

EU-Type Examination Certificate

Issued by FORCE Certification A/S, Denmark
EU-notified body number 0200

Issued to: **Flonidan A/S**
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Denmark

In accordance with: Annex II Module B of the 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 (MID).

Type of instrument: Diaphragm Gas Meter

Type designation: UniFlo G4SRTV, Uniflo G6SRTV

Certificate No.: DK-0200-MID-04171

Date of issue: 26-05-2020

Valid until: 11-09-2028

Number of pages: 10

Version: 3

This certificate replaces previous version, which is withdrawn.

Approved by

Certification Manager

The certificate is only valid with one digital signature from FORCE Certification. The original version of the certificate is archived in FORCE Certifications database and is sent in electronic duplicate to the customer. The stored version of the certificate at FORCE Certification prevails as documentation for its contents and validity.

The conformity markings may only be affixed to the above type approved equipment. The manufacturer's EU-Declaration of Conformity may only be issued and the notified body identification number may only be affixed on the instrument when the production/product assessment module (D or F) of the Directive is fully complied with and controlled by a written inspection agreement with a notified body. This EU-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references:

Task no.: 120-27313 and ID. No.: DK-0200-MID-08534

History of the Certificate:

Revision	Issue date	Changes
Ver. 3	26-05-2020	Updating point 1.7 to include newer versions of the integrated valve version H.
Ver. 2	27-02-2019	Uniflo G6S included
Ver. 1	17-12-2018	Minor editorial correction
DK-0200-MI002-04171	04-08-2018	Original certificate

Conclusion of the examination:

For the instruments mentioned in this certificate, the following essential requirements of Directive 2014/32/EU apply:

- Annex I "Essential Requirements"
- Annex IV "Gas meters and Volume conversion devices (MI-002)"

For the instruments, the following harmonized standards will be applied:

- EN 1359:1998/A1:2006 Gas meters – Diaphragm gas meters. Which is covered by use of EN 1359:2017 Gas meters – Diaphragm gas meters and EN 16314:2013 Gas meters – Additional functionalities

For the instruments, the following technical specifications will be applied additionally:

- WELMEC Guide 7.2, Issue 2018. Software Guide
The software fulfils the basic requirements for type P
The software fulfils the requirements for extension S and extension I chapter 10.2
- WELMEC Guide 11.1, Issue 2017: Common application for utility meters
- WELMEC Guide 11.3, Issue 1, May 2012: Guide for sealing of Utility meters

The measuring instrument's technical design which is described below complies with the above-mentioned essential requirements. With this certificate, permission is given to attach the number of this certificate to the instruments that have been manufactured in compliance with this certificate.

The instruments must meet the following provisions:

1. Design of the instrument

1.1 Construction

Uniflo G4SRTV and G6SRTV is a diaphragm meter with electronic index.

The meter has a single board PCB with valve control and integrated wireless M-bus radio. The type designation is as following:

UNIFLO G4SRTV UNIFLO G6SRTV

UNIFLO: Flonidan product brand

G4 or G6: Size of the meter

S: Smart meter with electronic index

R: Equipped with wireless M-Bus communication

T: Internal temperature conversation available. (This can by programming be remotely activated)

V: Integrated valve

The mechanical measuring unit including the housing is the model UG-G4 or UG-G6 from the manufacture Metrix. The UG-G4 is approved with another index on the no. PL-MI002-1450CL0001 rev.5. and the UG-G6 is approved with this type examination certificate. The pipe connection of the measuring unit is co-axial.

The measurement from the mechanical unit is transmitted via an optical scanning to the electronic index. The calculator in the index register the measured gas volume and calculate a volume corrected for the meter error determined by factory calibration.

The index is fitted with a display showing either the corrected volume or the converted volume. When Reverse flow occur, the meter is programmed not to register any flow.

The meter is equipped with an integrated valve.

1.2 Sensor

The electronic consists of a transmitting LED's and a gray-code wheel, which together with the corresponding optical receivers forms an optical encoder which transforms the mechanical movement of the meter output axle to electric signals, which can be processed by the microcontroller.

1.3 Measurement value processing

The volume is measured and calculated by the index with use of the electrical signals from the optical encoder and is corrected for the meter error determined in production.

1.4 Indication of the measurement results

The display shows the meter reading in m³ in a range from 0 to 99999.9999 m³.

1.5 Optional equipment and functions

None.

1.6 Technical documents

Electronic index: FORCE Certification A/S File no. 118-20695

Gas meter: FORCE Certification A/S File no. 118-35736
EU type examination certificate no. PL-MI002-1450CL0001 rev.5

1.7 Integrated equipment and functions not subject to MID requirements

The meter is equipped with an integrated valve for interruption of the gas supply of type ZGV015 revision C, revision F or revision H.

Internal temperature conversation can by programming be remotely activated.

2. Technical data

2.1 Rated operating conditions

Measurand:

The diaphragm gas meter measures the corrected volume at measuring condition showing in m³. A correction factor for the meter error curve found by manufacture calibration is programmed into the meter.

The meter can also be programmed to show converted volume, the gas meter will then convert the measured volume to a volume at base conditions (converted volume). The

conversion is based on measured temperatures, a fixed set value of gas pressure and a fixed set conversion constant.

Measurement range:

	G4S	G6S	
Maximum flow rate, Q_{\max} :	6,0	10,0	m ³ /h
Minimum flow rate, Q_{\min} :	0,04	0,06	m ³ /h
Transitional flow rate, Q_t :	0,6	1,0	m ³ /h
Overload flow rate, Q_r :	7,2	12,0	m ³ /h
Cyclic volume, V :	1,2	2,4	dm ³

Accuracy class:

The diaphragm meter is accuracy class: 1,5

Environmental conditions/influence quantities:

Protection class: IP 54

Climatic:

Ambient temperature, t_m : -25°C to +55°C, condensing, closed outdoor location

Gas temperature, t_g : -25°C to +55°C

Storage temperature: -30°C to +60°C

Mechanical:

Mechanical class: M1

Electromagnetic:

Electromagnetic class: E2

Connections:

Co-axial single pipe.

2.2 Other operating conditions

Maximum pressure, p_{\max} : 0,2 barg

Gas family: Fuel gasses of 1st, 2nd and 3rd family (EN 437:2003)

Power supply: 3.6 V Lithium battery, C-cell

High ambient temperature resistant

3. Interfaces and compatibility conditions

The index is supplied with an IR communication interface which may be used for reading, parameterizing and upload of new software for the non-metrological software in the calculator.

Upload of the metrological software is not possible without removing the verification seal, which again is not possible without leaving visible damage the index.

The Metrological software is protected by an electrical connection (jumper) which must be mounted on the printed circuit board. The printed circuit board is protected by the metrological cover, which again is secured by a metrological seal.
The communication can also be done by wireless M-Bus.
A new non-metrological software may be uploaded through the communication interfaces.

4. Requirements on production, putting into use, and utilization

The manufacturing and the configuration of the gas meter must be in accordance with the documentation described in the manufacturer's quality system according to the certified MID module D.

5. Checking of instruments which are in operation

Instruments which are in operation shall be checked according to the national regulations.

5.1 Documents required for the test

User manual for the meter.

5.2 Special test facilities or software

The instruments can be verified and calibrated at the same facilities as for a new meter.
The meter can be read by use of a special Software called "DuoMeter" and by use of an IR transmitter.

5.3 Identification

Hardware: PCB 6024110.07.vv
07 is the metrological version
vv is the non-metrological version

Software: 05.XX.21 (the Software version and checksum can be read in the display by pressing the bottom)
05 is the metrological version
XX is the non-metrological SW version
21 is the meter type

Checksum: 0x2224 (hexadecimal)

5.4 Calibration/adjustment procedure

Maximum permissible errors (MPE) according to Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID), Annex IV (MI-002).

Unconverted volume:

Ambient temperature t_{am} : -25 °C to +55 °C
Maximum permissible errors $\pm 3\%$ for $Q_{min} \leq Q < Q_t$
 $\pm 1,5\%$ for $Q_t \leq Q \leq Q_{max}$

Converted volume:

Specified temperature: +20°C
Ambient temperature t_{am} : -25 °C to +55 °C

Maximum permissible errors in the range of +5°C to +35°C
 $\pm 3,5\%$ for $Q_{min} \leq Q < Q_t$

$\pm 2,0 \%$ for $Q_t \leq Q \leq Q_{\max}$

Outside this temperature ranges an additional increase of 0,5 % is permitted in each interval of 10 °C.

The gas meter shall not exploit the MPEs or systematically favour any party.

Verification is carried out at laboratory conditions. It is permitted to use air as verification gas. The verification is valid only for the display reading of corrected volume V_c .

6. Security measures

The sealing of the meter consists of a metrological seal and a work seal.

6.1 Mechanical seals

There are two seals, one on each side of the index called work seals. Removing of these seals by help of a special tool gives access to the battery compartment and the inner index. Further access to the electronics of the meter is protected by a metrological seal.



Figure 1: Work seal

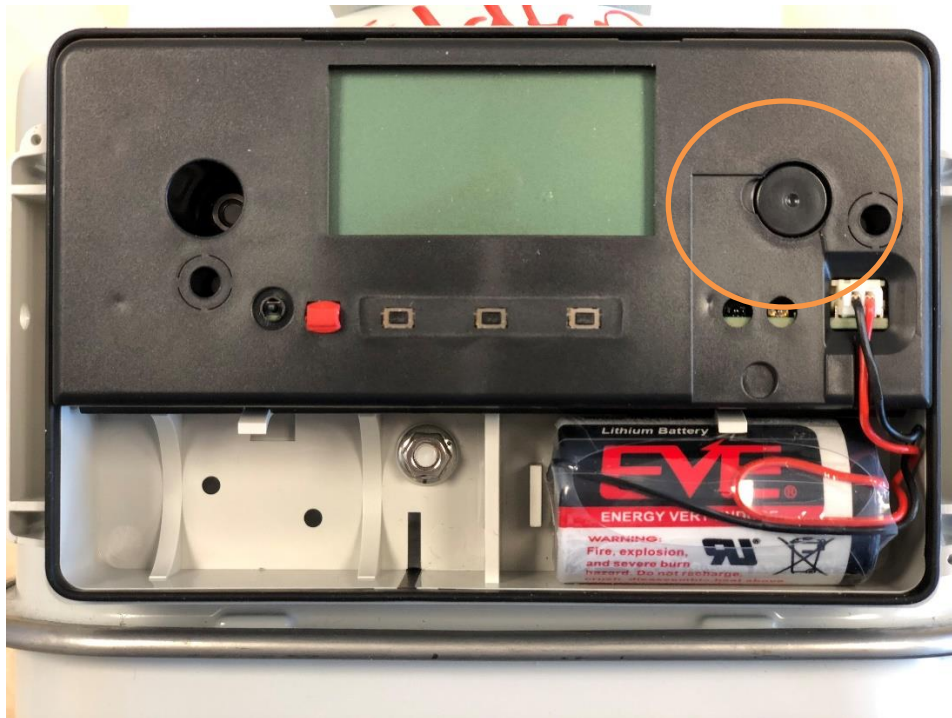


Figure 2: Metrological seal

6.2 Software seals

The metrological Software is protected by passwords and use of a metrological switch (jumper) which must be mounted on the printed circuit board (PCB) before programming. The PCB is protected by the metrological seal, which cannot be removed without damage to the index after installed.

7. Labelling and inscriptions

7.1 Information to be enclosed with the instrument

Rated operating conditions not included on the index:

- Transitional flow rate: $Q_t = 0,1 Q_{max}$
- Overload flow rate: $Q_r = 1,2 Q_{max}$
- Climatic class: condensing, closed outdoor location
- Mechanical and electromagnetic environment classes: M1, E2
- Gas family: Fuel gasses of 1st, 2nd and 3rd family (EN 437:2003)
- Power supply: Lithium battery, 3.6 V DC

Suitable for significantly different ambient and gas temperatures.

Instructions for installation and maintenance.

Instructions for correct operation and any special conditions of use.

7.2 Markings and inscriptions

According to Directive 2014/32/EU Article 21 and 22, and Annex I paragraph 9 and EN1359 paragraph 8 and EN16314 paragraph 8 the following inscriptions must appear on the label.

Conformity marking (CE + M + Year of affixing + NB no.)

EU-type examination certificate number

Manufacturer designation or logo and address

Type, production year and serial number				
Applied European Standard	: EN 1359:1998/A1:2006, covered by EN1359:2017 and EN 16314:2013			
Class	: 1,5			
Meter size	: G4	G6		
Maximum flow rate: Q_{max}	: 6	10	m^3/h	(Label or device info)
Minimum flow rate: Q_{min}	: 0,04	0,06	m^3/h	(Label or device info)
Ambient and gas temperature: t_m	: -25 °C ... +55 °C			(Label or device info)
Base gas temperature: t_b	: 0		°C	(Label or device info)
Base pressure: P_b	: 1013,25		mbar	(Label or device info)
Specified pressure: P_{sp}	: selectable		mbar	(Label or device info)
Specified temperature: t_{sp}	: 20		°C	(Label or device info)
Maximum working pressure: p_{max}	: 0,2		barg	(Label or device info)
Corrected Volume: V_c			m^3	(display)
Or converted volume: V_b			m^3	(display)
Cyclic volume: V	: 1,2	2,4	dm^3	(Label or device info)
High ambient temperature resistant			T	(Label or device info)

8. Figures

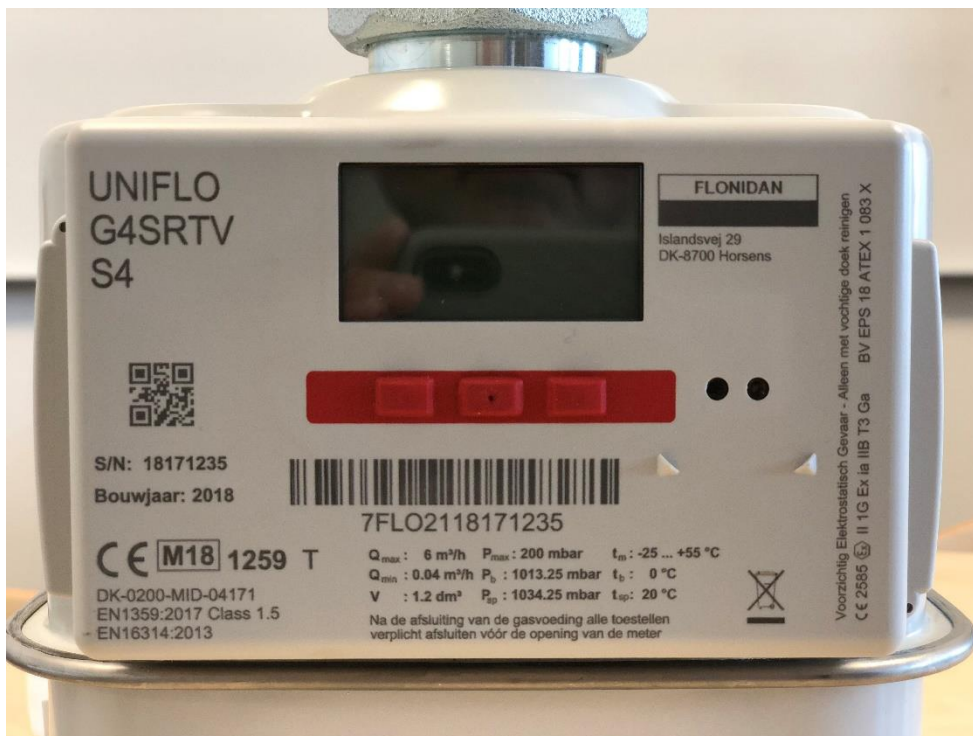


Figure 3: Index (label G4 and G6)



Figure 4: G4 meter



Figure 5: G6 Meter