OIML Member State Denmark	**OIML Certificate No.** R49/2013-A-DK2-2021.03

OIML CERTIFICATE ISSUED UNDER SCHEME A

OIML Issuing Authority

Name:	FORCE Certification A/S
Address:	Park Allé 345, 2605 Brøndby Denmark
Person responsible:	Lars Poder

Applicant

Name:	Kamstrup A/S
Address:	Industrivej 28, 8660 Skanderborg, Denmark

Manufacturer

Name:	Kamstrup A/S
Address:	Industrivej 28, 8660 Skanderborg, Denmark

Identification of the certified type *(the detailed characteristics will be defined in the additional pages)*

Ultrasonic water meter, type KWM3230

Designation of the module *(if applicable)*

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

OIML R 49, Edition (year): 2013

For accuracy class (if applicable): 2

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Mail: info@forcecertification.com
Task no.: 121-22696.04 and ID no.: FC-OIML-10248

OIML Certificate No.
R49/2013-A-DK2-2021.03

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

This OIML 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 reports:

- OIML type evaluation report no. 120-26204-1 issued by FORCE Technology on 25-03-2021
- OIML type evaluation report no. 120-26204-2 issued by FORCE Technology on 19-04-2021
- Test report no. 120-31757-2 issued by FORCE Technology on 02-12-2020

The technical documentation relating to the identified type is contained in documentation file:

Task no. 121-22696

OIML Certificate History

Revision No.	Date	Description of the modification
Revision 0	28-04-2021	Original certificate

Identification, signature and stamp
The OIML Issuing Authority

Date: 28-04-2021

Michael Møller Nielsen
Certification manager

FORCE Certification
Tlf. 43 25 01 77
Park Allé 345
DK-2605 Brøndby

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 type evaluation report(s) is not permitted, although either may be reproduced in full.

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Measuring system description

KWM3230 is an integrated and hermetically sealed static water meter based on the ultrasonic measuring principle. The meter house is moulded composite material, mounted on a measuring tube made of brass or stainless steel.

The volume measurements are made by means of bidirectional ultrasonic technique according to the transit time method. KWM3230 has a display indicating the registered volume, measuring unit, error codes and more. Furthermore, an optical eye is located on the front, whereby data reading of data loggers and configuration of the meter, can be made for service and diagnostic purposes.

The meter has a wired connection on top of the meter, hidden behind a blind cover. Behind the blind cover, the meter has 3 pins for the wire connection. This would not cause any problems even on submerged water meters. The blind cover only protects the pins from mechanical impact and is not a seal of the connection.

The cover is mounted from factory and must be removed before installing the cable. It can be removed without use of any tools.

KWM3230 is power supplied from an internal lithium D-cell battery providing long battery life, even with high performance communication. A separate pulse interface can be used for converting the data telegram into volume pulses during calibration of the meter.

Inscriptions

The water meters type KWM2230 shall be clearly and indelibly marked with the following information:

- System designation
- Manufacturer designation or logo
- Manufacturer postal address
- Type, production year and serial number
- Accuracy class
- Frequency
- Max pressure loss
- Mechanical and electromagnetic environment classes
- Climatic class
- Flow limits
- Sensitivity velocity field classes
- Temperature of medium
- Maximum working pressure (PN)
- Protection class
- Dynamic Range (Q3/Q1)
- Software version (e.g.: SW: E1C1)
- Meter replacement year
- Direction of flow by means of an arrow shown on both sides of the body

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Technical and metrological characteristics

Flow designations

Meter size 1" x 190mm

Q_1 Minimum flow rate [l/h]	6.3		
Q_2 Transitional flow rate [l/h]	10		
Q_3 Permanent flow rate [m^3/h]	2.5	4	6.3
Q_4 Overload flow rate [m^3/h]	3.1	5	7.9
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

Meter size 1¼" x 260mm

Q_1 Minimum flow rate [l/h]	10		
Q_2 Transitional flow rate [l/h]	16		
Q_3 Permanent flow rate [m^3/h]	4	6.3	10
Q_4 Overload flow rate [m^3/h]	5	7.9	12.5
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

Meter size 1½" x 260mm

Q_1 Minimum flow rate [l/h]	16		
Q_2 Transitional flow rate [l/h]	25.6		
Q_3 Permanent flow rate [m^3/h]	6.3	10	16
Q_4 Overload flow rate [m^3/h]	7.9	12.5	20
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

Meter size 2" x 300mm

Q_1 Minimum flow rate [l/h]	25		
Q_2 Transitional flow rate [l/h]	40		
Q_3 Permanent flow rate [m^3/h]	10	16	25
Q_4 Overload flow rate [m^3/h]	12.5	20	31.3
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

Meter size DN50 x 270mm

Q_1 Minimum flow rate [l/h]	40		
Q_2 Transitional flow rate [l/h]	64		
Q_3 Permanent flow rate [m^3/h]	16	25	40
Q_4 Overload flow rate [m^3/h]	20	31.3	50
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

1) The meter can also be used for dynamics ranges: R315, R250, R200, R160, R125, R100
2) The meter can also be used for dynamics ranges: R500, R400, R315, R250, R200, R160, R125, R100
3) The meter can also be used for dynamics ranges: R800, R630, R500, R400, R315, R250, R200, R160, R125, R100

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Flow designations continued

Meter size DN65 x 300mm

Q_1 Minimum flow rate [l/h]	40	
Q_2 Transitional flow rate [l/h]	64	
Q_3 Permanent flow rate [m^3/h]	25	40
Q_4 Overload flow rate [m^3/h]	31.3	50
Dynamic range Q_3/Q_1	630 [2)]	1000 [3)]

Meter size DN80 x 300mm

Q_1 Minimum flow rate [l/h]	63	
Q_2 Transitional flow rate [l/h]	101	
Q_3 Permanent flow rate [m^3/h]	40	63
Q_4 Overload flow rate [m^3/h]	50	78.8
Dynamic range Q_3/Q_1	630 [2)]	1000 [3)]

Meter size DN100 x 250mm

Q_1 Minimum flow rate [l/h]	160		
Q_2 Transitional flow rate [l/h]	256		
Q_3 Permanent flow rate [m^3/h]	63	100	160
Q_4 Overload flow rate [m^3/h]	78.8	125	200
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

Meter size DN100 x 360mm

Q_1 Minimum flow rate [l/h]	160		
Q_2 Transitional flow rate [l/h]	256		
Q_3 Permanent flow rate [m^3/h]	63	100	160
Q_4 Overload flow rate [m^3/h]	78.8	125	200
Dynamic range Q_3/Q_1	400 [1)]	630 [2)]	1000 [3)]

1) The meter can also be used for dynamics ranges: R315, R250, R200, R160, R125, R100
2) The meter can also be used for dynamics ranges: R500, R400, R315, R250, R200, R160, R125, R100
3) The meter can also be used for dynamics ranges: R800, R630, R500, R400, R315, R250, R200, R160, R125, R100

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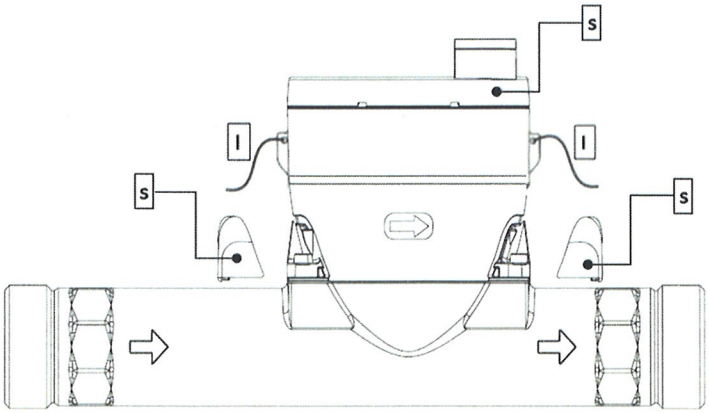
Other characteristics:

Instrument type:	Complete water meter
Temperature class:	T50 (0.1…50 °C) @ R = 1000 T70 (0.1…70 °C) @ R = 400
Water pressure class:	MAP 16
Accuracy class:	2
Electromagnetic environment class:	E1 and E2
Mechanical environment class:	M1, Class B and O (building and outdoors)
Ambient temperature range:	-25 °C – 55 °C
Sensitivity to irregularity upstream velocity field classes:	U0
Sensitivity to irregularity downstream velocity field classes:	D0
Protection class:	IP68
Orientation requirements:	Horizontal, vertical or at an intermediate angle
Power supply:	3.65 VDC lithium battery
Battery lifetime:	Up to 20 years

Security measures:

S	Security seal (Void sealing ring)
I	Installation seals (Wire and seals)



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