



OIML Member State  
**Denmark**



**OIML Certificate no.  
R49/2006-DK2-10.01**

## **OIML CERTIFICATE OF CONFORMITY**

### **Initial Certificate**

Issuing authority

Name and address:

**FORCE Certification A/S  
Park Allé 345  
2605 Brøndby  
Denmark**

Person responsible:

**Michael Møller Nielsen – Examiner**

Applicant/Manufacturer

Name and address:

**Siemens A/S Flow Instruments  
Nordborgvej  
DK-6430 Nordborg**

#### **Identificatation of the certified type:**

Type of instrument: Water meter, electro magnetic flowmeter

Type designation: MAG5100W DN50-150 with MAG8000CT

Detailed characteristics will be defined on the following pages.

This certificate attests the conformity of the above identified Type (represented by the sample(s) identified in the OIML Evaluation report) with the requirements of the following Recommendation of the International Organization of Legal Metrology (OIML):

OIML R 49

Edition 2006

For accuracy class 1 and 2

This Certificate relates only to metrological and technical characteristics of the Type of measuring instrument covered by the relevant OIML Recommendation above-identified.

This certificate does not bestow any form of legal international approval.





The conformity was established by the results of tests and examinations provided in the associated OIML Type Evaluation report:

No. 10.01 dated 2010-05-31 that includes 369 pages

The OIML Issuing Authority

Date of issue: 2010-05-31

  
B. Lind-Nielsen  
Certification manager

  
Mr. M. M. Nielsen  
Examiner

*Important note:* Apart from the mention of the Certificate's reference number and the name of the OIML Member State in which the Certificate is issued, partial quotation of the Certificate and of the associated OIML Evaluation Report is not permitted, although either may be reproduced in full.

Technical documentation

FORCE Certification A/S File no. 80.976-134/10 and 80.976-105/09

### Characteristics:

Instrument tested according to	: OIML R49:2006	
Software version	: 3.03	
Accuracy class	: 1 & 2	
Verification tolerance	: Class 1	Class 2
	$\pm 3\% Q_1 \leq Q < Q_2$	$\pm 5\% Q_1 \leq Q < Q_2$
	$\pm 1\% Q_2 \leq Q \leq Q_4$	$\pm 2\% Q_2 \leq Q \leq Q_4$
Unit of measurement	: Cubic metre	
Measurement direction	: Bi directional	
Temperature	: T50 (0.1 - 50°C)	
Pressure	: PN = 16 bar or PN = 10 bar or PN = 6 bar	
Power supply	: 3.6V Lithium Battery, 12 - 24 V AC/DC, 115 - 230 V AC	
Compact/Remote	: Up to 30 meter cable	
Orientation	: All orientations	

### Class1

SIZE	*50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")
"R" Q3/Q1	250	250	250	250	250	250
Q1 [m³/h]	0.25	0.40	0.63	1.00	1.60	2.50
Q2 [m³/h]	0.40	0.64	1.00	1.60	2.60	4.00
Q3 [m³/h]	63	100	160	250	400	630
Q4 [m³/h]	78.75	125	200	312.5	500	787.5

\* OIML R49-1 allows class 1 only for meters with  $Q_3 \geq 100 \text{ m}^3/\text{h}$ , although the meter were tested to class 1 accuracy and passed the requirements.



The above mentioned table describe the maximum specification of flow range. Other dynamic ranges are allowed if "R" is 10, 25, 63, 80, 100, 125, 160, 200.

### Class 2

SIZE	50 (2")	65 (2½")	80 (3")	100 (4")	125 (5")	150 (6")
"R" Q3/Q1	400	400	400	400	400	400
Q1 [m³/h]	0.160	0.25	0.40	0.63	1.00	1.60
Q2 [m³/h]	0.250	0.40	0.63	1.00	1.60	2.50
Q3 [m³/h]	63	100	160	250	400	630
Q4 [m³/h]	78.75	125	200	312.5	500	787.5

The above mentioned table describe the maximum specification of flow range. Other dynamic ranges are allowed if "R" is 10, 25, 63, 80, 100, 125, 160, 200, 250, 315.

### **Technical data**

Water meter intended for metering cold potable water and hot water, based on an electromagnetic principle, designed to measure forward and reverse flow in all orientations, with straight inlet and outlet length, with no conditioner and equipped with an electronic calculating/indicating device.

Instrument tested according to	: OIML R49:2006	
Software version	: 3.03	
Environment class	: C	
Climatic class	: -25...55°C, condensing, closed.	
Durability specification	: Battery 6 years, Product 10 years	
Verification tolerance	: Class 1 ± 3% $Q_1 \leq Q < Q_2$ ± 1% $Q_2 \leq Q \leq Q_4$	Class 2 ± 5% $Q_1 \leq Q < Q_2$ ± 2% $Q_2 \leq Q \leq Q_4$
Unit of measurement	: Cubic metre	
Measurement direction	: Bi directional	
Temperature	: T50 (0.1 - 50°C)	
Pressure	: PN = 16 bar or PN = 10 bar or PN = 6 bar	
Power supply	: 3.6V Lithium Battery, 12 - 24 V AC/DC, 115 - 230 V AC	
Compact/Remote	: Up to 30 meter cable	



## **Other relevant information:**

Applied standards and documents:  
OIML R49: 2006

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

Type designation:  
MAG5100W DN50-150 with MAG8000CT

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

The design principle is, as for any electro magnetic 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 is fitted that generate the magnetic field.

## **Verification**

Procedure: Test points and verification requirements according to OIML R49:2006.

The water temperature range shall be  $20 \pm 10^{\circ}\text{C}$ .

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

$$Q_1 \leq Q \leq 1.1Q_1 \text{ (class 1: 3\%)} \text{ (class 2: 5\%)}$$

$$Q_2 \leq Q \leq 1.1Q_2 \text{ (class 1: 1\%)} \text{ (class 2: 2\%)}$$

$$0.9Q_3 \leq Q \leq Q_3 \text{ (class 1: 1\%)} \text{ (class 2: 2\%)}$$

## **Installation**

The product requires minimum of  $5 \times [\text{Dia}]$  straight pipe upstream from the sensor and minimum of  $3 \times [\text{Dia}]$  straight pipe downstream from the sensor.

The sensor can be installed in all orientations.


The meter is approved to be used bidirectional.

MAG8000CT must be installed as described by the manual.



**Labeling**

Example of a label

<b>SIEMENS</b>			
<b>SITRANS F M MAG8000 CT</b>			
7ME6820-2YC11-1AA1			
System no	7ME682 123456N123	Certification no:	R49/2006-DK2-10.1
DN50	EN 1092-1 PN16 PED	Accuracy:	Class 2 OIML R49
Meter orientation:	All orientations	Year:	2010
Environ. class:	C IP68	Q3:	63m <sup>3</sup> /h
Pressure max.	PN16	Q2/Q1:	1,6
Amb. Temp.:	-25 to + 55°C	Q3/Q1:	400
Software version	3.03		
Supply:	Lithium battery inside	<b>CE</b>	
Siemens A/S Flow Instruments			
Made in Denmark			