the gears, magnets are installed on them. An electronic board, installed in a chamber isolated from that of fluid passage, perceives and processes the passage of the magnetic field generating impulses as output. The system with two magnets per gear and two sensors has the purpose of generating a pulse every half turn of each gear. The phase shift of π/8 mechanics between the two ampoules generates a phase delay of π/4 between the electrical signals; this phase shift between the electrical signals allows the electronics connected to the meter to discriminate the direction of fluid flow and therefore any flow reversals

Other devices to which the measuring transducer can be connected: the measuring transducer is equipped with two reed switches which act as clean contacts, normally open, excited by the magnets mounted on the gears. The measuring transducer can be interfaced with any device capable of discriminating the state of these contacts. The external device is responsible for providing the supply voltage for the circuit. An R-C filter with cut-off frequency Ft = 160 kHz is provided on board. Except in cases of malfunction, interaction hypotheses between devices capable of modifying the measured data are not configurable.

The measuring transducer does not incorporate metrologically significant software.

1.2. Essential characteristics

- Type of measurand: AUS32 (32.5% aqueous urea solution), identified as AdBlue®, DEF or Arla 32
- Viscosity of the measurand: 1.0 / 2.2 mPa s
- Density of the measurand: 0.997 / 1.104 g/cm^3
- Temperature range for the measurand: 0 / +40 °C
- Accuracy class: 0.5
- Minimum measurable quantity (MMQ): 5 L
- Flow rate range Qmax / Qmin: 7:1 for versions 5-35
  6:1 for versions 5-30
- Ambient temperature range: -10 / +40 °C
- Mechanical environment class: M1
- Electromagnetic environment class: E2
- Climatic environment class: H1
- Permitted pressure range: 0.1 / 20 bar

1.2.1. Indicator

Not applicable.

1.3. Essential shapes

1.3.1. Printed tickets

Not applicable.

1.3.2. Inscriptions

As there is no provision for access to the internal components by the user, there are no specific requirements relating to the identification of the main components of the measuring transducer.

1.4. Conditional parts

Not applicable.

1.5. Adjustment parameters

Not applicable.

2. Seals

The legalization plan is reported in Pict. 2.

To prevent access to the hydraulic compartment or to the electronic compartment, an aluminum ball is pressed inside the hexagonal seat of one of the fixing screws that close the body of the measuring transducer.

Only the Manufacturer, or personnel authorized by the Manufacturer, may remove and re-affix this seal after repeating the transducer test cycle.

The measuring transducer is also equipped with a hole for the passage of a lead cable over the head of one of the fixing screws (Pict. 3); this option is used by the manufacturer of the complete measuring system, in which the transducer is installed.

2.1. Plate

At least the following information must be clearly visible on the measuring transducer:

- Company name or trademark of the Manufacturer
- Identification of the transducer model (type)
- Serial number and year of manufacture
- Qmin and Qmax
- Minimum measurable quantity (MMQ)
- Accuracy class
- Pressure range of use
- Physical characteristics of the product to be measured (viscosity)
- Characteristics of the output signals emitted

The Manufacturer may also include a reference to this Evaluation Certificate.

Examples of identification plates for each variant of the measuring transducer are shown in Pict. 4. Other formats may be used, without the need to revise this Evaluation Certificate, provided they contain all the data listed above.

3. Conformity assessment conditions

Once installed on the complete measuring system, the measuring transducer must be calibrated before use, if possible using the product to be measured, under operating conditions of temperature and pressure compatible with what reported in par. 1.2. This operation is carried out following the procedure indicated in the PIUSI Bulletin MO441C IT-00 Installation, use and maintenance manual.
This operation can be carried out at the place of installation, or at a test site.

If the measuring transducer is installed in a complete measuring system that falls within the scope of legal metrology, seals shall be applied as described in par. 2, and the identification plate shall contain the information listed in par. 2.1.

The metrological performance of the complete measuring system shall be subject to specific verification, according to the applicable requirements.

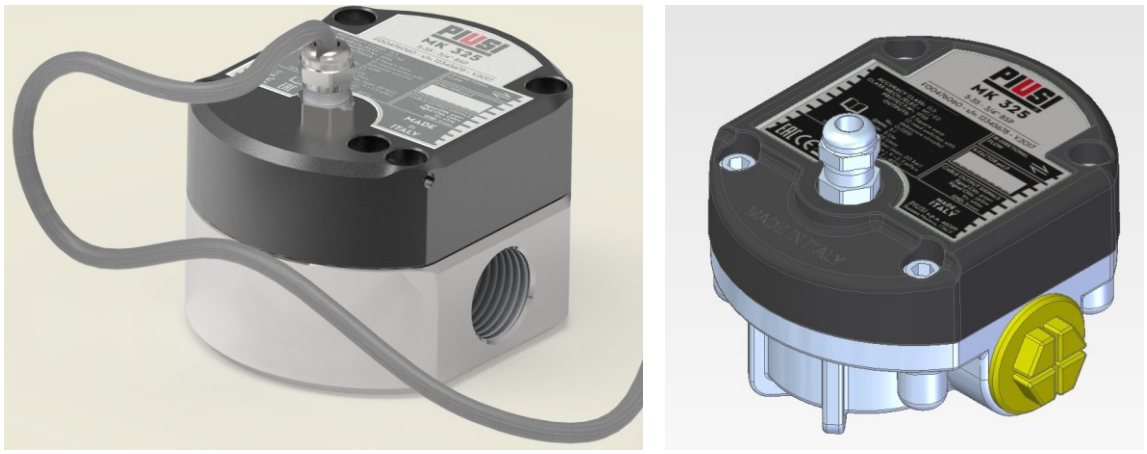
Other manufacturers may make use of this Evaluation Certificate and its supporting technical documentation only with the written authorization of PIUSI S.p.A. .

4. Technical documentation of reference

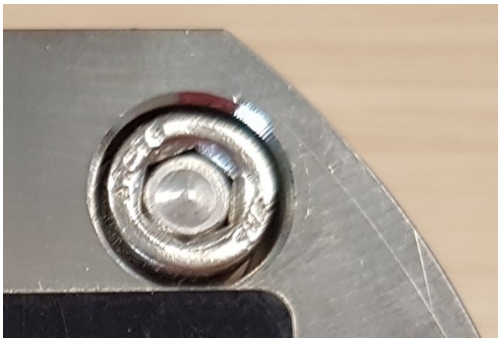
- PIUSI Technical file for MK325 device rev. 01 dated March 2024
- PIUSI Bulletin MO441C IT-00 Installation, use and maintenance manual

For measuring transducers placed on the market in relation to rev. 00 of this document, the reference technical dossier is the document PIUSI Technical file for MK325 device rev. 00 dated 2017-12-18, and the user and maintenance manual is the document PIUSI Bulletin MO441 IT-00 Installation, use and maintenance manual rev. 01 dated 2017-12-04

5. Pictures



Pict. 1 – left) Variant 1 / right) Variant 2



Pict. 2

Pict. 3

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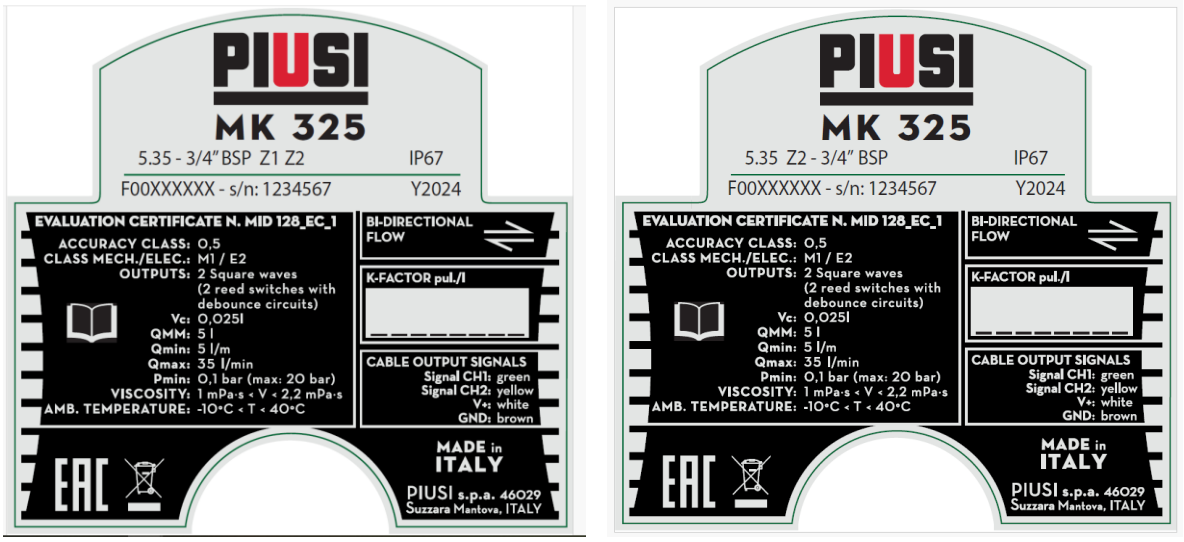

Pict. 4 – left) Variant 1 / right) Variant 2