

EU-Type Examination Certificate

Measuring Instrument Directive

Certificate number: DK-0200-MI001-017

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

In accordance with Annex II Module B of the Directive 2014/32/EU of the of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of measuring instruments (MID).

Issued to: **Kamstrup A/S**
Industrivej 28, Stilling
DK-8660 Skanderborg

Type of instrument: Water meter

Type designation: flowIQ® 3100

Valid until: 2023-08-31

Number of pages: 15, including appendix

Date of issue: 2023-03-01

Version: 29

This new version of DK-0200-MI001-017 is an administrative extension of the validity period and it replaces the previous 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.

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FORCE Certification references: TASK no.: 123-23464.01 and ID. No.: 0200-MID-09689-29

Appendix to

EU-Type Examination Certificate Measuring Instrument Directive

Number: DK-0200-MI001-017

Issued by FORCE Certification A/S, Denmark

EU-notified body number 0200

Version	Issue date	Changes
DK-0200-MI001-017	2013-03-22	Original certificate
DK-0200-MI001-017 rev 1-2013	2013-09-23	Certificate withdrawn
DK-0200-MI001-017 rev 2-2013	2013-10-11	New updated technical data section, new type number overview
DK-0200-MI001-017 rev 1-2014	2014-10-24	New type designation – flowIQ™ 3100 changed to flowIQ® 3100, new antenna and temperature measuring feature added, new software versions, new type number overview
DK-0200-MI001-017 rev 3	2015-02-09	Changes to top PCB, new software versions, new meter variant added, new type number overview
DK-0200-MI001-017 rev 4	2015-08-19	New meter variant added, new type number overview
DK-0200-MI001-017 rev 5	2015-09-17	New meter variant added, new type number overview
DK-0200-MI001-017 ver 6	2016-09-07	New meter variant added, new type number overview
DK-0200-MI001-017 ver 7	2016-10-26	New meter variant added, new type number overview
DK-0200-MI001-017 ver 8	2017-06-02	New software version added, new radio frequency added, new antenna PCB added
DK-0200-MI001-017 ver 9	2017-06-28	New software version added
DK-0200-MI001-017 ver 10	2017-09-04	New meter variants added, new radio communication added, new software version added
DK-0200-MI001-017 ver 11	2017-11-07	Auxiliary components added to the RF circuit, new software version added
DK-0200-MI001-017 ver 12	2017-11-15	New meter variants added, new software versions added
DK-0200-MI001-017 ver 13	2017-12-08	New software version added
DK-0200-MI001-017 ver 14	2017-12-15	New software version added
DK-0200-MI001-017 ver 15	2018-02-08	New software version added
DK-0200-MI001-017 ver 16	2018-04-05	Module update for communication – changes only applies to the radio package
DK-0200-MI001-017 ver 17	2018-08-06	New software version added
DK-0200-MI001-017 ver 18	2018-09-19	New software version added
DK-0200-MI001-017 ver 19	2019-02-18	New software version added
DK-0200-MI001-017 ver 20	2019-03-22	New Sigfox power supply added, minor editorial change to the verification section
DK-0200-MI001-017 ver 21	2019-04-08	New LinkIQ radio and new software version added
DK-0200-MI001-017 ver 22	2019-07-10	New software versions added
DK-0200-MI001-017 ver 23	2019-09-25	New LinkIQ software version added
DK-0200-MI001-017 ver 24	2019-11-13	New LinkIQ software version added
DK-0200-MI001-017 ver 25	2020-02-19	Clarification of meter sizes based on rod profile brass and hot forged brass respectively
DK-0200-MI001-017 ver 26	2020-03-13	New Sigfox software version added
DK-0200-MI001-017 ver 27	2020-11-26	Minor editorial changes on page 5 and 8
DK-0200-MI001-017 ver 28	2022-04-05	New LinkIQ software version added
DK-0200-MI001-017 ver 29	2023-03-01	Administrative extension of the validity period

Applied standards and documents

OIML R 49:2006, OIML R 49:2013 (ISO 4064:2014).

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

Type designation:
flowIQ® 3100

Description:

The flowIQ® 3100 is an integrated and hermetically sealed static water meter, based on the ultrasonic measuring principle. The flowIQ® 3100 consists of a meter housing, which is formed as a vacuum chamber of injection moulded PPS composite, mounted on a meter body of brass or stainless steel. This construction ensures that no water will enter the electronic compartment, neither from the flow pipe, nor from the surroundings. The brass body is either hot forged or made of a rod profile.

The volume measurements are made by means of bidirectional ultrasonic technique, according to the transit time method. The measuring pipe and the electronics are integrated in one construction, which cannot be separated.

flowIQ® 3100 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.

flowIQ® 3100 is power supplied from an internal lithium battery, with a life time of up to 16 years. A separate pulse interface can be used for converting the data telegram into volume pulses during calibration of the meter.

Technical documentation:

Reference numbers:

- 123-23464.01
- 120-23190.04
- 120-23190.03
- 120-23190.02
- 120-23190.01
- 119-23567.06
- 119-23567.05
- 119-23567.04
- 119-23567.03
- 119-23567.02
- 119-23567.01
- 118-22961.04
- 118-22961.03
- 118-22961.02
- 118-22961.01
- 117-28455.07
- 117-28455.06
- 117-28455.05
- 117-28455.04
- 117-28455.03
- 117-28455.02
- 117-28455.01
- 116-26995.11
- 116-26995.05
- 114-33017.03.07
- 114-33017.03.08
- 114-33017.03.05
- 113-21029.0001.0005
- 113-21029.0001.0003
- 113-21029.0001.0002

Technical data for rod profile meters approved according to OIML R 49:2006

Meter sizes	DN	15	15	20	25	25
Permanent flow Q ₃	[m ³ /h]	1.6	2.5	2.5	4.0	6.3
Overload flow Q ₄	[m ³ /h]	2.0	3.1	3.1	5.0	7.8
Minimum flow Q ₁	[l/h]	10	10	10	16	25.2
Transitional flow Q ₂	[l/h]	16	16	16	25.6	40.3
Dynamic range Q ₃ /Q ₁		160/100	250/200/160/125/100			
Threaded connection	[Inch]	G ³ / ₄ B	G ³ / ₄ B	G1B	G1 ¹ / ₄ B	G1 ¹ / ₄ B
Flanged connection		N/A	N/A	N/A	N/A	N/A
Length	[mm]	110	110	190	260	260
Pressure stage	PN[bar]	16	16	16	16	16

Instrument type:	Complete meter
Temperature class:	T30 (0.1 – 30 °C) Also tested T50 according to OIML R 49:2006
Accuracy class:	2
Electromagnetic environment class:	E1 and E2
Mechanical environment class:	M1, class B and O (building and outdoors)
Climatic class:	-25 °C – 55 °C, condensing
Sensitivity to irregularity upstream velocity field classes:	U0
Sensitivity to irregularity upstream velocity field classes:	D0
Protection class:	IP68
Orientation requirements:	None
Power supply:	3.65 VDC Lithium battery
Battery lifetime:	Up to 16 years

DK-0200-MI001-017
Technical data for rod profile meters approved according to OIML R 49:2013

Meter sizes	DN	25	25	25	25	50	65	80
Permanent flow Q ₃	[m ³ /h]	1.6	2.5	4.0	6.3	16	25	40
Overload flow Q ₄	[m ³ /h]	2.0	3.1	5.0	7.8	20	31.3	50
Minimum flow Q ₁	[l/h]	10	10	16	25.2	64	100	160
Transitional flow Q ₂	[l/h]	16	16	25.6	40.3	102.4	160	256
Dynamic range Q ₃ /Q ₁		160/100	250/200/160/125/100					
Threaded connection	[Inch]	G1¼B	G1¼B	G1¼B	G1¼B	N/A	N/A	N/A
Flanged connection		N/A	N/A	N/A	N/A	Yes	Yes	Yes
Length	[mm]	175	175	175	175	270	300	300
Pressure stage	PN[bar]	16	16	16	16	25	25	25

Meter sizes	DN	50	65	80
Permanent flow Q ₃	[m ³ /h]	25	40	63
Overload flow Q ₄	[m ³ /h]	31.3	50	78.8
Minimum flow Q ₁	[l/h]	62.5	100	157.5
Transitional flow Q ₂	[l/h]	100	160	252
Dynamic range Q ₃ /Q ₁		400/315/250/200/160/125/100		
Threaded connection	[Inch]	N/A	N/A	N/A
Flanged connection		Yes	Yes	Yes
Length	[mm]	270	300	300
Pressure stage	PN[bar]	25	25	25

DK-0200-MI001-017
Technical data for hot forged meters approved according to OIML R 49:2013

Meter sizes	DN	20	25	25	32	25	32
Permanent flow Q ₃	[m ³ /h]	2.5	4.0	6.3	6.3	10	10
Overload flow Q ₄	[m ³ /h]	3.1	5.0	7.8	7.8	12.5	12.5
Minimum flow Q ₁	[l/h]	10	16	25.2	25.2	15.9	15.9
Transitional flow Q ₂	[l/h]	16	25.6	40.3	40.3	25.4	25.4
Dynamic range Q ₃ /Q ₁		250/200/160/125/100				630/500/400/315/250/ 200/160/125/100	
Threaded connection	[Inch]	G1B	G1¼B	G1¼B	G1½B	G1¼B	G1½B
Flanged connection		N/A	N/A	N/A	N/A	N/A	N/A
Length	[mm]	190	260	260	260	260	260
Pressure stage	PN[bar]	16	16	16	16	16	16

Meter sizes	DN	40	40
Permanent flow Q ₃	[m ³ /h]	10	16
Overload flow Q ₄	[m ³ /h]	12.5	20
Minimum flow Q ₁	[l/h]	40	40
Transitional flow Q ₂	[l/h]	64	64
Dynamic range Q ₃ /Q ₁		250/200/160/125/100	400/315/250/200/160/125/100
Threaded connection	[Inch]	G2B	G2B
Flanged connection		N/A	N/A
Length	[mm]	300	300
Pressure stage	PN[bar]	16	16

Technical data for all meters approved according to OIML R 49:2013 (continued)

Instrument type:	Complete meter
Temperature class:	T30 (0.1 – 30 °C) Also tested T50 according to OIML R 49:2013
Accuracy class:	2
Electromagnetic environment class:	E1 and E2
Mechanical environment class:	M1, class B and O (building and outdoors)
Climatic class:	-25 °C – 55 °C, condensing
Sensitivity to irregularity upstream velocity field classes:	U0
Sensitivity to irregularity upstream velocity field classes:	D0
Protection class:	IP68
Orientation requirements:	None
Power supply:	3.65 VDC Lithium battery
Battery lifetime:	Up to 16 years

Communication

Communication modules:

Module designation	Module description
021-10	Sigfox EU 1-way
021-15	Sigfox RCZ1 Daily Advanced
021-29	LinkIQ
021-30	Wired M-Bus
021-46	Wireless M-Bus, 868 MHz, mode C1 – ver. 2
021-47	Wireless M-Bus, 868 MHz, mode T1 – OMS – ver. 2
021-66	Wireless M-Bus, 868 MHz, mode C1
021-67	Wireless M-Bus, 868 MHz, mode T1 – OMS
021-90	Wireless M-Bus, 434 MHz, mode C1
021-91	Wireless M-Bus, 434 MHz, mode T1 – OMS

Configuration

Configuration modules:

Module designation	Module description
021-11	Sigfox, Daily values, 16-year battery
021-12	Sigfox, Hourly values, 5-year battery
021-13	Sigfox, Daily values sequence, 16-year battery
021-14	Sigfox, Hourly values sequence, 5-year battery
021-16	Sigfox RCZ1 Hourly Advanced
021-17	Sigfox RCZ1 Daily Sequence Advanced
021-18	Sigfox RCZ1 Hourly Sequence Advanced
021-19	Sigfox RCZ1 Hourly Compressed Advanced
021-95	Sigfox RCZ1 Radio Off Advanced
021-97	Sigfox, Radio disabled, 16-year battery
021-40	Wireless M-Bus, 868 MHz, mode C1
021-41	Wireless M-Bus, 868 MHz, mode T1 – OMS
021-42	Wireless M-Bus, 868 MHz, Mode T1 BSI
021-43	Wireless M-Bus, 434 MHz, Mode C1
021-44	Wireless M-Bus, 434 MHz, Mode T1 OMS, 12-year battery
021-45	Wireless M-Bus, 868 MHz, Mode C1, Extended Info
021-48	Wireless M-Bus, 868 MHz, Mode C1, 10-year battery
021-49	Wireless M-Bus, 434 MHz, Mode C1, 10-year battery
021-50	Wireless M-Bus, 868 MHz, Mode T1 OMS, 16-year battery
021-51	Wireless M-Bus, 434 MHz, Mode T1 OMS, 16-year battery
021-52	Wireless M-Bus, 868 MHz, Mode C1, 10-year batt. flow rate
021-60	Wireless M-Bus, 868 MHz, Monthly values, Mode C1
021-61	Wireless M-Bus, 868 MHz, Monthly values, Mode T1 OMS, 12-year battery
021-62	Wireless M-Bus, 868 MHz, Monthly values, Mode T1 BSI
021-63	Wireless M-Bus, 868 MHz, Yearly values, Mode C1
021-64	Wireless M-Bus, 868 MHz, Yearly values, Mode T1 OMS, 12-year battery
021-65	Wireless M-Bus, 868 MHz, Yearly values, Mode T1 BSI
021-71	Wireless M-Bus, 868 MHz, Monthly values, Mode C1, full log
021-72	Wireless M-Bus, 868 MHz, Monthly values, Mode T1 OMS, full log
021-73	Wireless M-Bus, 868 MHz, Monthly values, Mode T1 BSI, full log
021-74	Wireless M-Bus, 868 MHz, Yearly values, Mode C1, full log
021-75	Wireless M-Bus, 868 MHz, Yearly values, Mode T1 OMS, full log
021-76	Wireless M-Bus, 868 MHz, Yearly values, Mode T1 BSI, full log
021-96	Radio disabled, 868 MHz, full log
021-98	Radio disabled, 434 MHz
021-99	Radio disabled, 868 MHz

Approved software versions

Module description	Version no.	Checksum for metrological part of the software
Sigfox EU 1-way	xxxx0301/C1	40484
	xxxx0401/D1 ¹	50816
	xxxx0501/E1 ²	14914
	xxxx0601/F1	18145
	xxxx0701/G1	9851
	xxxx0801/H1	65508
	xxxx0A01/J1	36895
	xxxx0B01/K1	28931
	xxxx0C01/L1	48738
	xxxx0D01/M1	10820
	xxxx0E01/N1	8487
	xxxx1001/P1	64663
	xxxx1101/Q1	31263
LinkIQ	xxxx0201/B1	38243
	xxxx0301/C1	1458
	xxxx0401/D1	650
	xxxx0501/E1	33232
	xxxx0601/F1	30238
Wired M-Bus	xxxx0401/D1	44771
	xxxx0501/E1	26886
	xxxx0601/F1	47773
Wireless M-Bus C1/T1 OMS	xxxx0501/E1	25048
	xxxx0601/F1	47849
	xxxx0701/G1	22098
	xxxx0801/H1	55019
	xxxx0A01/J1	3880
	xxxx0B01/K1	51612
	xxxx0C01/L1	2941
	xxxx0D01/M1	52475
	xxxx0E01/N1	24735
	xxxx1001/P1	62145
	xxxx1101/Q1	44419
	xxxx1201/R1	43133
	xxxx1301/S1	54982
	xxxx1401/T1	14057
	xxxx1501/U1	58546
	xxxx1601/V1	63114
	xxxx1701/W1	59383
xxxx1801/X1	60936	
xxxx1901/Y1	48414	
xxxx1A01/Z1	3785	

¹ This version is not available in marketed products

² This version is not available in marketed products

Verification procedure

- According to: Directive 2014/32/EU and OIML R 49:2013
- Errors: Maximum permissible errors according to the Directive 2014/32/EU of the European Parliament and Council of February 26, 2014 on measurement instruments (MID), ANNEX III (MI-001).
- Procedure: Flow rate requirements according to OIML R 49:2013.
It is also a possibility to use water at a temperature of $20\text{ °C} \pm 10\text{ °C}$.
- Test points (flows): $Q_1 \leq Q \leq 1.1 Q_1$
 $Q_2 \leq Q \leq 1.1 Q_2$
 $0.9 Q_3 \leq Q \leq Q_3$

Test of water meter via display reading (Standing start/stop)

- Preparation: Use the software METERTOOL and an optical head to set the meter in Verification mode.
- Mount the water meter in the test rig
 - Connect flow (start)
 - Disconnect flow (stop)
 - Read the LC-Display and compare the reading to the actual volume

Test of water meter via pulse interface (Flying start/stop)

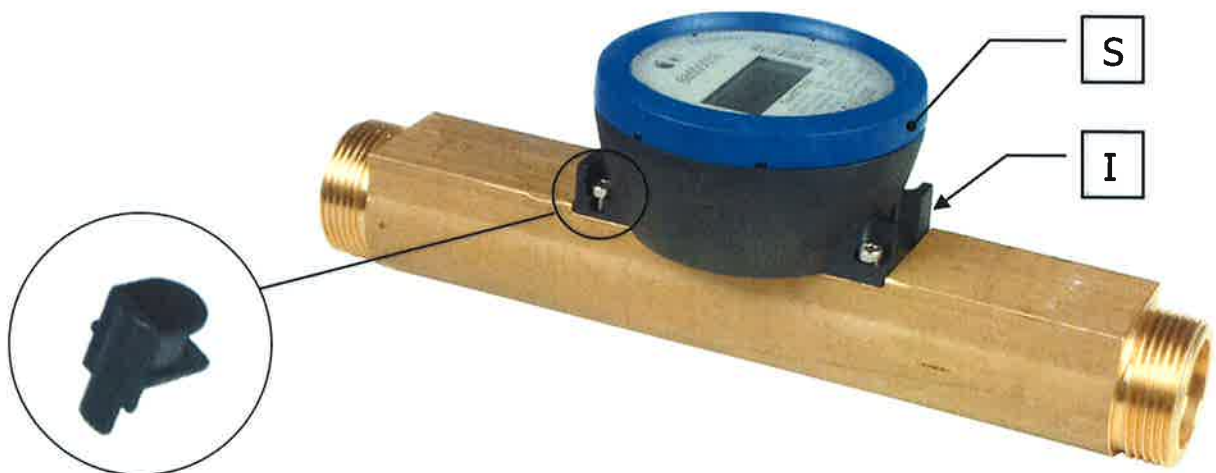
- Preparation: Connect a pulse interface type 66-99-143 to each water meter in the test rig and connect the volume pulse output to the pulse input on the test rig
- Mount the water meter in the test rig
 - Connect flow and wait for stabilisation of flow rate
 - The measuring period is started and stopped
 - Compare the EUT volume pulses to the master volume

Pulse Interface type 66-99-143 mounted on flowIQ® 3100 water meter via the optical support type 6561-331



Seals and markings

- D** Module D label (Behind the front glass)
- S** Security seal (Void sealing ring)
- T** Type label (Behind the front glass)
- I** The meter is sealed (2 seals placed diagonally)



Inscriptions

Front cover for flowIQ® 3100

System designation
Manufacturer designation or logo
Manufacturer postal address
Type, production year and serial number
Accuracy class
Mechanical and electromagnetic environment classes
Flow limits
Temperature of medium
Maximum working pressure (PN)
Dynamic Range (Q_3/Q_1)³
Software version (e.g.: SW:J1)

Regulations regarding installation angle

flowIQ® 3100 water meter may be installed in all possible angles and positions.

³ flowIQ® 3100 water meter may be labelled with a lower dynamic range than used under the verification procedure.

Photos of flowIQ® 3100

