DANAK
PROD Reg. No. 7026

FORCE Certification

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 G25S

Certificate No.: DK-0200-MI002-017

Date of issue: 21-11-2022

Valid until: 22-11-2029

Number of pages: 10, including appendix

Version: Version 8

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 All previous versions are withdrawn.

Approved by
Lars Poder
2022-11-22

Digitally signed by Lars Poder
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Project Manager

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.: 122-29124 and ID. No.: 0200-MID-13719

History of the Certificate:

Revision	Issue date	Changes
Ver. 8	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. 7	2021-06-04	Updated to SMM MK II index
Ver. 6	2019-11-22	Renewal of the certificate. The renewal starts with version 6 and includes SMR5 with MK I index.

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.

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 2020. 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 2020: Common application for utility meters
- WELMEC Guide 11.3, Issue 1, May 2020: 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 G25S yy

yy is option disignation (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 G25S is a diaphragm gas meter with electronic index. The mechanical measuring unit is mounted in steel plate housing with 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 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 m^3 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
(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. 121-26380.

PL-MI002-1450CP0014, original Type examination certificate for the meter with mechanical index.

Test report 17-GM-2021 and 25-GM-2021

1.7 Integrated equipment and functions not subject to MID requirements

Radio communication.

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.

Mechanical meter configuration

model	Mono pipe	Two pipe	Index
G25S	-	UG-G25	Uniflo GxS

Volume indication : m^3 at base condition (Vb) or actual conditions (Vc)
Measurement range : See table below
Accuracy class : 1,5

Environmental conditions/influence quantities:
Protection class : IP 54
Climatic environment : Closed location – non-condensing.
Mechanical class : M1
Electromagnetic class : E2

Model		G25
Mechanical measuring unit		UG-G25
Maximum flow rate	Q_{max} [m^3/h]	40
Minimum flow rate	Q_{min} [m^3/h]	0,25
Transitional flow rate	Q_t [m^3/h]	4
Overload flow rate	Q_r [m^3/h]	48
Cyclic volume	V [dm^3]	11,2
Maximum pressure	P_{max}[barg]	0,5
Lower temperature limit (gas)	T_g [°C]	-25
Upper temperature limit (gas)	T_g [°C]	+55
Lower temperature limit (Ambient)	t_m [°C]	-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	280, 335 or 400 mm, DN 40 or DN 50

2.2 Other operating conditions

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

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.

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

version[1)]	Checksum for metrological part of the software	PCB number[2)]	Functions
05.2400.XX-YY	8740 decimalt 0x2224 hexadecimalt	6024070-04-TT[3)]	SMR5
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.

- The software version can be found in the display via the pushbutton. Press and hold the button until the display is flashing, and then push the button to the right information is coming in the display.
- Display: In the display is shown "05 XX YY", "09 XX YY" on start-up.

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}: -25 °C to 55 °C
Maximum permissible errors ±3 % for $Q_{min} \leq Q < Q_t$
±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
±3,5 % for $Q_{min} \leq Q < Q_t$
±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.

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.

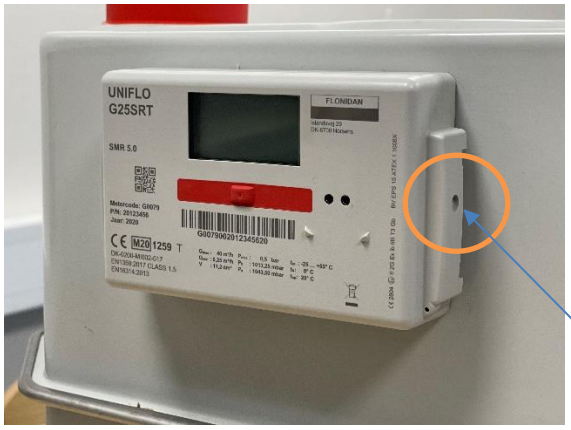
6. Security measures

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

6.1 Mechanical seals

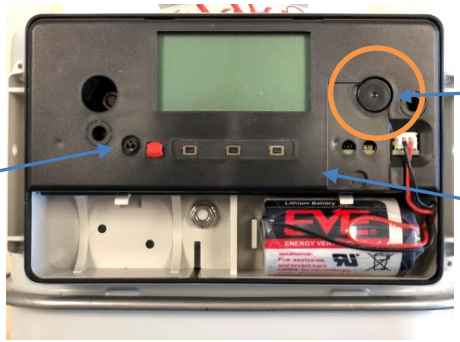
Work seal

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.



Metrological seal

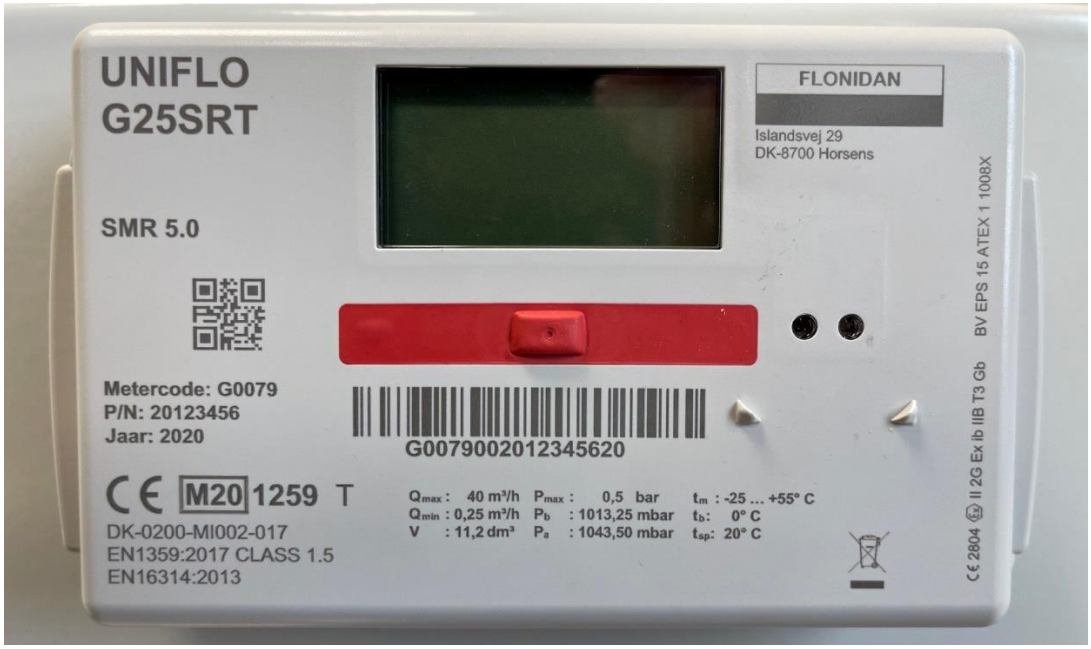
The PCB is protected by the metrological seal, which cannot be removed without damage to the index after installation.



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 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
Maximum flowrate,	Q_{max}	:	40 [m^3/h]
Minimum flowrate,	Q_{min}	:	0,25 [m^3/h]
Maximum working pressure,	P_{max}	:	0,5 bar(g)
Cyclic volume,	V	:	11,2 dm^3
Accuracy class		:	1,5
Ambient temperature:			
Lower temperature limit,	t_m	:	-25 °C
Upper temperature limit,	t_m	:	+55 °C
Gas temperature (if different from ambient)			
Lower temperature limit,	t_g	:	-25 °C
Upper temperature limit,	t_g	:	+55 °C
Base gas temperature,	$t_{b,i}$	:	0 to 20 °C
Specified temperature,	t_{sp}	:	20 °C
Base pressure:	p_b	:	selectable to fixed value, Default value 1013,25mbar.
Specified pressure:	P_{sp}	:	selectable to fixed value, between 800 mbar and 1200 mbar. (Calculated as atm. pressure at sea level and corrected for height above sea level plus

the gauge pressure p)

Volume, V_b or V_c (base or corrected) : m^3

High ambient temperature resistant : T

7.2 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 : 4,0 [m^3/h]
- Overload flow rate Q_r : 48,0 [m^3/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 (EN 437).
- Power supply: Lithium battery, 3 or 3.6 V DC.
- Software version number. : 05.2400.XX-YY 09.2400.XX-YY
- Legal software checksum decimal : 8740 decimal -
- Legal software checksum hexadecimal :0x2224 hexadecimal 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.

8. Figures