kamstrup

Data sheet

flowIQ® 3100

- Nominal flow from 1.6 m^3/h up to 100 m^3/h
- Approved with dynamic range up to R400
- 'Drive-by', network or IoT
- Pinpoint accuracy
- Designed for operation in submerged environments
- Integrated communication supporting Wireless M-Bus and Wired M-Bus
- Long life
- Simple installation
- GDPR ready

Contents

Electronic ultrasonic meter - for measuring the distribution and consumption of cold water in blocks of flats and commercial premises.

Pinpoint accuracy
Ultrasonic flow measurement guarantees pinpoint measuring accuracy and long life. All measurements, references, readings, calculations and data communication are controlled by an advanced, specially designed, electronic circuit. The electronic meter has no moving parts, meaning that there is no wear and that flowIQ® 3100 is resistant to any impurities in the water.

Vacuum-sealed construction
flowIQ® 3100 is constructed as a hermetically vacuum-sealed unit, which prevents humidity from reaching the electronics. Therefore, condensation water between the glass and the large display is avoided.

The meter is waterproof, IP68 type tested, so also suitable for installation in meter pits.

The meter has been MID approved and type tested according to OIML R49.

Many possibilities for communication
flowIQ® 3100 comes with the newest radio technology to meet increasing market demands for smart metering, both for 'Drive-by', network or Sigfox installations. flowIQ® 3100 has a long range antenna. Radio packages are available with transmission intervals of 16 or 96 seconds for Wireless M-Bus and daily for Sigfox.

Longevity
The water meter is powered by an internal lithium battery, providing up to 16 years' lifetime.

Wireless M-Bus
flowIQ® 3100 has built-in radio communication – Wireless M-Bus for data communication on 868 MHz.
Consumption data can be read directly and manually from the display or using an optical eye. Furthermore, consumption data can be remotely read by means of the Wireless M-Bus.

flowIQ® 3100 comes with built-in data communication for Wireless M-Bus, 868 MHz, Mode C1 and mode T1 OMS, and have the possibility of configuration of data packages. It is also possible to choose the meter with integrated Sigfox communication.

Wired M-Bus
flowIQ® 3100 (up to DN80) is also available in a version with Wired M-Bus providing a comprehensive datagram according to EN 13757:2013 – used in applications using M-Bus protocol.

Simple and safe Installation
The meter housing, which is made of the plastic material PPS, is mounted on a measuring tube of brass or stainless steel, and as the meter can be installed both vertically and horizontally, it is quickly mounted independent of existing piping and installation conditions.

The unique combination of pinpoint measuring accuracy, longevity and built-in Wireless M-Bus – wireless radio communication – reduces the current operating costs of the water utility measurably.

In addition, leakage monitoring helps the utility and the consumer to detect any leaks in the system, with the aim of preventing further loss of water thus minimizing unforeseen costs to the consumer.

Hygiene
To protect the health of the consumers Kamstrup has a hygienic manufacturing process of the water meters. Kamstrup has a highly automated manufacturing process, and only uses materials which are approved for drinking water. Furthermore the products gets disinfected before dispatch. The hygiene is being controlled by external accredited laboratories and by frequent audits.

General description
flowIQ® 3100 is a series of integrated water meters intended for consumption and distribution measurement of cold domestic water. The water meter uses the ultrasonic principle and has been constructed on the basis of Kamstrup's experience since 1991 with the development and production of static ultrasonic meters.

flowIQ® 3100 has been subjected to a very comprehensive OIML R49 type test with a view to securing a long-term stable, accurate and reliable meter. One of the water meter's many advantages is the fact that it has no wearing parts which entails high immunity towards particles and thereby longevity.

The meter housing is constructed as a vacuum chamber of moulded composite material, which is mounted on a measuring tube of brass or stainless steel. Thus, the electronics are fully protected against penetration of water, both from medium pipes and from the environment. The meter is specially suited for small pump stations and distribution wells as well as meter pits which are frequently filled with water.

flowIQ® 3100 is also suited for consumption measurement in big blocks of flats and in commercial buildings. The meter fits perfectly into a network of MULTICAL® 21 household meters.

The volume is measured using ultrasonic technique which is proven as a long-term stable and accurate measuring principle. Two ultrasonic transducers are used to send sound signals both against and with the flow. The ultrasonic signal travelling with the flow reaches the opposite transducer first. The time difference between the two signals can be converted into flow velocity and subsequently volume.

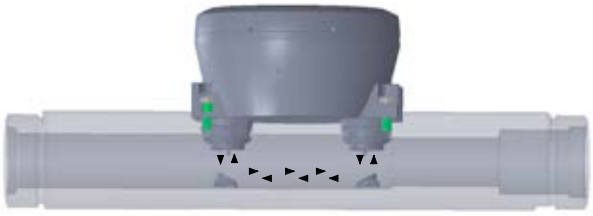
The accumulated water consumption is displayed in cubic meters (m^3) with five digits and up to three decimals, i.e. the resolution has been extended to 1 litre only. The large and clear display has been specially designed to obtain long life and sharp contrast in a wide temperature range.

In addition to volume reading, a graphic indication of current flow and a number of information codes are displayed.

All registers are saved daily in an EEPROM for 460 days. Furthermore, monthly data for the latest 36 months and yearly data for the last 10 years are saved.

The meter is fitted with an optical eye which makes it possible to read saved consumption data and info codes, stored in the meter's data logger. Using a USB connection, the optical eye furthermore gives access to the configuration of the water meter.

The meter can and must only be opened by Kamstrup A/S. If the meter has been opened and the seals have thus been broken, the meter is no longer valid for billing purposes. Furthermore, the factory guarantee no longer applies.



The ultrasonic principle

Characteristics – in short:

- OIML R49 type tested
- electronic ultrasonic meter
- accurate and reliable
- no moving parts – no wear
- low start flow
- hermetically sealed
- large clear display
- multiple info codes
- long-term stable
- long life
- powered by a lithium battery
- suitable for mounting in pits

Approved meter data

MID classifications

Approvals	
- up to 63 m^3/h	DK-0200-MI001-017
- DN100	DK-0200-MID-01858
Mechanical environment	Class M1
Electromagnetic environment	Class E2 for Wireless M-Bus version Class E1 for Wired M-Bus version
Climatic environment	5...55 °C, condensing humidity (indoors mounted in utility rooms and outdoors in meter pits – mounting in direct prolonged sunlight must be avoided)

OIML R49 designations

Accuracy class	2
Sensitivity class	U0/D0
Ambient class	Fulfils OIML R49 class B and C (B and O, new MID) indoors/outdoors
Medium temperature, cold water	0.1...30 °C (T30) or 0.1...50 °C (T50)

Meter type

Q_3 =	1.6 2.5 4.0 6.3 10 16 25 40 63 and 100 m^3/h
Drinking water approvals	DVGW W 421, WRAS, ACS, Belgaqua, SCU, PZH

Materials

Wetted parts

Meter housing, threaded	DZR brass (dezincification-resistant brass) (CW511L) – an environmentally friendly quality of brass – low lead
Meter housing, flanged	Stainless steel W.no. 1.4408
O-ring (gasket)	EPDM
Spring ring	Stainless steel
Measuring tube	Polyphenylene sulfide PPS with 40 % fibreglass Polyarylethersulfone (only for DN100)
Reflectors	Stainless steel
Strainer	Polyarylethersulfone PES

External meter parts

Meter housing	Polyphenylene sulfide PPS with 40 % fibreglass
Cover	Glass
Top ring (sealing)	Polycarbonate (dyed, blue)

Technical data

Electrical data

Battery	3.65 VDC, one C cell lithium
Battery lifetime:	up to 16 years at tBAT < 30 °C depending on selected module up to 8 years at tBAT < 55 °C (M-Bus only, Sigfox max 35 °C)
EMC data	Fulfils MID class: - E2 for Wireless M-Bus and Sigfox version - E1 for Wired M-Bus version
Sigfox classification	Class zero
Sigfox radio zone	RC1, 868 MHz, 14 dBm

Mechanical data

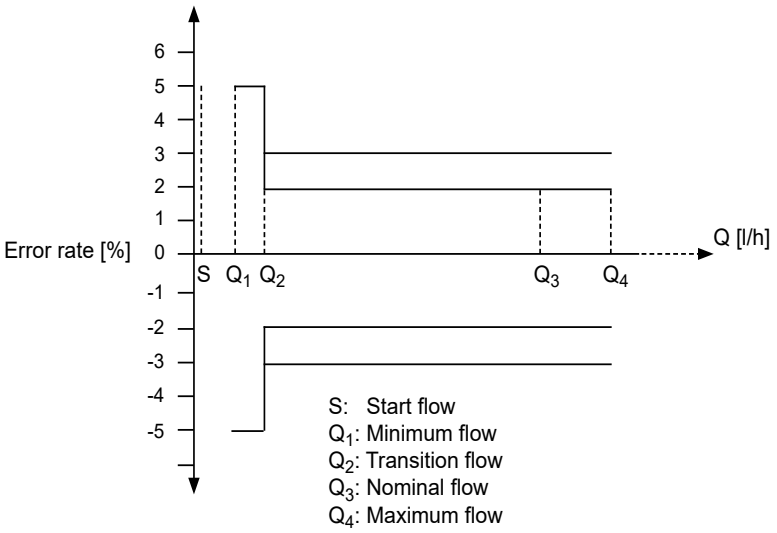
Metrological class	2
Ambient class	Fulfils OIML R49 class B and C (B and O, new MID) indoors/outdoors
Ambient/meter temperature	2…55 °C
Protection class	IP68
Water temperature	0.1…30 °C (T30) (Sigfox) or 0.1…50 °C (T50) (Wired and Wireless M-Bus only)
Storage temp. empty sensor	-25…60 °C
Pressure stage	Thread mounted PN16 Flange mounted PN25 Flange mounted DN100 PN16

Accuracy

MPE (maximum permissible error)
MPE according to OIML R49

Meter approved for 0.1…30 °C
± 5 % in range $Q_1 \leq Q < Q_2$
± 2 % in range $Q_2 \leq Q \leq Q_4$

For 30 °C < t < 50 °C
± 3 % in range $Q_2 \leq Q \leq Q_4$



Meter sizes

flowIQ® 3100 is available in different combinations of overall length and nominal flow Q_3.

YY = choice of communication
XX = country code
– also see section 'Ordering Details'

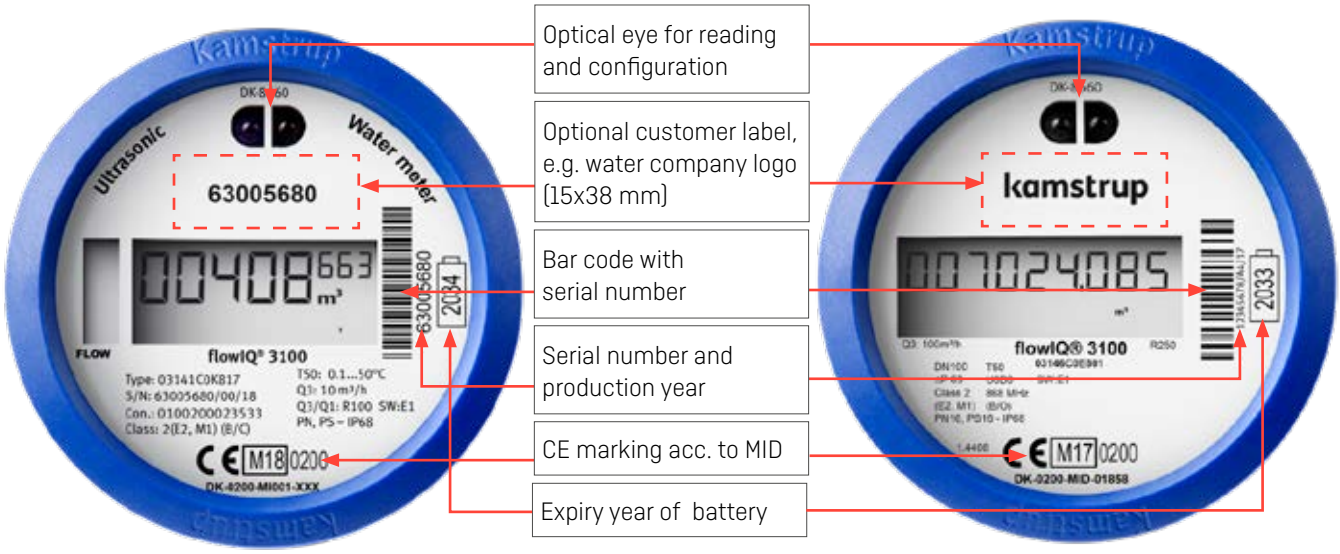
Type number	Nom. flow Q_3 [m³/h]	Connection on meter	Min. flow Q_1 [l/h]	Max flow Q_4 [m³/h]	Dynamic range Q_3/Q_1	Min. cutoff [l/h]	Max cutoff [m³/h]	Pressure loss Δp at Q_3 [bar]	Length [mm]	Check valve
031-YY-C0A-8XX	1.6	G¾B (R½)	16	2	100	2.0	4.6	0.14	110	No
031-YY-C0B-8XX	2.5	G¾B (R½)	25	3.1	100	2.0	4.6	0.34	110	No
031-YY-C5C-8XX	2.5	G1B (R¾)	25	3.1	100	2.0	4.6	0.34	190	Yes
031-YY-C02-8XX	2.5	G5/4B (R1)	25	3.1	100	2.0	4.6	0.34	175	Yes
031-YY-C03-8XX	4.0	G5/4B (R1)	40	5.0	100	3.2	11	0.095	175	Yes
031-YY-C0G-8XX	4.0	G5/4B (R1)	40	5.0	100	3.2	11	0.095	260	Yes
031-YY-C1T-8XX	4.0	G5/4B (R1)	40	5.0	100	3.2	30	0.028	260	Yes
031-YY-C1U-8XX	6.3	G5/4B (R1)	63	7.8	100	5.1	30	0.07	260	Yes
031-YY-C2U-8XX	6.3	G5/4B (R1)	40	7.8	160	5.1	30	0.07	260	Yes
031-YY-C0H-8XX	6.3	G5/4B (R1)	63	7.8	100	5.1	11	0.21	260	Yes
031-YY-C0K-8XX	6.3	G1⅛B (R5/4)	63	7.8	100	5.1	30	0.07	260	No
031-YY-C1K-8XX	6.3	G1⅛B (R5/4)	40	7.8	160	5.1	30	0.07	260	No
031-YY-C0D-8XX	10.0	G5/4B (R1)	100	12.5	100	8	30	0.175	260	Yes
031-YY-C1D-8XX	10.0	G5/4B (R1)	62.5	12.5	160	8	30	0.175	260	Yes
031-YY-C0Y-8XX	10.0	G1⅛B (R5/4)	100	12.5	100	8	30	0.175	260	No
031-YY-C1Y-8XX	10.0	G1⅛B (R5/4)	62.5	12.5	160	8	30	0.175	260	No
031-YY-C0J-8XX	10.0	G2B (R1½)	100	12.5	100	8	30	0.13	300	Yes
031-YY-C1V-8XX	16.0	G2B (R1½)	160	20	100	13	30	0.33	300	Yes
031-YY-C2V-8XX	16.0	G2B (R1½)	100	20	160	13	30	0.33	300	Yes
031-YY-C0L-8XX	16.0	DN50	160	20.0	100	13	45	0.19	270	No
031-YY-C1W-8XX	25.0	DN50	250	31	100	20	45	0.47	270	No
031-YY-C2W-8XX	25.0	DN50	156	31	160	20	45	0.47	270	No
031-YY-C0M-8XX	25.0	DN65	250	31	100	20	76	0.06	300	No
031-YY-C1Q-8XX	40.0	DN65	400	50	100	32	76	0.15	300	No
031-YY-C2Q-8XX	40.0	DN65	250	50	160	32	76	0.15	300	No
031-YY-C0N-8XX	40.0	DN80	400	50	100	32	114	0.05	300	No
031-YY-C1X-8XX	63.0	DN80	630	79	100	50	114	0.12	300	No
031-YY-C2X-8XX	63.0	DN80	394	79	160	50	114	0.12	300	No
031-YY-C2E-8XX	100	DN100	2000	125	50	80	152	0.2	360	No

Check valves are ordered separately.

Strainers can be ordered together with threaded meters.

Meter details

Meter information in permanent, laser engraved text.



For further information about the data on the label, please see the Technical description.

Display and info codes

flowIQ® 3100 sizes up to 63 m³/h can be read from the large, easily readable, specially designed display. The five large figures indicate number of cubic meters. The three small figures are decimals.

The sign L (to the right of m³) is always 'off' when the meter is in operation as it is solely used during factory control and verification of the meter.

The flow arrows in the left side of the display indicate water flow through the meter. If there is no flow, all arrows will be off.

flowIQ® 3100 size 100 m³/h (DN100) can be read from the large, easily readable, specially designed display.

The FLOW infocode is the equivalent of the flow arrows on the display to the left. Indicates water flow through the meter.

If there is no flow, the text will be off. This text does not flash.

The info codes in the displays have the following meaning and function:

Info code flashes in the display	Meaning
LEAK	The water in the meter has not been stagnant for one continuous hour during the latest 24 hours. This can be a sign of a leaky faucet or toilet cistern.
BURST	The water consumption has been consistently high for half an hour which indicates a pipe burst.
TAMPER	Attempt of fraud. The meter is no longer valid for billing.
DRY	The meter is not water-filled. In this case nothing will be measured.
REVERSE	The water flows through the meter in the wrong direction.
RADIO OFF flashes	The meter is still in transport mode with the built-in radio transmitter turned off. The transmitter turns on automatically when the first litre of water has run through the meter.
RADIO OFF	RADIO OFF lights permanently. The radio is switched off permanently. Can be activated via DataTool (module 99 only).
■■ (two square 'dots')	Two small squares flashing alternately indicate that the meter is active.
'A' followed by a number	Indicates the number of metrologic changes the meter has gone through after factory verification. If no adjustments have been made, both the 'A' symbol and the digit are inactive.

The info codes 'LEAK', 'BURST', 'DRY' and 'REVERSE' switch off automatically when the conditions that activated them no longer exist. In other words, LEAK disappears when the water has been stagnant for an hour, BURST disappears when the consumption falls to normal level, REVERSE disappears when the water no longer flows in the wrong direction, and DRY disappears when the meter is filled with water.

Measurement of temperatures

Temperature monitoring
flowIQ® 3100 measures temperatures, water*) and ambient temperature respectively. The measurements can be used to monitor the installation and to give an indication of the quality of the water. Both temperatures are logged in the daily, monthly and yearly records.

Minimum, average and maximum values are being registered daily. The register contains the last 460 days.

The first day of each month minimum, maximum and average temperatures are stored in the register. The first day of each year minimum and maximum temperatures are stored. The register contains the last 36 months, and the last 10 years.

Temperature values are referred to in °C and can be read via the optical eye and sent by the radio signal. Optional temperature combinations in the radio package are described in the section 'Data registers'.

Ambient/meter temperatures
Monitoring the ambient/meter temperature of the installation can be used as a warning of freezing temperatures or unintended high temperatures. The measurement in the meter housing corresponds to the ambient temperature where the meter is installed. The temperature is measured every minute. The calculation of maximum and minimum values is based on a two-minute averaging value. The average temperature is a time-weighted average value.

Water temperatures *)
Measuring the water temperature can be used to give an indication of the quality of the water when it reaches the consumer. This temperature is logged daily and monthly. The water temperature is measured as an indirect measurement of the water using the ultrasound signal.

The water temperature is measured every 32 seconds. The maximum and minimum values are calculated every 2 minutes based on an average since the latest calculation. Measurement of water temperature requires that the meter is filled with water. If there is no water in the meter, a code is saved, saying that the meter is not water filled.

During periods of very low water consumption, the water temperature approaches the ambient temperature. To give a correct indication of the average water temperature, this value is a volume weighted average. During periods without water flow, the weighted average cannot be calculated, and then a code 128 is stored.

*) Water temperature only available for sizes up to Q_3 = 4 m^3/h.

Data registers

flowIQ® 3100 has a permanent memory in which the values of various data loggers are saved.

The meter includes the following registers:

Data logging interval	Data logging depth	Logged value
Yearly logger	10 years	See table below
Monthly logger	36 months	See table below
Daily logger	460 days	See table below
Info logger	50 events	Info code, meter reading and date

It is always possible to read target volume and info codes for each of the latest 36 months as well as corresponding meter reading and possible info codes for each of the latest 460 days. The loggers can only be read via the meter's optical eye.

The following registers are logged:

The monthly/yearly logger is written on the first day of the month/year, the daily logger is written at midnight.

Register type	Description	Yearly logger, 10 years	Monthly logger, 36 months	Daily logger, 460 days
Date (YY.MM.DD)	Logging time, year, month and day	✓	✓	✓
Volume	Current meter reading (legal)	✓	✓	✓
Operating hour counter	Accumulated number of operating hours	✓	✓	✓
Info	Information code	–	✓	✓
Vol. Reverse	Volume during reverse flow	✓	✓	–
Date of max flow	Date stamp of max flow during period	✓	✓	–
Max flow	Value of max flow during period	✓	✓	✓
Date of min. flow	Date stamp of min. flow during period	✓	✓	–
Min. flow	Value of min. flow during period	✓	✓	✓
*) Min. temp. water	Water temperature – minimum	✓	✓	✓
*) Max temp. water	Water temperature – maximum	✓	✓	✓
*) Average temp. water	Volume weighted average water temp.	–	✓	✓
Min. temp.	Meter temperature – minimum	✓	✓	✓
Max temp.	Meter temperature – maximum	✓	✓	✓
Average temp.	Meter temp. – time weighted average	–	✓	✓

*) applies only for the meter sizes 1.6, 2.5 and 4.0 m^3/h.

Every time the information code changes, date and info codes are logged. Thus, it is possible to data read the latest 50 changes of the information code as well as the date the change was made. Reading is only possible via the optical eye.

For module 99 the daily, monthly and yearly loggers are not accessible over the optical eye, which is why the values in the loggers will show 0.

Optional data packages Wireless M-Bus

Part of the data transmitted through the Wireless M-Bus radio signal are optional.

It is possible to choose between different protocols (C1, T1), and various reading intervals, by choosing a specific module. Each module contains the option of choosing between up to 10 different data packages. You MUST choose one data package. For DN100 only module 46 is available.

868 MHz			
	C1	**T1 OMS**	**Radio disabled**
Modules with actual values	40/46/48	41	
Module – 'Radio off'			99

Note that the logger is reset whenever you change between the various modules.

Also note that the target date is always 31/12 when selecting 'yearly reading'.

DataTool
With DataTool, the water utility can itself make various settings on the water meters allocated to its customer number. After successful installation on the computer, the utility has the possibility of selecting between various modules and communication standards. If the meter, for example, is purchased with module 40, it can be reconfigured for one of the other modules. In addition, it is also possible to switch off the radio, if necessary. The required preset is already taken into account in the ordering process. DataTool can be requested from Kamstrup by sending an email to service@kamstrup.com.

Module	**Battery lifetime**		
868	16 Years	12 Years	10 Years
40	✓		
41		✓	
46 [1]	✓		
48 [2]			✓
99	✓		

[1] Only for DN100
[2] Only for selected markets

A Wireless M-Bus data package is transmitted every 16 or 96 seconds.

When sending a data package every 16 seconds the package is kept short and compressed to achieve a long battery life.

At 96 second intervals, a longer and intelligent radio package with built-in 'repair coding' is sent – the long battery life is still guaranteed since the transmission interval is increased.

'Drive-by' or 'Fixed network' need to be chosen when ordering, and can be re-programmed by METERTOOL or DataTool.

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Optional data packages Sigfox

Part of the data transmitted through the Sigfox radio signal is optional.

It is also possible to choose between the different data so it changes from one data package to another. The target volume is mandatory for each transmission, but transmission 1 can have information on max flow, whereas transmission 2 can have information on min. flow. This is called 'Sigfox sequence'.

Module	
11	Daily values
13	Daily values sequence
97	Radio disabled

Data packages

R-package	0	1
Info codes	✓	✓
Target volume V1	✓	✓
Max flow target		✓
Min. flow target	✓	

Sequences

R-package	0	1
Sequence	✓	✓

Info codes are pushed one time as soon as they occur. If the info code disappears and appears once again, a new info code is pushed.

The planned transmission will always hold information on active info codes.

Data packages in communication modules

Module	40										41										46 (only DN100)										48										99
Values	Actual																																							
Lifetime estimated	16										12		10						16		16										10										16
Mode	C1										T1										C1										C1										
Wireless M-Bus Freq. [MHz]	868																																							
R-group	1										2										1										6										9
R-package	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0
INFO codes	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Volume V1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
V1 Reverse	✓										✓	✓	✓		✓																✓	✓	✓		✓						
Target V1, month		✓		✓		✓		✓				✓	✓	✓		✓		✓				✓		✓		✓		✓					✓	✓				✓			
Target V1, year																																								
Target date																																								
Max flow, year																																								
Max flow, month	✓		✓		✓		✓										✓						✓														✓				
Max flow, day									✓										✓					✓						✓								✓			
Min. flow, month								✓										✓																	✓						
Min. flow, day																																							✓		
Date and time											✓				✓							✓			✓																
Battery, days left															✓										✓																
Min. T water, day				✓					✓					✓					✓																		✓	✓			
Min. T water, month					✓		✓	✓	✓						✓	✓	✓	✓						✓		✓	✓	✓													
Min. Temp. water, year																																								
Max Temp. water, month									✓															✓		✓		✓													
Min. Temp. ambient day																																				✓	✓			
Min. Temp. ambient, month						✓	✓		✓				✓			✓	✓	✓						✓		✓		✓													
Max Temp. ambient, month							✓	✓	✓				✓	✓			✓	✓						✓		✓		✓													
Min. Temp. ambient, year																																								
Average Temp. water day					✓																																			
Average Temp. ambient day				✓	✓				✓					✓					✓					✓												✓	✓			
Radio disabled																																								✓

Wired M-Bus version

Wired M-Bus is available for all sizes up to 63 m³/h.

For billing and analysis
- Fixed datagram
- Up to 9600 baud communication speed
- Primary/secondary/enhanced secondary addressing
- According to M-Bus standard EN 13757:2013

Introduction
flowIQ® 3100 is available with Wired M-Bus offering easy reading of the water meter via, for example, an M-Bus Master. Also electricity meters or heat/cool meter with a built-in M-Bus micro-master can be used.

The M-Bus interface fulfills the requirements in the M-Bus standard EN 13757:2013 and can be used in a wide variety of applications using M-Bus protocol.

Applications
The M-Bus meter is designed with focus on high flexibility, to fulfill a wide pallet of applications.

Analytics
flowIQ® 3100 supports high quantities of data in a fixed datagram. This is valid for both actual meter data as well as for historical logger data.

Billing
All relevant data for billing purposes can be transmitted from flowIQ® 3100.

M-Bus Addressing
The M-Bus interface supports primary, secondary and enhanced secondary addressing.

Primary addressing – (000-250)
When nothing else is specified, the M-Bus interface will automatically use the last 2-3 digits of the flowIQ® 3100 serial number as the primary address.

During the order process or by use of the METERTOOL HCW programming software, dedicated primary addresses can be selected. Further on, the primary address can be changed over the M-Bus network using standardized M-Bus commands.

Secondary addressing – (M-Bus ID No. 00000000-99999999)
The last eight digits of the serial number are used as M-Bus ID number for secondary addressing.

Enhanced Secondary addressing
– (M-Bus ID No. 00000000-99999999)/(M-Bus fabrication No. 00000000-99999999)

Enhanced secondary addressing is supported by adding the meter's serial number as M-Bus Fabrication Number to the secondary address.

Installation
The meter is delivered with a 1.5 meter long standard polarity independent connection.

Communication standard
Communication is in accordance with the M-Bus standard EN 13757:2013.

Communication speed
The meter supports 300, 2400 and 9600 baud communication speed and automatically detects the communication speed used by the M-Bus master.

Communication interval
Reading intervals ≥ one minute may not reduce the water meter battery lifetime, at any communication speed. Reading intervals ≥ 15 seconds are supported, but this will reduce battery lifetime and provide redundant information.

Communication via optical read-out head
Apart from the configurations in the flowIQ® 3100 itself, the primary M-Bus address can be configured via the optical readout head and METERTOOL HCW.

Communication from M-Bus master
The following parameters can be configured with M-Bus commands via the connected M-Bus master:

- Primary address
- Meter clock synchronization.

Wired M-Bus version

Communication from flowIQ® 3100 M-Bus
Available data (fixed datagram)

flowIQ® 3100			
M-Bus data header	**Actual data**	**Monthly data**	**Meter data**
M-Bus ID Manufacturer ID Version ID Device type Access counter Status (info codes) Configuration (not used)	Water meter reading (volume) Volume reverse Hour counter Actual flow Actual water temperature[2] Actual temp ambient. Min. flow day[1] Max. flow day[1] Min. water temp. day[2] Avg. water temp. day[2] Min. temp. ambient day[1] Max. temp. ambient day[1] Avg. temp. ambient day[1] Date/Time	Monthly target meter reading Min. flow last full month Max. flow last full month Min. water temp. last full mo.[2] Avg. water temp. lass full mo.[2] Min. ambient temp. last full mo. Max. ambient temp. las full mo. Avg. ambient temp. last full mo. Target date	Information codes Config number Meter type (main / sub type) Meter SW Revision

[1] The daily flow and temperatures are the actual daily minimum, average or maximum values, logged from midnight until the present reading time.

[2] Only available for sizes up to 4 m^3/h.

Technical specifications

Physical	Fully integrated M-Bus interface

Communication

Readout speed	300/2400/9600 baud with automatical speed detection
Communication interval	Longer than 1 minute (recommended)
Protocol	EN 13757:2013
Configuration	METERTOOL HCW via optical read-out head (see page 14)

Supply

Power consumption	1 unit load (1.5 mA) per M-Bus slave
Rin / Cin	422 Ω/0.5 nF
Max cable resistance	29 Ω/180 nF per pair
Operational temperature	5 - 55 °C

Markings/approvals
- EN 13757CE approval
- MID

Ordering
See sections ‘Ordering details’ and ‘Configuration’

Pressure loss

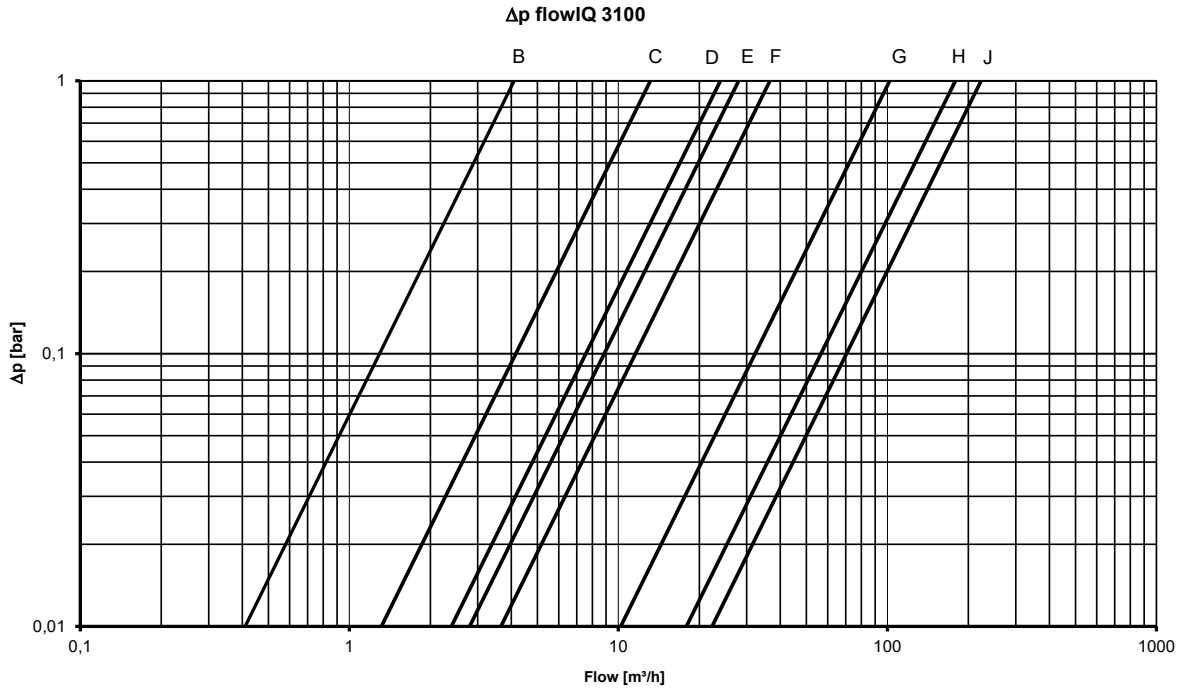
According to OIML R49 the maximum pressure loss must not exceed 0.63 bar (0.063 MPa) in the range Q_1 to Q_3.
The pressure loss in a meter increases with the square of the flow and can be stated as:

$Q=k_v \times \sqrt{\Delta p}$

where:

Q = volume flow rate [m³/h]
k_v = volume flow rate at 1 bar pressure loss
Δ_p = pressure loss [bar]

Graph	Q_3 [m³/h]	Nom. diameter [mm]	k_v	Q at 0.63 bar [m³/h]	Type 031-YY-**CXX**-8XX
B	1.6	G3/4B[R½]	4.1	3	C0A
	2.5	G3/4B[R½] & G1B[R3/4] & G5/4B[R1]	4.1	3	C0B-C5C-C02
C	4.0	G5/4[R1]	13	10	C03-C0G
	6.3	G5/4[R1]	13	10	C0H
D	4.0	G5/4[R1]	24	19	C1T
	6.3	G5/4[R1] & G1½[R5/4]	24	19	C1U-C2U-C0K-C1K
	10	G5/4[R1] & G1½[R5/4]	24	19	C0D-C1D-C0Y-C1Y
E	10 & 16	G2B[R1½]	28	22	C1V-C2V-C0J
F	16 & 25	DN50	36.6	29	C1W-C2W-C0L
G	25 & 40	DN65	102	81	C1Q-C2Q-C0M
H	40 & 63	DN80	179	142	C0N-C1X-C2X
J	100	DN100	223	177	C2E



Ordering details

An order is initiated by stating the type number of the selected model of flowIQ® 3100. The type number includes information on meter type - cold or hot water, meter size, overall length, battery life, country code, etc. Some of the features included in the type number cannot be changed.

Subsequently, the meter configuration, which determines customer specific requirements such as number of digits in display, etc., is selected. The configuration is completed during programming of the finished meter.

Finally, required accessories, if any, in the form of gaskets, different extension pipes, non-return valve, strainer and standard couplings are selected.

Accessories are enclosed separately to be mounted by the installer.

Ordering details

flowIQ® 3100	**Type 031**	☐☐	☐	☐	☐	☐	☐☐
Communication							
Wireless M-Bus. 868 MHz. mode C1		40					
Wireless M-Bus. 868 MHz. mode T1 - OMS [1]		41					
Wireless M-Bus. 868 MHz. mode C1 [2]		46					
Wireless M-Bus. 868 MHz. mode C1 [1]		48					
Wired M-Bus [3]		30					
Module with deactivated radio communication		99					
Sigfox daily values		11					
Sigfox daily values sequence		13					
Module with disabled radio communication (Sigfox)		97					
[1] only for selected markets							
[2] only for DN100							
[3] only for meters up to 63 m³/h							
Supply							
16 years' battery life			C				
Meter size							
Q_3 [m³/h]	**Connection**	**Length [mm]**	**Dynamic range**				
1.6	G¾B (R½)	110	100		0	A	
2.5	G¾B (R½)	110	100		0	B	
2.5	G1B (R¾)	190	100		5	C	
2.5	G5/4B (R1)	175	100		0	2	
4.0	G5/4B (R1)	175	100		0	3	
4.0	G5/4B (R1)	260	100		0	G	
4.0	G5/4B (R1)	260	100		1	T	
6.3	G5/4B (R1)	260	100		1	U	
6.3	G5/4B (R1)	260	160		2	U	
6.3	G5/4B (R1)	260	100		0	H	
6.3	G1½B (R5/4)	260	100		0	K	
6.3	G1½B (R5/4)	260	160		1	K	
10	G5/4B (R1)	260	100		0	D	
10	G5/4B (R1)	260	160		1	D	
10	G1½B (R5/4)	260	100		0	Y	
10	G1½B (R5/4)	260	160		1	Y	
10	G2B (R1½)	300	100		0	J	
16	G2B (R1½)	300	100		1	V	
16	G2B (R1½)	300	160		2	V	
16	DN50	270	100		0	L	
25	DN50	270	100		1	W	
25	DN50	270	160		2	W	
25	DN65	300	100		0	M	
40	DN65	300	100		1	Q	
40	DN65	300	160		2	Q	
40	DN80	300	100		0	N	
63	DN80	300	100		1	X	
63	DN80	300	160		2	X	
100	DN100	360	50		2	E	
Cold water meter							8
Country code (language on label, etc.)							XX

The country code is used for:

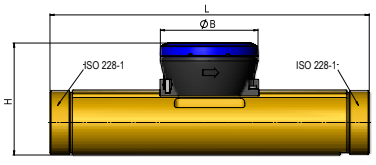
- Language and approval on type label
- Temperature class of cold water meter (T30 and T50)

Configuration

	KK	LLL	MMM	N	P	R	S	T
Target date (fixed)	01							
Average time of max values								
2 minutes		002						
Customer label 2005-MMM			MMM					
Leakage message limit								
OFF				0				
Flow continuously > 0.5 % of Q_3				1				
Flow continuously > 1.0 % of Q_3				2				
Flow continuously > 2.0 % of Q_3				3				
Pipe burst limit								
OFF					0			
Flow > 5 % of Q_3 for 30 minutes					1			
Flow > 10 % of Q_3 for 30 minutes					2			
Flow > 20 % of Q_3 for 30 minutes					3			
Optional register in data logger								
Depending on the selected communication type, it is possible to select between up to 10 data packages. For further information see page 13.								
Display resolution								
00001 m^3							0	
00000.1 m^3							1	
00000.01 m^3							2	
00000.001 m^3							3	
000000.001 m^3 *(only for DN100)*							9	
Encryption level								
No encryption								0
Utility encryption (only available for selected markets)								2
Encryption with separately forwarded key								3
Unless otherwise stated in the order, Kamstrup supplies the following:	***01***	***002***	***000***	***2***	***3***	***5***	***3***	***3***

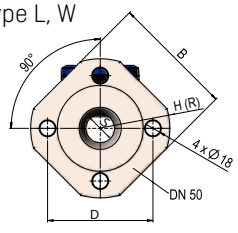
Dimensioned sketches

Threaded meters

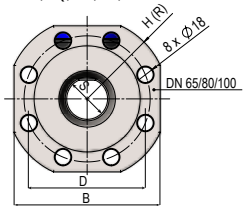


Flanged meters

Type L, W



Type M, Q, N, X, E



Dimensions

Q_3 [m³/h]	Thread/ flange on meter	L [mm]	H [mm]	B [mm]	S [mm]	D [mm]	Approx weight [kg]	Meter type
1.6	G¾B (R½)	110	97	91.6	-	-	1.05	A
2.5	G¾B (R½)	110	97	91.6	-	-	1.05	B
2.5	G1B (R¾)	190	97	91.6	-	-	1.1	C
2.5	G5/4B (R1)	175	89.5	91.6	-	-	1.9	2
4.0	G5/4B (R1)	175	89.5	91.6	-	-	1.7	3
4.0	G5/4B (R1)	260	89.5	91.6	-	-	2.5	G
4.0	G5/4B (R1)	260	89.5	91.6	-	-	1.7	T
6.3	G5/4B (R1)	260	89.5	91.6	-	-	1.7	U
6.3	G5/4B (R1)	260	89.5	91.6	-	-	2.5	H
6.3	G1½B (R5/4)	260	89.5	91.6	-	-	1.7	K
10.0	G5/4B (R1)	260	89.5	91.6	-	-	1.7	D
10.0	G1½B (R5/4)	260	89.5	91.6	-	-	1.7	Y
10.0	G2B (R1½)	300	104.5	91.6	-	-	4.7	J
16.0	G2B (R1½)	300	104.5	91.6	-	-	4.7	V
16.0	DN50	270	R 83	165	Ø34	125	8.5	L
25.0	DN50	270	R 83	165	Ø34	125	8.5	W
25.0	DN65	300	R 93	168	Ø47	145	12.0	M
40.0	DN65	300	R 93	168	Ø47	145	12.0	Q
40.0	DN80	300	R 100	185	Ø59	160	14.2	N
63.0	DN80	300	R 100	185	Ø59	160	14.2	X
100.0	DN100	360	R 110	205	Ø77	180	16.2	E

Accessories and additional documentation

See Accessories for Water Meters: 5810-1270-GB

For further information about READy, USB Meter Reader and Wireless M-Bus see Technical Descrpiton and/or the installation guide.

For information about our Hygiene concept go to: products.kamstrup.com.

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