

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-001

Issued by FORCE Certification A/S, Denmark
EU-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: Water meter
Type designation: MAG5100W DN50-2000 with MAG5000CT or MAG6000CT
Valid until: 2028-12-01
Number of pages: 9 including appendix
Date of issue: 2021-05-25
Version: 16
This version of DK-0200-MI001-001 is issued due to addition of new sensor variants. It replaces the earlier version.

Approved by



Michael Møller Nielsen
Certification Manager

Processed by



Lars Poder
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 EU-type examination certificate may not be reproduced except in full, without written permission by FORCE Certification A/S.

FORCE Certification references: TASK no.: 119-24890.04 and ID no.: 0200-MID-10794

Appendix to

EU-Type Examination Certificate

Measuring Instrument Directive

Number: DK-0200-MI001-001

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

Version	Issue date	Changes
DK-0200-MI001-001	2007-03-30	Original certificate
DK-0200-MI001-001 rev 1	2009-04-29	Changes in pressure and flow ranges
DK-0200-MI001-001 rev 1 - 2012	2012-02-21	Change of installation requirement
DK-0200-MI001-001 rev 1 - 2014	2014-05-22	DN350 – DN600 added
DK-0200-MI001-001 rev 1 - 2015	2015-06-22	New HW- and SW versions added, DN700 – DN2000 added, 12 – 24 V variant added
DK-0200-MI001-001 ver 5	2017-03-31	Administrative extension of the validity period
DK-0200-MI001-001 ver 6	2017-07-01	Administrative extension of the validity period
DK-0200-MI001-001 ver 7	2017-09-04	Administrative extension of the validity period
DK-0200-MI001-001 ver 8	2018-01-01	Administrative extension of the validity period
DK-0200-MI001-001 ver 9	2018-04-01	Administrative extension of the validity period
DK-0200-MI001-001 ver 10	2018-05-01	Administrative extension of the validity period
DK-0200-MI001-001 ver 11	2018-06-01	Administrative extension of the validity period
DK-0200-MI001-001 ver 12	2018-12-01	Meter re-tested according to OIML R 49:2013 and now valid for a new 10-year period
DK-0200-MI001-001 ver 13	2019-03-21	Editorial change on page 5
DK-0200-MI001-001 ver 14	2020-01-27	Clarification of approved sensor variants
DK-0200-MI001-001 ver 15	2021-03-08	Addition of DN1400 sensor variant, clarification of verification procedure
DK-0200-MI001-001 ver 16	2021-05-25	DN1500 – DN2000 added

Applied standards and documents:

OIML R 49:2013

The instrument/measuring system shall correspond with the following specifications:

Type designation:

MAG5100W DN50-2000 with MAG5000CT or MAG6000CT.

Description:

The construction consists of an electromagnetic flow sensor, MAG5100W, and a signal transmitter, MAG5000CT or MAG6000CT with or without communication modules.

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 pass through the magnetic field, a differential DC voltage is introduced between the measuring electrodes.

The MAG5000CT and MAG6000CT signal converter operates at 1.5625 – 12.5Hz depending on sensors size. All sensors are charged with 125mA constant current. The sensitivity of the sensors gives a nominal signal of 125 μ V per m/s flow.

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

Technical documentation:

Reference numbers:

- 119-24890.04
- 119-24890.03
- 119-24890.02
- 119-24890.01
- 117-20869.14
- 117-20869.10
- 117-20869.09
- 117-20869.08
- 117-20869.07
- 117-20869.05
- 117-20869.04
- 115-22122.05
- 114-23907.0007

FORCE Certification A/S - File numbers:

- 80.970.6-004A/06
- 80.976-086/09
- 80.976-193/10
- 80.976-265/12

Technical data

Instrument tested according to: OIML R 49:2013

Hardware bundle: 7

Firmware version: MAG5000CT

Version	Checksum for metrological part
4.09 X05	4DDA8DBEF84A2BAB1A28EABF27CE3A08

MAG6000CT

Version	Checksum for metrological part
3.03	057A9FFF
4.09 X02	A39561F596DE3DCC2C554698584DC083

Verification tolerance: $\pm 5 \% Q_1 \leq Q < Q_2$ and $\pm 2 \% Q_2 \leq Q \leq Q_4$

Unit of measurement: Cubic meters

Media temperature: 0.1 – 30 °C

Pressure class: PN 16, PN 10 or PN 6

Power supply: 115 – 230 VAC, 12 – 24 VAC/VDC

Environmental class: E2, M1

Climatic class: -25...55 °C

Durability specification: 10 years

Approved sensor variants

SIZE	DN50 (2")	DN65 (2½")	DN80 (3")	DN100 (4")	DN125 (5")	DN150 (6")	DN200 (8")
"R" Q ₃ /Q ₁	400	400	400	400	400	400	400
Q ₁ [m ³ /h]	0.16	0.25	0.4	0.63	1	1.6	2.5
Q ₂ [m ³ /h]	0.25	0.4	0.63	1	1.6	2.5	4
Q ₃ [m ³ /h]	63	100	160	250	400	630	1000
Q ₄ [m ³ /h]	78.75	125	200	312.5	500	787.5	1250

SIZE	DN250 (10")	DN300 (12")	DN350 (14")	DN400 (16")	DN450 (18")	DN500 (20")	DN600 (24")
"R" Q ₃ /Q ₁	400	400	160	160	160	160	160
Q ₁ [m ³ /h]	4	4	15.63	25	39.38	39.38	39.38
Q ₂ [m ³ /h]	6.4	6.4	25	40	63	63	63
Q ₃ [m ³ /h]	1600	1600	2500	4000	6300	6300	6300
Q ₄ [m ³ /h]	2000	2000	3125	5000	7875	7875	7875

SIZE	DN700 (28")	DN750 (30")	DN800 (32")	DN900 (36")	DN1000 (40")	DN1200 (48")	DN1400 (54")
"R" Q ₃ /Q ₁	160	160	160	160	160	160	40
Q ₁ [m ³ /h]	39.38	39.38	39.38	62.5	62.5	100	250
Q ₂ [m ³ /h]	63	63	63	100	100	160	400
Q ₃ [m ³ /h]	6300	6300	6300	10000	10000	10000	10000
Q ₄ [m ³ /h]	7875	7875	7875	12500	12500	12500	12500

SIZE	DN1500 (60")	DN1600 (64")	DN1800 (72")	DN2000 (80")
"R" Q ₃ /Q ₁	40	40	40	40
Q ₁ [m ³ /h]	250	250	250	250
Q ₂ [m ³ /h]	400	400	400	400
Q ₃ [m ³ /h]	10000	10000	10000	10000
Q ₄ [m ³ /h]	12500	12500	12500	12500

The tables above show the sensor variants that have been approved based on the type approval tests performed.

Other sensor variants are also covered by this approval provided the following is fulfilled:

- "R" (Q₃/Q₁) shall not exceed the values in the tables and shall be chosen from OIML R 49-1:2013 list 4.1.4
- Q₃ shall not exceed the values in the tables and shall be chosen from OIML R 49-1:2013 list 4.1.3
- Q₁ shall be larger than the values in the tables
- Q₂ shall be larger than the values in the tables

Checking facilities:

The meter complies with the requirements for type P checking facilities in OIML R 49-2:2013 Annex A "Type examination and testing of checking facilities of electronic devices".

Verification

Errors: Maximum permissible errors according to Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measuring instruments (MID), Annex III (MI-001).

Procedure: According to OIML R 49:2013

The water temperature range shall be 20 ± 10 °C

At least the following three flow rates shall be used for verification:

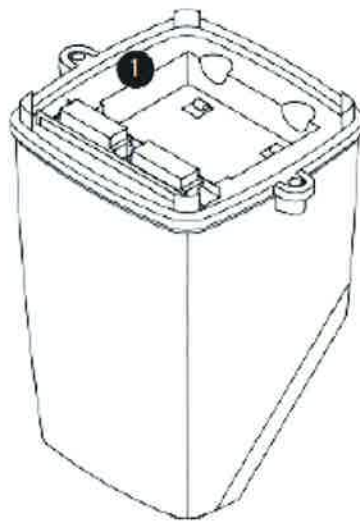
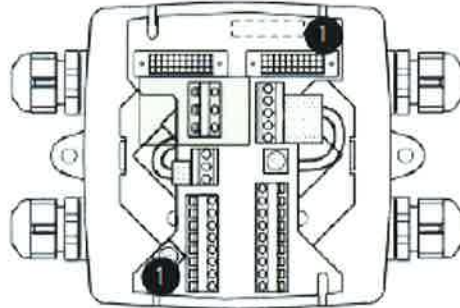
$$Q_1 \leq Q \leq 1.1Q_1 (\pm 5 \%)$$

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

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

Internal sealing

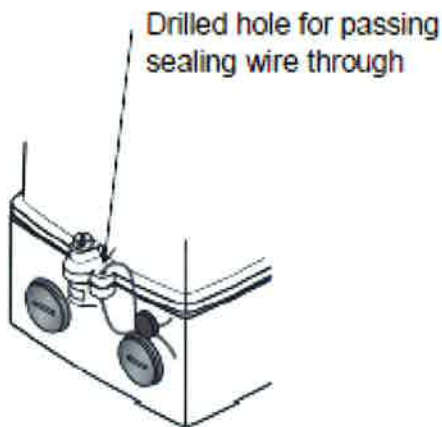
- 1** Indicates the sealing locations.



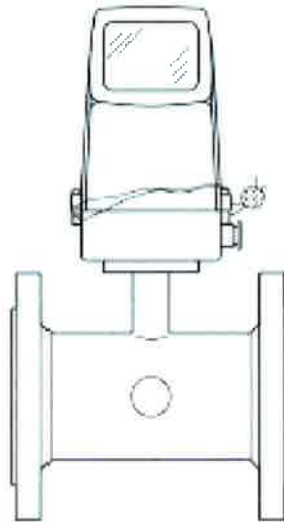
Installation sealing

The installation sealing is made as shown below.

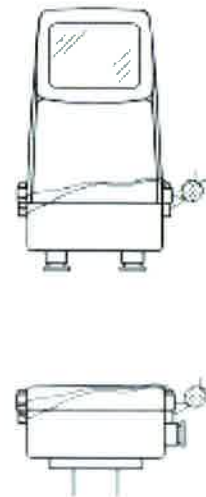
Transmitter Sealed on both sides either with one or 2 wires/seals
(Use the drilled holes on the T-Box)



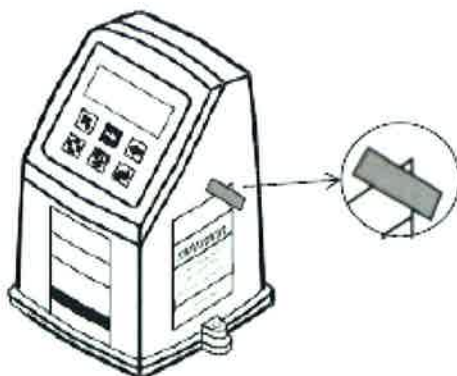
Compact version
sealed each side



Compact version
with 1 wire



Remote version
with 1 wire



Sealed Nameplate

Installation

The product requires 0D of straight pipe upstream from the sensor and 0D of straight pipe downstream from the sensor.

DN50 - 300: The sensor can be installed horizontally, vertically or at an angle.
DN350 - 2000: The sensor must be installed horizontally.

The signal transmitter can be fitted in all positions either compact on the sensor or remotely with a cable. Cable specification according to manufacturers (Siemens) specification. The cable length must not exceed 500 m.

Labeling and inscriptions

Manufacturer, type, year
Serial no.
EC-Type examination certificate number
 T_{max} and P_{max}
Application temperature range
Power supply
Accuracy class
Software version
Unit of measurements: Cubic meter
Direction of flow
Letter H for the sensor orientation (DN350-2000)

Label examples

SIEMENS	
SITRANS F M MAG 6000 CT/5100 W	
System Order No.:	7ME65206PB122MA1-Z P24
System Serial No.:	111202H168
Transmitter/ Converter Serial No.:	N1K3085008
Sensor Serial No.:	186702H108
SW/HW V.:	4.09 X02 / 7
Checksum:	A39561F596DE3DCC2C5546985B4DC083
T. amb:	-25°C to +55°C
Ver. tol.:	:2% Q2sQsQ4 :5% Q1sQ<Q2
Certification No.:	DK-0200-MI001-001
CE M18 0200	
Siemens AG, DE- 76181 Karlsruhe	
Made in France	

SIEMENS			
SITRANS F M MAG 6000 CT/5100 W			
System Order No.:	7ME65206PB122MA1-Z P24	MAWP (PS) at 0.1°C/32°F	10bar/145psi
System Serial No.:	111202H168	MAWP (PS) at 30°C/86°F	10bar/145psi
Size DN: 600 (24 inch.)	Lining: EPDM	T.media min.:	0.1°C/32°F
Sensor material:	ASTM A 105	T.media max.:	30°C/86°F
Meter orientation:	Horizontal (H)	Process connection:	EN 1092-1, PN10
Environmental Class:	E2.M1 IP67/NEMA 4X	Year of Manuf.:	2018
Fluid group	PED/L1	SW/HW V.:	4.09 X02 / 7
Supply:	115-230V AC 50-60Hz	Q3: 2500m3/h	Q3/Q1: 40
Certification No.:	DK-0200-MI001-001	CE M18 0200	
Siemens AG, DE- 76181 Karlsruhe			
Made in France			