

EC-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-011

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: **Siemens AG**
DE-76181 Karlsruhe
Germany

Type of instrument: Cold water meter, electromagnetic flow meter
Type designation: MAG5100W DN50-600 with MAG8000CT or MAG8000CT GSM
Valid until: October 13, 2019
Number of pages: 7, including appendix
Date of issue: March 15, 2018
Version: 10
 This new version of DK-0200-MI001-11 is issued due to a postal address change.
 The previous certificate is withdrawn.

Approved by

Processed by



Lars Poder
Certification Manager



Michael Møller Nielsen
Examiner

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.: 118-24331.01 and ID. No.: 0200-MID-03974

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Appendix to

EC-Type Examination Certificate

Measuring Instrument Directive

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Version	Issue date	Changes
DK-0200-MI001-011	2009-10-13	Original certificate
DK-0200-MI001-011 rev 1 - 2010	2010-01-21	Text regarding bi-directional use of meter added
DK-0200-MI001-011 rev 2 - 2011	2011-03-18	New meter sizes DN200 and 400 added
DK-0200-MI001-011 rev 3 - 2011	2011-10-13	New SW version added
DK-0200-MI001-011 rev 4 - 2011	2011-12-16	New installation requirements added
DK-0200-MI001-011 rev 1 - 2012	2012-12-17	New transmitter MAG8000CT GSM added
DK-0200-MI001-011 rev 1 - 2014	2014-03-21	New meter sizes DN450, 500 and 600 added
DK-0200-MI001-011 rev 1 - 2015	2015-05-22	New 'R' and 'Q' values for DN300, 350 and 400 added
DK-0200-MI001-011 rev 2 - 2015	2015-07-20	New SW and HW versions added
DK-0200-MI001-011 ver 9	2017-04-07	New SW version added
DK-0200-MI001-011 ver 10	2018-03-15	New postal address added

Applied standards and documents:

OIML R 49:2006

The instruments/measuring systems shall correspond with the following specifications:

Type designation

MAG5100W DN50-600 with MAG8000CT or MAG8000CT GSM.

Description

The construction consists of an electromagnetic flow sensor, MAG5100W, and a signal transmitter, MAG8000CT or MAG8000CT GSM.

The design principle is, as for any electromagnetic flow sensor, that a constant pulsed DC electrical current through the coil circuit results in a magnetic field through the sensor bore with direction from coil to coil. When a conductive liquid passes through the magnetic field, a differential DC voltage is introduced between the measuring electrodes.

The sensor has a steel tube and steel flanges and the bore are fitted with an electrically insulating lining, which is coned to optimize the velocity profile of the fluid. Between the lining and the steel tube, the coil that generates the magnetic field is fitted.

The water meter may be equipped with an optional remote data read out module type SITRANS F M MAG 8000 GSM/GPRS Wireless Communication Module. The GSM module is approved both as a factory mounted variant in a MAG8000CT GSM as well as for retrofitting into an existing MAG8000CT without damage to the internal verification sealing.

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Technical documentation

Reference no.

- 118-24331.01
- 117-25308.04
- 115-22122.03.01
- 114-23907.0003.0001
- 112-24266.0003.

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File no.

- 80.976-266/11
- 80.976-259/11
- 80.976-134/10
- 80.976-105/09.

DK-0200-MI001-011**Technical data**

Instrument tested according to	: OIML R 49:2006										
Hardware version	: AB/010										
Software version	: Version and checksum for metrological part										
<table border="1"><thead><tr><th>Version</th><th>Checksum for metrological part</th></tr></thead><tbody><tr><td>3.03</td><td>Not available</td></tr><tr><td>3.04</td><td>BF3CB5ECCC13070E1FE84C069A04418A</td></tr><tr><td>3.07</td><td>B400612EAB7877459BF1648CEF5DABB4</td></tr><tr><td>3.09</td><td>9652AA52EA3CBEFB6EF93CB1AEFE6F11</td></tr></tbody></table>		Version	Checksum for metrological part	3.03	Not available	3.04	BF3CB5ECCC13070E1FE84C069A04418A	3.07	B400612EAB7877459BF1648CEF5DABB4	3.09	9652AA52EA3CBEFB6EF93CB1AEFE6F11
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Environment class	: E2, M1										
Climatic class	: -25...55 °C, condensing, closed										
Durability specification	: Battery 6 years										
Verification tolerance	± 5% $Q_1 \leq Q < Q_2$ ± 2% $Q_2 \leq Q \leq Q_4$										
Unit of measurement	: Cubic meters										
Temperature	: 0.1 – 50 °C										
Pressure	: PN = 16 bar or PN = 10 bar or PN = 6 bar										
Power supply	: 3.6 V Lithium Battery, 12 - 24 VAC/VDC, 115 - 230 VAC										
Compact/Remote	: Max. 30 m cable										

SIZE	DN50 (2")	DN65 (2½")	DN80 (3")	DN100 (4")	DN125 (5")	DN150 (6")	DN200 (8")
"R" Q3/Q1	400	400	400	400	400	400	400
Q1 [m³/h]	0.16	0.25	0.40	0.63	1	1.60	2.50
Q2 [m³/h]	0.25	0.40	0.63	1	1.60	2.50	4
Q3 [m³/h]	63	100	160	250	400	630	1000
Q4 [m³/h]	78.75	125	200	312.50	500	787.50	1250

SIZE	DN250 (10")	DN300 (12")	DN350 (14")	DN400 (16")	DN450 (18")	DN500 (20")	DN600 (24")
"R" Q3/Q1	400	200	200	160	160	160	160
Q1 [m³/h]	4	8	8	10	39.38	39.38	62.50
Q2 [m³/h]	6.40	12.80	12.80	16	63	63	100
Q3 [m³/h]	1600	1600	1600	1600	6300	6300	10000
Q4 [m³/h]	2000	2000	2000	2000	7875	7875	12500

The table above describes the maximum specification of flow range. Other dynamic ranges are allowed if "R" is 10, 25, 63, 80, 100, 160, 200 or 250.

And
 $Q_1 \geq$ values in table
and
 $Q_2/Q_1 = 1.6$
and
 $Q_4/Q_3 = 1.25$

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Verification

Errors: Maximum permissible errors according to Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), Annex MI-001.

Procedure: Test points and verification requirements according to OIML R 49:2006.

The water temperature range shall be 20 ± 10 °C.

At least the following three flowrates shall be used for verification:

$$Q_1 \leq Q \leq 1.1Q_1 (5 \%)$$

$$Q_2 \leq Q \leq 1.1Q_2 (2 \%)$$

$$0.9Q_3 \leq Q \leq Q_3 (2 \%)$$

Sealing

Write protection of parameters.

The system has four levels of write-protection of parameters: software, hardware, double, and full protections.

Software: As default, all registers in the database are protected by a user access code (software code). The user access code shall be given to the system before changing registers. This protection covers all application relevant parameters that do not meet the restriction described by other protections.

Hardware: HW-lock protected registers are only changeable when the physical seal is broken and the HW-key is mounted. And when the seal is broken, then the software access code will be unnecessary, that is, software and hardware protected registers are all accessible. This protection covers legal parameters and values that make influence on the measurement while installed as a custody transfer application.

Double: Some parameters identify the variety of meters. These are not hard coded and must therefore be secured in another way. The registers are protected with the HW-lock and a special access code known by SFI-production only. This protection covers parameters describing functionality used for variant creation and factory information identifying the product. It also covers internal variables that need to be saved and are not relevant to the user. Or information that must be read-only, but are updated by the device.

Full: Full protection against external access is only possible to measurement values (RAM values) and values controlled by the data administration software (checksum and change status). These registers are all read only. Full protection cannot be broken.

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Internal sealing

The internal sealing is carried out as shown where the front and back shielding plate is locked using two labels:



Furthermore, the JTAG connector is sealed with an additional label:



External sealing

The external sealing is carried out as shown with a tread and seal via the sealing bolt.



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Installation

DN50 – DN400: The product requires 0xD of straight pipe upstream from the sensor and 0xD of straight pipe downstream from the sensor.

DN > DN400: The product requires 3xD of straight pipe upstream from the sensor and 3xD of straight pipe downstream from the sensor.

DN50 – DN150: The sensor can be installed in all orientations.

DN200 – DN600: The sensor can only be installed in a horizontal condition.

The meter is approved to be used bidirectional.

MAG8000CT and MAG8000CT GSM must be installed as described by the manual.

Labeling and inscriptions

Manufacturer, type, year
 Manufacturer postal address
 Serial no.
 EC-Type examination certificate number
 Tmax and Pmax
 Application temperature range
 Power supply
 Accuracy class
 Software version
 Unit of measurements: Cubic metre
 Direction of flow
 All orientations, for the position.

Label example

SIEMENS			
SITRANS F M MAG 8000 CT			
Order No.:	7ME68203TC001AA2	MAWP (PS) at -20°C/-4°F:	16 bar/232psi
Serial No.:	123456H123	MAWP (PS) at 70°C/158°F:	16 bar/232psi
Size DN: 100 (4 inch.)	Lining: EPDM	T.media min.:	0.1C/32°F
Sensor material:	ASTM A 105	T.media max.:	50°C/122°F
Meter orientation:	All orientations	Process connection:	EN 1092-1 PN16
Enclosure:	IP68/NEMA 6P	Year of Manuf.:	2017
Fluid group: PED/L1		Software version:	3.09
Supply:	Lithium battery inside	Q3: 160m ³ /h	Q3/Q1: 160
Certificate no.:	DK-0200-MI001-011	CE M 18 0200	
Siemens AG, DE-76181 Karlsruhe			
Made in France			