DANAK
PROD Reg. No. 7025

FORCE Certification

EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI002-014

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

In accordance with the Danish Safety Technology Authority's statutory order no. 1382 of November 25, 2016 which implements the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID).

Issued to:	**Flonidan A/S** **Islandsvej 29** **8700 Horsens** **Denmark**
Type of instrument:	Diaphragm Gas Meter with temperature conversion
Type designation:	Uniflo G4S
Valid until:	July 24, 2019
Number of pages:	7, including appendix
Date of issue:	May 31, 2017
Version:	2 This certificate replaces all earlier versions. All previous versions are withdrawn.

Approved by

Lars Poder
2017-05-31
Digitally signed by Lars Poder
lpx@force.dk
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 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 EC-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references:
Task no.: 117-20887.02 and ID. No.: DK-0200-MID-02485

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Appendix to
EC-Type Examination Certificate
Measuring Instrument Directive

Certificate no. DK-0200-MI002-014, Version 2.

Issued by FORCE Certification A/S, Denmark
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Revision history

Revision	Issue date	Changes
Ver. 2	2017-05-31	Editorial changes in chapter regarding verification and sealing. Certificate updated to 2014/32/EU.
Ver. 1	2012-07-30	Including two new versions of the software with accompanying PCB's Including DSMR 4.0 functions and function for download of non legal software New meter photographs
DK-0200-MI002-014	2009-07-24	Original certificate

Applied standards and documents:

EN 1359:1998/A1:2006. Gas meters – Diaphragm gas meters.
EN 12405-1:2005+A1:2006+A2:2010. Gas meters – Conversion devices – Part 1. Volume conversion.
WELMEC Guide 7.2, Issue 5, May 2011. Software Guide (Measuring Instruments Directive 2004/22/EC).
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
The software ver. 01 fulfils the requirements for extension D.

The instrument shall correspond to the following specifications:

Type designation

Uniflo G4S

Description

Uniflo G4S is a diaphragm gas meter with electronic index. 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.

The meter is also available without temperature conversion. In that case the index is showing the corrected volume.

The mechanical measuring unit is mounted in a steel plate housing with either two-pipe or co-axial connections. 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. The calculator is fitted with a display showing the corrected volume, or the converted accumulated volume in m^3 at base condition.

The meter may be verified at two different Q_{max}.

The meter is available with the following options:

T temperature conversion
M M-bus output
V integrated valve
R radio communication
(blank) without any of the above options

Functional errors activate a warning triangle on the display.

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 metrologic cover, which again is secured by a verification seal.

The software used in the calculator is supplied in three different versions as shown:

Version	Designation
01	01.2400.XX-YY
02	02.2400.XX-YY
03	03.2400.XX-YY

Where XX and YY refer to version numbers which 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, either 01 XX YY, 02 XX YY or 03 XX YY.

The meter is resistant to high ambient temperature and suitable for differential temperature and intermittent operation.

Technical documentation

Software and index

FORCE Certification A/S File no. 80.976-085/09 (SW ver. 01) or 112-22462 (SW ver. 02 and 03)

Gasmeter

FORCE Certification A/S File no. 80.976-084/09 (gas meter)

Technical data

Instrument type:		Diaphragm gas meter with temperature conversion		
Accuracy class:		1,5		
Environment class:		M1, E2		
Climatic class:		-25°C to +55°C, condensing, closed outdoor location.		
Volume indication:		m^3 at base condition or corrected volume at actual conditions		
Maximum flow rate:	Q_{max}	4	6	m^3/h
Minimum flow rate:	Q_{min}	0,025	0,04	m^3/h
Transitional flow rate:	Q_t	0,4	0,6	m^3/h
Overload flow rate:	Q_r	4,8	7,2	m^3/h
Cyclic volume	V	2,2 dm^3		
Gas family:		Fuel gasses of 1st, 2nd and 3rd family (EN 437:2003)		
Maximum pressure:	p_{max}	0,5 barg		
Gas temperature range:	t_m	-25 °C to +55 °C		
Base gas temperature:	$T_{b,i}$	selectable to fixed value between 0 and 20 °C. Default value 15 °C		
Base pressure:	p_b	selectable to fixed value between 800 mbar and 1200 mbar. Default value 1013,25 mbar		
Base volume:	V_b	0 – 99999.9999 m^3		
Specified temperature:	t_{sp}	20 °C		
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"		

High ambient temperature resistant

The meter is supplied with different connections:

Two-pipe, with centre distance 110 to 250 mm, threads from 1/2" to 5/4"

Mono-pipe (coaxial) 2"

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

Index

Software versions

Version no.	Checksum for metrological part of the software	Shown in display on start-up
01.2400.XX-YY	10799	01 XX YY
02.2400.XX-YY	2517	02 XX YY
03.2400.XX-YY	12147	03 XX YY

XX is the application version

YY refers to the hardware for SW ver. 01. YY refers to the software type for SW ver. 02 and 03.

Main PCB

SW version	PCB number	
	HW wired M-bus	HW wireless M-bus
01	6024800-XX-YY[1)]	6024801-XX-YY[1)]
01	6024000-RX[2)]	6024001-RX[2)]
02	6024030-RX	6024031-RX
03	6024032-RX[3)]	6024032-RX[3)]
03	6024032-02-XX[4)]	6024032-02-XX[4)]

[1)] and [2)] are the same PCB. [2)] is a new number system

[3)] and [4)] are the same PCB. [4)] is a new number system

Verification

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

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

Ambient temperature t_{am}: +5 °C to +35 °C

Maximum permissible errors ±3 % for $Q_{min} \leq Q < Q_t$

±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 range 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.

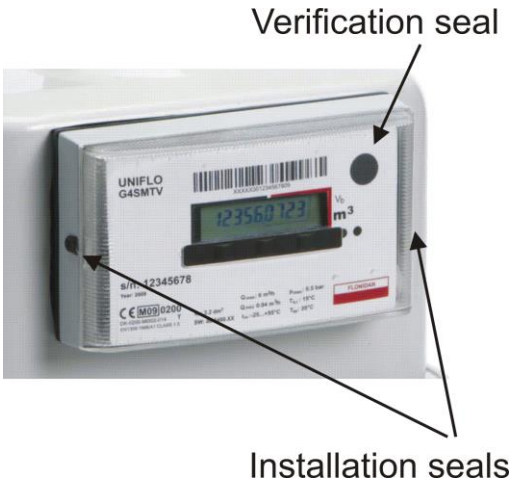
Sealing

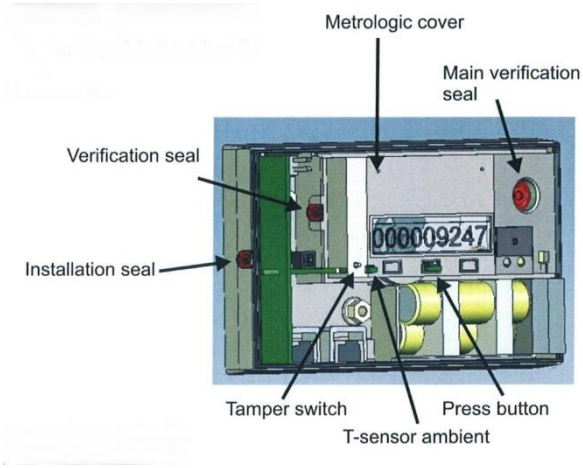
Verification sealing

The main verification seal is placed in the metrologic cover. The main verification seal locks the index to the meter body, and the front label to the index. The metrologic 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.

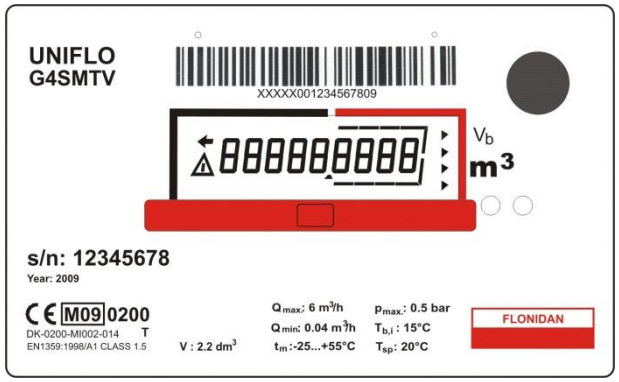
Installation sealing

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.





Labelling and inscriptions



According to 2014/32/EU MID article 21 and 22, and Annex I, paragraph 9 and EN1359, the following inscriptions must appear on the label:

Conformity marking (CE + M + Year of affixing + NB no.)
EC-type examination certificate number
Manufacturer designation or logo and address
Type, production year and serial number

Applied European Standard		:	EN 1359:1998/A1:2006		
Class		:	1,5		
Maximum flow rate:	Q_{max}	:	4	6	m^3/h
Minimum flow rate:	Q_{min}	:	0,025	0,04	m^3/h
Ambient and gas temperature:	t_m	:	-25 °C … +55 °C		
Base gas temperature:	$t_{b,i}$	:	0 to 20 °C		

Specified temperature:	t_{sp}	:	20 °C
Maximum working pressure:	p_{max}	:	0,5 barg
Volume:	V_b or V_c	:	m^3
Cyclic volume:	V	:	2,2 dm^3
High ambient temperature resistant		:	T

Accompanying information

Rated operating conditions not included on the label:

- 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 or 3.6 V DC
- Software version number: 01.2400.XX-YY, 02.2400.XX-YY, 03.2400.XX-YY
- Legal software checksum: 10799 2517 12417

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.