

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 with temperature conversion

Type designation: Uniflo G10S, Uniflo G16S, Uniflo G10/16

Certificate No.: DK-0200-MI002-016

Date of issue: 21-11-2022

Valid until: 22-11-2029

Number of pages: 11, including appendix

Version: Version 9

This certificate replaces all earlier versions. All previous versions are withdrawn

Approved by

Certification Manager

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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.: 122-29124 and ID. No.: 0200-MID-13718

History of the Certificate:

Revision	Issue date	Changes
Ver.9	2022-11-21	The electronic index has been updated with a new microprocessor. New Legal software version 09 included with fulfilment of Welmec guide 7.2 2022 with respect to Basic requirements for type P, extension T, extension L extension S and extension D and instrument specific requirements I2.
Ver.8	2022-06-09	"multirange" G10/16 added to the certificate
Ver.7	2019-11-22	Renewal of the certificate The renewal starts with version 7 and includes New version of PCB 6024100-08-xx with SMETS-2 mk.II functions with integrated radio. New Legal software version 08 included with fulfilment of welmec guide 7.2 extension T. Fulfilment of welmec guide 7.2 extension T for software version 04.

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:

- EN 1359:2017 Gas meters – Diaphragm gas meters.
- Parts of EN12405-1:2005+A2:2010 Gas meters conversion devices for fulfilling the requirements for MK I index.

Non harmonised standard:

- 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 2019. Software Guide.
The software fulfils the basic requirements for type P.
The software fulfils the requirements for extension S and I2.
The software fulfils the requirements for extension T for (only for SW 04 and 08).
WELMEC Guide 11.1, Issue 2017: Common application for utility meters.
- WELMWC Guide 11.3, Issue 1, May 2012: Guide for sealing of Utility meters.

For SW09:

- WELMEC Guide 7.2, Issue 2022. Software Guide
The software fulfils the basic requirements for type P.
The software fulfils the requirements for extension S, T, L, D and I2.

Type designation

Uniflo G10S yy, Uniflo G16S yy, Uniflo G10/16S yy

yy is option designation (See also point 1.5 below)

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 G10S, G16S and G10/16 is a diaphragm gas meter with electronic index. The mechanical measuring unit is mounted in steel plate housing with either two-pipe or mono-pipe (coaxial) 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 deviation 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
V	Integrated valve
Z	Zigbee radio communication (only for meters with software version 04)
DZ	Double-Band Zigbee radio communication (only for meters with software version 08)
-1	SMETS 2 mk1
-2	SMETS 2 mk2
(Blank)	Without any of the above options

1.6 Technical documents

Electronic index: FORCE Certification A/S File no. 119-26928 and 122-29124
 Gas meter: FORCE Certification A/S File no. 119-26928 and 122-27176
 PL-MI002-1450CP0014, original Type examination certificate for the meter with mechanical index.

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 deviation 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	:	m ³ at base condition or corrected volume at actual conditions.
Measurement range	:	See table below.
Accuracy class	:	The diaphragm meter is accuracy class: 1,5.
Environmental conditions/influence quantities:		
Protection class	:	IP54.
Climatic environment	:	Closed location – non-condensing.
Mechanical class	:	M1.
Electromagnetic class	:	E2.

Model		G10	G16	G10/16
Mechanical measuring unit		UG G10	UG G16	UG G10 / UG G16
Maximum flow rate	Q _{max} [m ³ /h]	16	25	25
Minimum flow rate	Q _{min} [m ³ /h]	0,1	0,16	0,1
Transitional flow rate	Q _t [m ³ /h]	1,6	2,5	2,5
Overload flow rate	Q _r [m ³ /h]	19,2	30	30
Cyclic volume	V [dm ³]	5 or 5,6		5,6
Maximum pressure	P _{max} [barg]	0,5		
Lower temperature limit (gas)	T _g [°C]	-10 (5 dm ³ Cyclic volume) -25 (5,6 dm ³ Cyclic volume)		-25
Upper temperature limit (gas)	T _g [°C]	+55		
Lower temperature limit (Ambient)	t _m [°C]	-10 (5 dm ³ Cyclic volume) -25 (5,6 dm ³ Cyclic volume)		-25
Upper temperature limit (Ambient)	t _m [°C]	+55		
Storage temperature	t _s [°C]	-30 to +60		

Base gas temperature	$t_{b,I}$ [°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 – 99999.999
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	centre distance 152,4 mm; 250mm; 280mm; 300 mm, threads from 5/4" to 2"
	mono-pipe (coaxial)	2 3/4"

2.2 Other operating conditions

Gas family: Fuel gasses of 1st, 2nd and 3rd 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, depending on transmitter activity and number of valve operations.
 When the meter is marked with "T" The meter is resistant to high ambient temperature.
 The meter is suitable for differential temperature and intermittent operation.

3. Interfaces and compatibility conditions

The calculator is supplied with an IR communication interface which may be used for remote reading and coding of the calculator. Coding 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 the metrological cover, which again is secured by a verification seal. In the Index house called "MKII" the electronic is protected by a metrological seal which again is protected by a cover which is sealed by a seal at each side. The label is imprinted on the cover where also the serial number is engraved. The serial number can also be found electronically in the display.

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

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

Software and hardware

version ¹⁾	Checksum for metrological part of the software	PCB number ²⁾	Functions
04.2400.XX.YY	29812 decimal 0x7474 hexadecimal	6024050-03-XX	SMETS2 MK I
05.2400.XX.YY	8740 decimalt 0x2224 hexadecimalt	6024060-04-TT 6024070-04-TT ³⁾ 6024080-04-TT	ESMR5 SMR5 Luxmeter
08.2400.XX.YY	1491218967 decimalt 0x58E23217 hexadecimalt	6024100-08-XX	SMETS2 MK II
09.2400.XX.YY	0x2379 hexadecimal	6024180-09-XX	SMR5.X

¹⁾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.

²⁾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.

³⁾ The layout of the PCB has been changed due to index house "Mk II". This layout is from the non-metrological version 22 and upwards.

- Meters with 3 buttons: The software version can be found in the display via the pushbutton.
Meters with one button: Press and hold the button until the display is flashing, and then push the button to the right information is coming in the display.
- On start-up of the meter the index will show an abbreviated version of the software version number, either 04 XX YY, 05 XX YY, 08 XX YY or 09 XX YY.

5.4 Calibration/adjustment procedure

Errors

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

Unconverted volume:	G10S	G16S	G10/16S
Ambient temperature t_{am} :		-10 °C to +55 °C (5 dm ³ Cyclic volume) -25 °C to +55 °C (5,6 dm ³ Cyclic volume)	-25 °C to +55 °C
Maximum permissible error		±3 % for $Q_{min} \leq Q < Q_t$ ±1,5 % for $Q_t \leq Q < Q_{max}$	
Converted volume:			
Specified temperature:		+20°C	
Ambient temperature t_{am}		-10 °C to +55 °C (5 dm ³ Cyclic volume) -25 °C to +55 °C (5,6 dm ³ Cyclic volume)	-25 °C to +55 °C
Maximum permissible errors		in the range of +5°C to +35°C* ±3,5 % for $Q_{min} \leq Q < Q_t$ ±2,0 % for $Q_t \leq Q < Q_{max}$	

*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 MPE 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 a work seal.

6.1 Mechanical seals

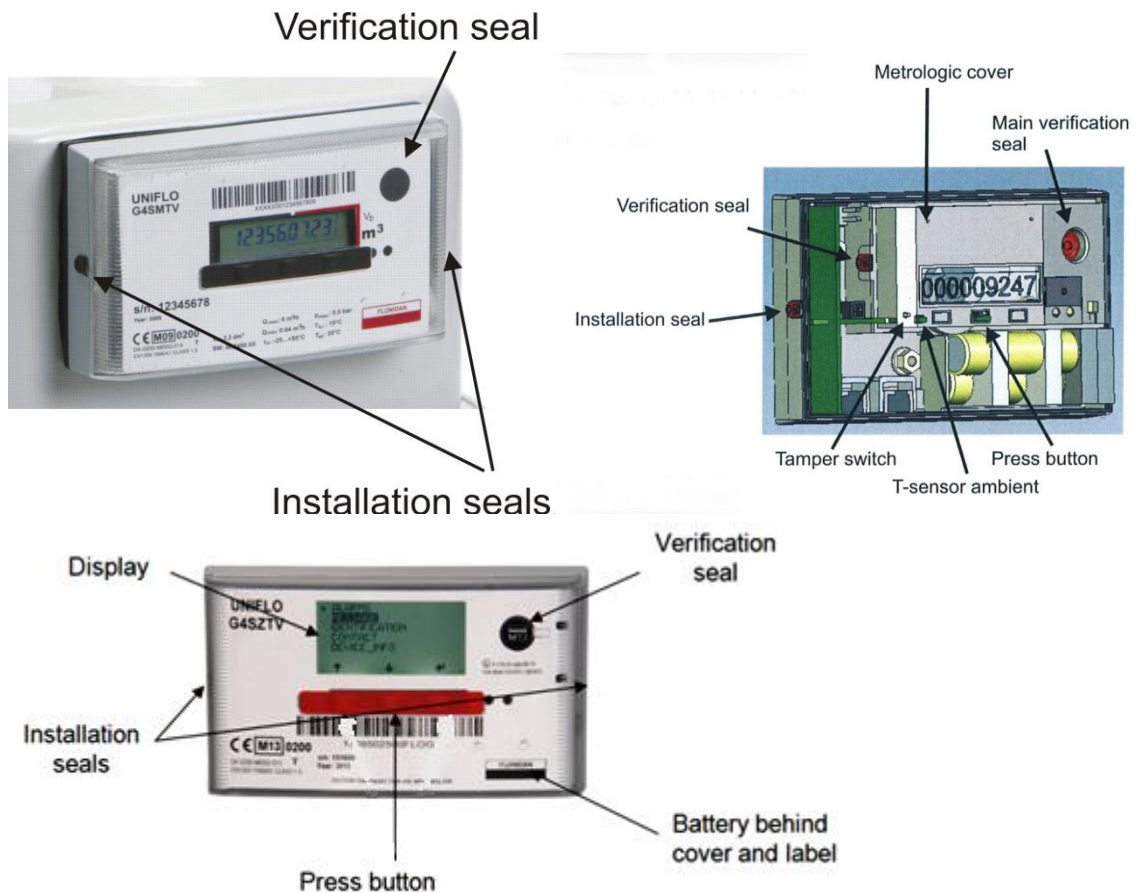
MK I index

Verification sealing

The main verification seal is placed in the metrological cover. The main verification seal locks the index to the meter body, and the front label to the index. The metrological cover is sealed with the main verification seal, and a secondary seal. The main verification seal is marked with the logo of Flonidan, and optional with the year of verification.

Installation sealing

The transparent 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. The seals are optionally marked with the year of sealing.



MK II Index

Work seal

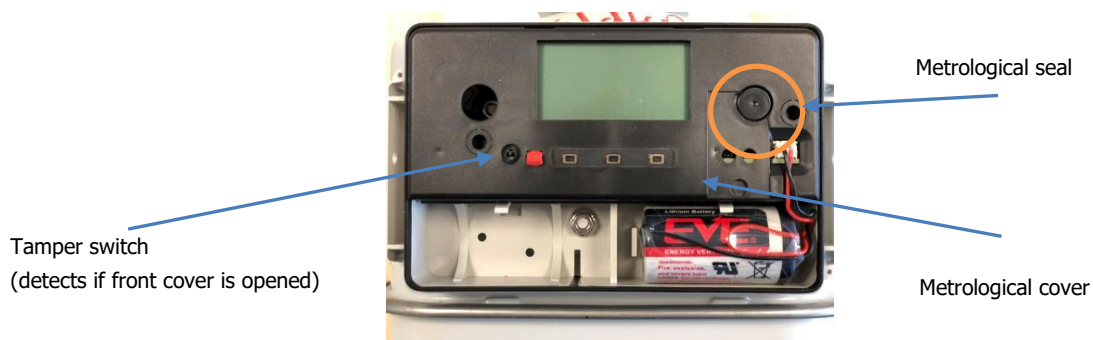
The work seals are located on each side of the index. Removing of these seals by help of a special tool gives access to the battery compartment and the inner index. Further access to the electronics of the meter is protected by a metrological seal.



Work seals

Metrological seal

The PCB is protected by the metrological seal, which cannot be removed without damage to the index after installed.



Tamper switch
(detects if front cover is opened)

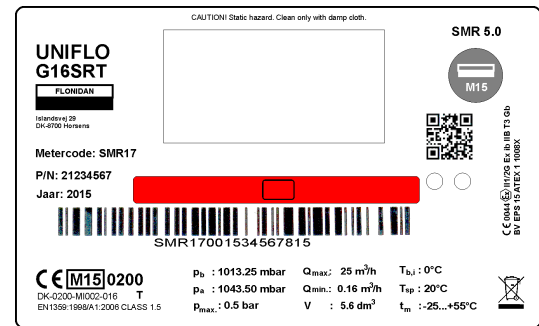
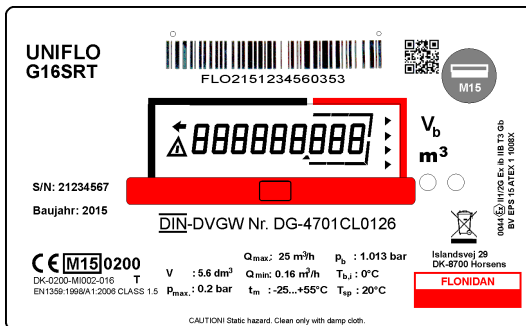
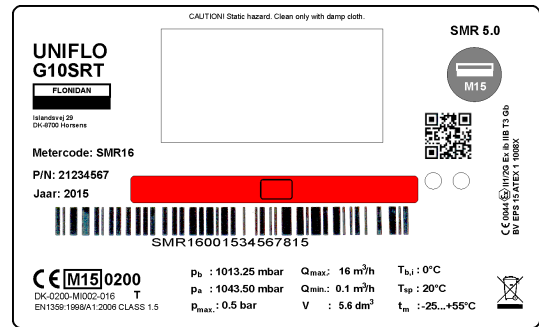
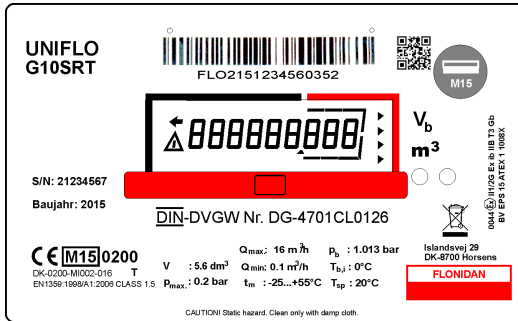
Metrological seal

Metrological cover

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



Label imprinted on cover for version with "Metrix MKII"



Label imprinted on cover for version G10/16

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
 - : $G_{10} = 1,6$ [m³/h]
 - $G_{16} = 2,5$ [m³/h]
 - $G_{10/16} = 2,5$ [m³/h]
- Overload flow rate Q_r
 - : $G_{10} = 19,2$ [m³/h]
 - $G_{16} = 30$ [m³/h]
 - $G_{10/16} = 30$ [m³/h]
- Climatic class : IP 54, Closed location – non-condensing.
- Storage temperature, t_s : -30 °C to +60 °C.
- Gas family : Fuel gasses of 1st, 2nd and 3rd family (EN437).
- Power supply : Lithium battery, 3 or 3.6 V DC.
- Software version number. : 04.2400.XX.YY 05.2400.XX-YY 08.2400.XX-YY 09.2400.XX-YY
- Legal software checksum.

decimal	: 29812	8740	1491218967	
Hexadecimal	: 0x7474	0x2224	0x58E23217	0x2379

Suitable for significantly different ambient and gas temperatures.

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

Applied European Standard : EN1359:2017 and EN 16314:2013 or EN1359:2017 and EN 12405-1:2005+A2:2010.

	G10	G16	G10/16
Maksimum flowrate, Q_{max}	: 16 [m ³ /h]	25 [m ³ /h]	25 [m ³ /h]
Minimum flowrate, Q_{min}	: 0,1 [m ³ /h]	0,16 [m ³ /h]	0,1 [m ³ /h]
Maximum working pressure, P_{max}	: 0,5 bar(g)	0,5 bar(g)	0,5 bar(g)
Cyclic volume, V	: 5 or 5,6 dm ³	5 or 5,6 dm ³	5,6 dm ³
Accuracy class	: 1,5	1,5	1,5

Ambient and gas temperature:

Lower temperature limit, t_m : -10 (5 dm³ Cyclic volume) -25 °C
-25 °C (5,6 dm³ Cyclic volume)

Upper temperature limit, t_m : +55 °C +55 °C +55 °C

Base gas temperature, $t_{b,i}$: 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, V_b or V_c (base or corrected) : m^3
 High ambient temperature resistant : T

8. Figures

