

EU-Type Examination Certificate

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

Issued to: **Flonidan A/S**
Islandsvej 29
8700 Horsens
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 with temperature conversion

Type designation: Uniflo GxS II

Certificate No.: DK-0200-MID-01348

Date of issue: 28-10-2019

Valid until: 22-02-2027

Number of pages: 9, including appendix

Version: Version 1

(This certificate replaces all earlier versions)

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.: 119-32069.03 and ID. No.: 0200-MID-07237

History of the Certificate:

Revision	Issue date	Changes
DK-0200-MI002-01348	22-02-2017	Original certificate
Version 1	28-10-2019	Changed for fulfilling EN1359:2017/EN16314:2013 insted of former EN1359:1998/A1:2006/EN12405

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 standard will be applied:

- EN1359:1998/A1:2006 Which is covered by use of
 - EN 1359:2017 Gas meters – Diaphragm gas meters.
 - EN 16314:2013 Gas meters – Additional functionalities (electronic index).

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

- WELMEC Guide 7.2, Issue 2015. Software Guide
 - The software fulfils the basic requirements for type P
 - The software fulfils the requirements for extension S and I2
- 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

Type designation

Uniflo GxS II yy

X is the size disignator 4, 6, 10 or 16

yy and z is option designation

yy	R	Radio communication (wireless M-bus 868 MHz)
	T	Temperature conversion

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 GxS II is a diaphragm gas meter with electronic index. The mechanical measuring unit is mounted in steel plate housing with either coaxial or two-pipe connections.

1.2 Sensor

The measuring unit's movements are transmitted via an optical scanning to the electronic index. The calculator in the index registers the measured gas volume and calculates a volume corrected for the meter error determined during calibration (corrected volume).

1.3 Measurement value processing

The gas meter converts the measured volume to volume at base condition (converted volume). The conversion is based on measured temperatures, a fixed set value of gas pressure and a fixed set conversion constant.

1.4 Indication of the measurement results

The calculator is fitted with a display showing the corrected volume or the converted accumulated volume in m³ at base condition.

Functional errors activate an alarm symbol on the display.

1.5 Optional equipment and functions

The meter is available with the following options:

R	Radio communication (wireless M-bus 868 MHz)
T	Temperature conversion

1.6 Technical documents

Electronic index: FORCE Certification A/S File no. 116-27898 and 119-32069.
Gas meter: FORCE Certification A/S File no. 116-27898 and 119-32069.

1.7 Integrated equipment and functions not subject to MID requirements

none

2. Technical data

2.1 Rated operating conditions

Measurand:

The Instrument type is a diaphragm gas meter which measures the corrected volume or the converted volume.

Corrected volume: A correction factor for the meter error found by manufacture calibration is programmed into the meter.

Converted volume: 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.

Volume indication:

m³ at base condition or actual conditions

Measurement range:

See table below.

Accuracy class:

The diaphragm meter is accuracy class: 1,5

Environmental conditions/influence quantities:

Protection class: IP 54

Climatic:

Climatic environment: Closed location – non-condensing.

Mechanical:

Mechanical class: M1

Electromagnetic:

Electromagnetic class: E2

Model		G4	G6	G10	G16
Mechanical measuring unit		G4 RF1	G6 RF1	ACD-G10	ACD-G16
Maximum flow rate	Q_{max} [m ³ /h]	6,0	10	16	25
Minimum flow rate	Q_{min} [m ³ /h]	0,04	0,06 or 0,04	0,1	0,1 or 0,16
Transitional flow rate	Q_t [m ³ /h]	0,6	1,0	0,5	0,5
Overload flow rate	Q_r [m ³ /h]	7,2	12	19,2	30
Cyclic volume	V [dm ³]	2	2	5	5
Maximum pressure	P_{max} [barg]	0,5	0,5	0,5	0,5
Maximum pressure (high temperature option)	P_{max} [barg]	0,2	0,2	0,1	0,1
Lower temperature limit (gas)	T_g [°C]	-10			
Upper temperature limit (gas)	T_g [°C]	+40			
Lower temperature limit (Ambient)	t_m [°C]	-10			
Upper temperature limit (Ambient)	t_m [°C]	+40			
Storage temperature	t_s [°C]	-30 to +60			
Base gas temperature	$t_{b,1}$ [°C]	selectable to fixed value between 0 and 20 °C. Default value 15 °C			
Base pressure	p_b [mbar]	selectable to fixed value between 800 mbar and 1200 mbar. Default value 1013,25 mbar			
Base volume	V_b [m ³]	0 – 99999.9999		0 – 99999.999	
Specified temperature	t_{sp} [°C]	20			
Actual gas pressure	P_a [mbar]	selectable to fixed value between 800 mbar and 1200 mbar. Default value 1013,25 mbar. (Calculated as atm. pressure at sea level and corrected for height above sea level plus the specified pressure P_{sp}).			
Connections	Two-pipe	110, 130, 152.4 (6"), 220, 250 mm		250, 280, 290, 300 mm	
	mono-pipe (coaxial)	DN 25		DN 40	

2.2 Other operating conditions

Gas family:	Fuel gasses of 1 st , 2 nd and 3 rd family (EN 437:2003).
Power supply:	3 or 3.6 V Lithium battery, AA, double AA or C-cell, ER 6 / ER20 according to IEC 86-1, "Primary batteries".
Estimated life time for gas meter:	20 years.
Estimated battery life time:	Up to 20 years.
Option:	High ambient temperature resistant.

3. Interfaces and compatibility conditions

The calculator is supplied with a IR communication interface which may be used for remote communication with the calculator. Remote communication is only for the non-metrological part of the firmware. Coding via the IR-port can only be made with a special configuration software after an electrical connection (jumper) has been mounted on the printed circuit board.

The printed circuit board is protected by a metrological cover, which again is secured by a metrological seal. The software used in the calculator has version number 052400XX-YY, where XX and YY are of no significance to the measurement or in any other way may change the properties of the meter according to this EC-type examination certificate.

On start-up of the meter the index will show an abbreviated version of the software version number: 05 XX YY, where 05 is the metrological version, XX the application version, and YY the software type.

When the meter is marked with "T" The meter is resistant to high ambient temperature.

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 manufactures 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

Usermanual 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

Software and hardware

The identification of the software and hardware version and the checksum can be found in the meter service mode which can be reached by pressing the button for a period longer than 10 seconds. The software version can also be seen in the display on start-up. In the display is shown "05 XX YY"

version*	Checksum for metrological part of the software	PCB number**	Display
05.2400.XX-YY	8740	6024060-04-TT	Alphanumeric display

- *The first number is the version no. for the approved legal part of the software, the second (2400) is the product type and XX is the non-metrological version and YY refers to the product version
- **The first number is a unique ID, the second (04) is the legal metrological number and the last number (TT) is a version number that do not include changes to metrology.

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 MI-002.

Unconverted volume

Ambient temperature t_{am} : -10 °C to 40 °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

Ambient temperature t_{am} : +5 °C to +35 °C
 Maximum permissible errors $\pm 3\%$ for $Q_{min} \leq Q < Q_t$
 $\pm 1,5\%$ for $Q_t \leq Q \leq Q_{max}$

If the meter indicates the converted volume an additional increase of 0,5 % to MPE is permitted in the temperature interval 5 °C to 35 °C. 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.

Procedure

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 converted volume V_b or corrected volume V_c .

6. Security measures

The sealing consists of a metrological seal and an installation seal.

6.1 Mechanical seals

Verification sealing

The index is mounted to the mechanical measuring unit, by pressing metal parts into the index. There is no other sealing between index and mechanical measuring unit.

The printed circuit board is protected by a metrological cover, which again is secured by a metrological seal.

The Metrological seal is a plastic pin formed on the bottom part of the cabinet, which penetrates a hole in the metrological cover and locks the metrological cover.

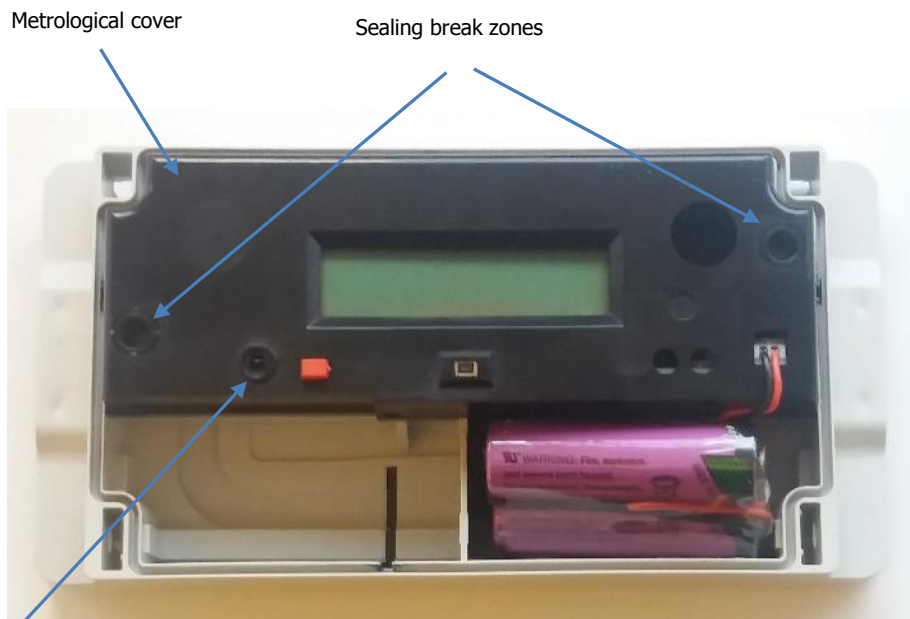
A "Break-Zone" (a weak area) is made in the front surface of the metrological cover in the area around the plastic pin. This has the effect, that if an attempt is made of removing the metrological cover by force, it will break in a very visible way, leaving clear evidence that the Index has been tampered or attempted to be tampered.

Installation sealing

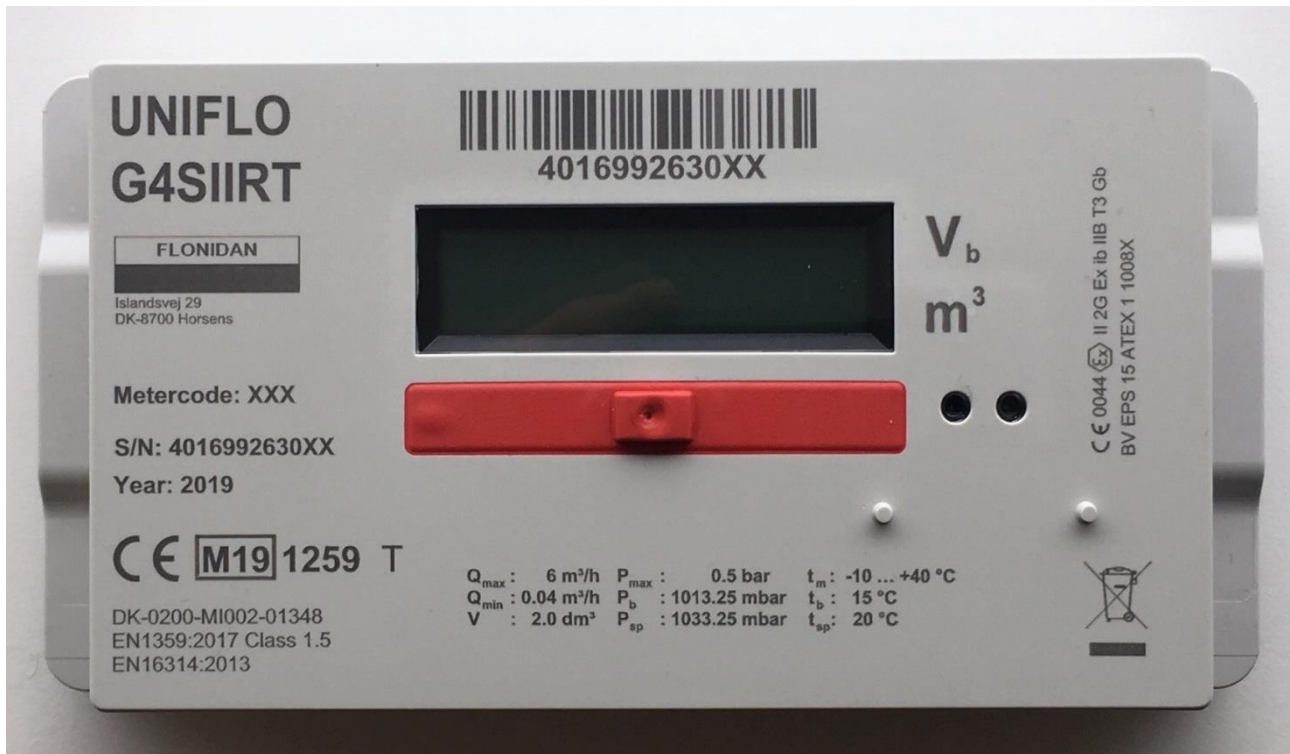
The front cover is secured by two installation seals, one on each side of the index. The installation seals are small plastic caps which are pressed and locked into a hole in the cover and index.

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 label:

Mechanical and electromagnetic environment classes	:	M1, E2
Transitional flow rate	:	Q_t [m ³ /h]
Overload flow rate	:	Q_r [m ³ /h]
Climatic class	:	non-condensing, closed location
Storage temperature, t_s	:	-30 °C to +60 °C

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

Power supply: Lithium battery, 3 or 3.6 V DC.

Software version number.

Legal software checksum.

Instructions for installation, maintenance, repairs, permissible adjustments.

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 *Markings* and EN16314 paragraph 8 *Markings* 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

Maksimum flowrate	:	Q_{max}
Minimum flowrate	:	Q_{min}
Maximum working pressure, P_{max}	:	bar(g)
Cyclic volume, V	:	dm^3
Accuracy class	:	1,5
 Ambient temperature:		
Lower temperature limit, t_m	:	-10 °C
Upper temperature limit, t_m	:	+40 °C
 Gas temperature (if different from ambient)		
Lower temperature limit, t_g	:	-10 °C
Upper temperature limit, t_g	:	+40 °C
 Base gas temperature, $t_{b,i}$		
Specified temperature, t_{sp}	:	0 to 20 °C
Specified temperature, t_{sp}	:	20 °C
Base Pressure, P_b	:	1013,25 mbar
Specified pressure: P_{sp}	:	selectable to fixed value, default value 1013,25 mbar.
 Volume (base or corrected), V_b or V_c :		
High ambient temperature resistant (Option)	:	m^3
	:	T
Applied European Standard	:	EN1359:2017 and EN 16314:2013

8. Figures



G4S II / G6S II



G10S II / G16S II