

## Data sheet

### flowIQ® 4200

- Nominal flow from 160 m<sup>3</sup>/h to 1000 m<sup>3</sup>/h
- Approved with dynamic range up to R1000
- Connection from DN125 to DN300
- Pinpoint accuracy
- Wired interface for flowIQ® Gateway
- External power supply from the gateway
- Ambient temperature measurement
- Replaceable battery
- Designed for operation in submerged environments
- Coated split flanges in cast iron
- Volume measurements every second



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## Intelligent district meters

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flowIQ® 4200 is intended for measuring potable water in distribution networks and covers a series of water meters with integrated, hermetically sealed electronics. A wired interface connection for serial communication is built-in on the front of the meter, which enables connection to flowIQ® Gateway. flowIQ® 4200 can also be externally power supplied from the Gateway.

flowIQ® 4200 is a stainless steel meter that comes with four ultrasonic sensors. The meter is powered by 2xD-cell batteries. Meter sizes are available from DN125 to DN300. The meter is delivered with separate coated split flanges in cast iron.

flowIQ® 4200 is suitable for measurement in commercial premises and industrial environments. The meters are suitable for mounting in pump stations or well heads and are fully protected against internal or external penetration of water.

### Hygiene

Security and hygiene are high-priority areas within both development and production.

Our water meters are approved for use with drinking water.

## Approved meter data

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### MID classifications

Approval flowIQ® 4200 - KWM4230 – meter sizes: DN125-DN300:  
DK-0200-MI001-040

Mechanical environment Class M1

Electromagnetic environment Class E2

### OIML R 49 designations

Accuracy class 2

Sensitivity class U0/D0

Ambient class Fulfills OIML R 49 class B and O (building/outdoor)

Medium temperature, cold water 0.1...50 °C (T50)

Meter types  $Q_3 = 160, 250, 400, 630$  and  $1000 \text{ m}^3/\text{h}$

Ambient temperature range 5...55 °C, condensing humidity  
(mounted indoors in utility rooms and outdoors in meter pits – mounting in direct prolonged sunlight must be avoided)

**Radio communication** RE-D (Radio Equipment Directive)

**Drinking water approvals** KIWA, KTW-BWGL  
(all parts are suitable for drinking water)

## Material

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### Wetted parts

Meter flow part Stainless steel, W.no. 1.4408 (316)

Transducer pocket PPS

O-ring/gasket EPDM

### Non-wetted parts

Flange Cast iron, EN-GJS-500-7C, black FBE coating

## Technical data

### Electrical data

Battery	2 x 3.65 VDC lithium D-cell (replaceable)
Battery lifetime	Up to 20 years depending on selected data package and ambient installation temperature (without external power supply)

### Mechanical data

Metrological class	2
Protection class	IP68
Storage temp. empty sensor	-25...60 °C (< 40 °C for a prolonged storage time)
Impact energy levels	IK08 according to IEC62262
Pressure stage	PN16 all sizes
Connection	Split flange, EN 1092-1

## Meter sizes

flowIQ® 4200 is available in different combinations of length, dynamic range and nominal flow  $Q_3$ .

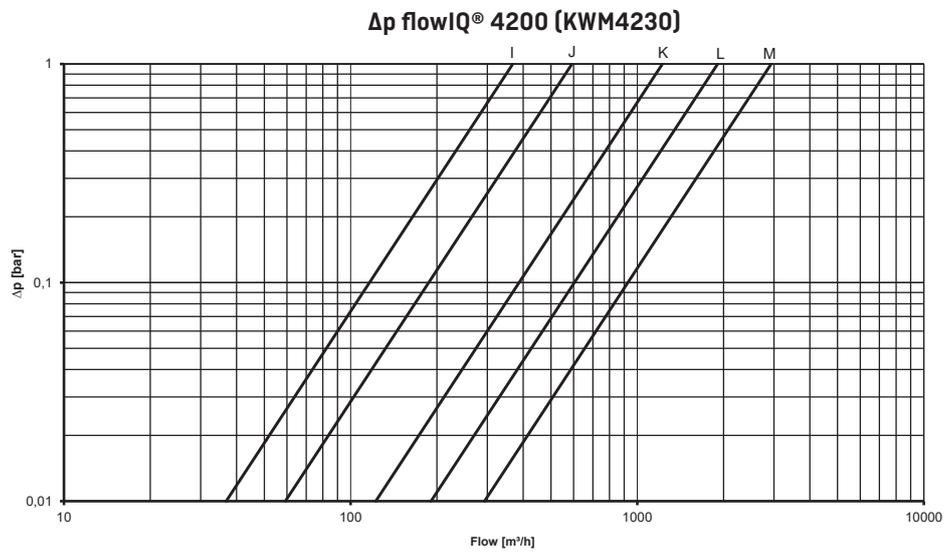
Meter type	Connection on meter	Nom. flow $Q_3$ [m³/h]	Min. flow $Q_1$ [l/h]	Max flow $Q_4$ [m³/h]	Min. cutoff [l/h]	Max cutoff [m³/h]	Pressure loss $\Delta p$ at $Q_3$ [bar]	Dynamic range	Split flanges weight kg	Total weight kg
AH	DN125	160	640	200	70	280	0.19	250	9.5	19
AR	DN150	250	1000	312.5	250	438	0.18	250	14	27
BA	DN200	400	1600	500	300	700	0.11	250	19	39
BJ	DN250	630	2520	787	600	1100	0.11	250	29	61
BS	DN300	1000	4000	1250	1000	1750	0.12	250	38	84

Measurements occur in the range from 'Min. cutoff' to 'Max cutoff' – however, the accuracy is only guaranteed in the range from  $Q_1$  to  $Q_4$ . The maximum cut-off flow above  $Q_4$  depends on the hydraulic conditions.

Meter type	Connection on meter	Nom. flow $Q_3$ [m³/h]	Min. flow $Q_1$ [l/h]	Max flow $Q_4$ [m³/h]	Min. cutoff [l/h]	Max cutoff [m³/h]	Pressure loss $\Delta p$ at $Q_3$ [bar]	Dynamic range <sup>1)</sup>	Split flanges weight kg	Total weight kg
AH	DN125	160	254	200	70	280	0.19	630	9.5	19
AR	DN150	250	397	312.5	250	438	0.18	630	14	27
BA	DN200	400	635	500	300	700	0.11	630	19	39
BJ	DN250	630	1000	787	600	1100	0.11	630	29	61
BS	DN300	1000	1587	1250	1000	1750	0.12	630	38	84

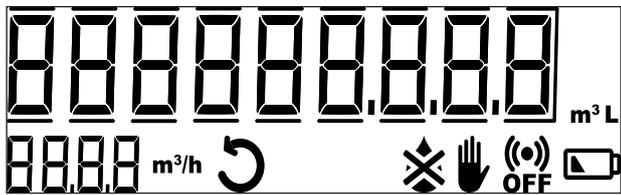
<sup>1)</sup> Only for selected markets. For dynamic range 630 the meter MUST only be installed horizontally.

## Pressure loss



Graph	Q <sub>3</sub> [m <sup>3</sup> /h]	Meter type	Dimension [mm]	kv	Q @ 0.63 bar [m <sup>3</sup> /h]
I	160	AH	250 mm, DN125	368	292
J	250	AR	300 mm, DN150	592	470
K	400	BA	350 mm, DN200	1224	972
L	630	BJ	450 mm, DN250	1908	1515
M	1000	BS	500 mm, DN300	2933	1855

## Display and info codes



The large display of flowIQ® 4200 shows totalized volume, flow rate and symbols for the info codes.

An info code indicates a special condition in the meter. If the info code is available in the display, the related symbol is on when it has been activated. If the 'condition' is not active, the sign is off.

Info code	Meaning
	Attempt of fraud. The meter is no longer valid for billing.
	The meter is not filled with water. In this case, nothing will be measured.
	The water flows through the meter in the wrong direction.
	This symbol appears when the expected battery lifetime left is 6 months.
	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 water start running through the meter.
	RADIO OFF lights continuously. The radio is switched off permanently. Can be activated via METERTOOL or DataTool.

## Core functions

### Temperature monitoring

flowIQ® 4200 measures ambient temperatures. An info code is activated if the temp. is above or below configurable values.

### Consumption above legal flow range

The meter logs information on consumption above the legal flow range. This information can be used to indicate if the meter size of a given installation is correct.

### Consumption profile and no consumption

The meter tracks consumption in different flow intervals for further analysis of the consumption patterns of the specific installation. If no consumption has been measured for a long period of time, the meter will inform the utility as this indicates that there might be a problem with the installation.

### Current flow and reverse flow display

Besides the consumed volume, flowIQ® 4200 also shows the current flow in the display. The flow display has been designed with user experience in mind, where it can be advantageous, for example during installation, to be able to see the current consumption. In this context, it is important to stress that the metrological approval of the water meter is related to the volume reading only. Due to the meter's update time, the flow display, in case of rapidly increasing/ decreasing flow, may turn out to be slower than the real flow and not a one-to-one correlation between the flow display and the volume growth. In general, one would expect the flow display to stabilise after about half a minute of constant flow and thereafter to be consistent with volume growth. The reverse flow will be shown with a "-" sign in front of the values. Therefore, the reverse flow will only be in three digits resolution.

## Data registers

The water meter has a permanent memory in which the values of various data loggers are saved. The loggers can be read via the meter's optical eye. The following registers are logged:

Description	Yearly logger	Monthly logger	Daily logger	Hourly logger
Logger depth	20 years	36 months	460 days	2400 hours
Operating hours	✓	✓	✓	✓
Info codes incl. hour counter	✓	✓	✓	✓
Volume	✓	✓	✓	✓
Volume reverse	✓	✓	✓	✓
Flow max incl. date	✓	✓		
Flow min. incl. date	✓	✓		
Flow max incl. timestamp			✓	
Flow min. incl. timestamp			✓	
Ambient temp. max	✓	✓	✓	
Ambient temp. min.	✓	✓	✓	
Ambient temp. avg.	✓	✓	✓	

Every time the information code changes, the 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 IR interface.

## Integrated Communication

The meter supports a variety of different communication options depending on meter type and country code. All meters can be used with Kamstrup's external antenna, except for meters with wired interface. Transmission properties and data packages are defined in the configuration number YY-ZZZ. These can be changed with METERTOOL through the optical IR interface.

### Wireless M-Bus

Wireless M-Bus is an unlicensed European frequency standard protocol. Kamstrup water meters are utilizing the C1-mode and also support T1-BSI/OMS. Kamstrup Wireless M-Bus is transmitting every 16 seconds (drive-by) or every 96 seconds (fixed network). Encryption for Wireless M-Bus is done in accordance with AES 128 standard.

### linkIQ®

linkIQ® is a Kamstrup developed communication protocol. The linkIQ® protocol ensures the potential for a future-proof, robust and competitive communication network. By utilizing the linkIQ® protocol, high data performance can be achieved. linkIQ® is a "multi-channel-protocol" that can communicate on the 868 MHz band, which has 8 channel changes and retransmission of previously transmitted data. Besides the linkIQ® transmission the meter can also send a small Wireless M-Bus data package for fallback drive-by readings.

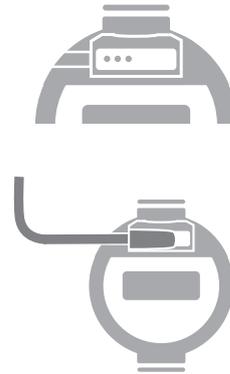
For detailed information regarding all of the above and data packages, please contact Kamstrup.

**Note:** Integrated radio communication is always active, independent of utilization of the wired interface.

## Wired interface

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- flowIQ® 4200 has a built-in wired interface on the front of the meter, through the front glass. The construction does not compromise the IP68 approval.
- The wired interface is a serial communication to connect to flowIQ® Gateway.
- The gateway synchronizes with the meter every 20 seconds. It is possible to reconfigure the meter with METERTOOL to set the meter in fast transmission which increases the synchronization to every 4 seconds.



- The wired interface does not support pulse output configuration [it is not possible for the wired interface to send out volume pulses].
- Fast transmission will reduce the battery lifetime with approximately 50 %.

## External power supply

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flowIQ® 4200 can also be externally power-supplied from the wired interface from flowIQ® Gateway.

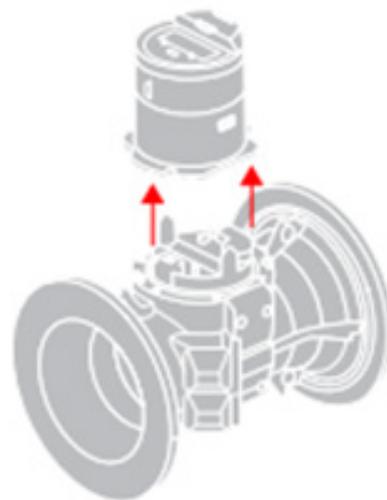
When an external power supply is connected, there is no power consumption from the meter's batteries.

## Replaceable battery

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flowIQ® 4200 has two built-in D-cell lithium batteries that supply the meter. When replacing the battery, Kamstrup's Battery replacement kit no: 66-99-821 must be utilized with the relevant replacement guide.

The battery replacement kit can ONLY be ordered through Kamstrup's product service. Otherwise the warranty is void. Kamstrup's product service will also help you with the training tutorial.



## Ordering details

An order is initiated by stating the type number of the selected model of flowIQ® 4200.

The type number includes information on meter type - meter size, meter length, battery supply, country code, etc.

Subsequently, the meter configuration, which determines customer-specific requirements, is selected.

Accessories are enclosed separately to be mounted by the installation technician.

The features included in the type number cannot be changed once the meter has been produced.

<b>flowIQ® 4200 - KWM4230</b>	<b>Meter type 02-</b>	<input type="checkbox"/>							
<b>Mechanical design</b>									
Stainless steel body with split flanges in cast iron		E							
<b>Communication module</b>									
Serial communication for gateway and external power supply		65							
<b>Power supply</b>									
2 x D-cell		G							
<b>Dynamic range</b>									
R250		C							
R630 <sup>1)</sup>		G							
<b>Meter size (stainless steel)</b>									
DN125 (250 mm)	160 m <sup>3</sup> /h	(DN125-PN16)	AH						
DN150 (300 mm)	250 m <sup>3</sup> /h	(DN150-PN16)	AR						
DN200 (350 mm)	400 m <sup>3</sup> /h	(DN200-PN16)	BA						
DN250 (450 mm)	630 m <sup>3</sup> /h	(DN250-PN16)	BJ						
DN300 (500 mm)	1000 m <sup>3</sup> /h	(DN300-PN16)	BS						
<b>Meter type</b>									
Cold water		8							
<b>Country code</b>		XX							

<sup>1)</sup> Only for selected markets

The country code is used for:

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

## Configuration

Config code	DDD	JJ	LLL	MMMM	N	P	S	U	RR	CCC	V	T	YY	ZZZ
	□□□	□□	□□□	□□□□	□	□	□	□	□□	□□□	□	□	□□	□□□
<b>Display views</b>														
KWM4230	804													
<b>GMT offset – time zone</b>														
(GMT-2)		40												
(GMT+1)		52												
(GMT+2)		56												
<b>Target date</b> (Handled as order data)														
1 <sup>st</sup> of the month														
<b>Max values – average over time</b> (1...120 min.)														
Default 2 minutes 002														
<b>Customer label</b>														
Options are defined in order system* MMMM														
* <sup>j</sup> Meters with wired interface have limited options for customer label. Contact Kamstrup for more information.														
<b>Leakage message limit</b>														
Disabled 9														
<b>Pipe burst limit</b>														
Disabled 0														
<b>Indicative ambient temperature - low limit</b>														
Ambient/meter temp. < 2 °C (default) 2														
Ambient/meter temp. < 3 °C 3														
OFF 0														
<b>Indicative ambient temperature - high limit</b>														
Ambient/meter temp. > 35 °C (default) 3														
Ambient/meter temp. > 45 °C 6														
OFF 0														
<b>Data logger profile</b>														
Standard 05														
<b>Display resolution (alphanumeric) – decimal markings</b> ** (options defined by meter size)														
0000000.00 m <sup>3</sup> – 0000 m <sup>3</sup> /h 060														
0000000.00 m <sup>3</sup> – 000.0 m <sup>3</sup> /h 061														
00000000.0 m <sup>3</sup> – 0000 m <sup>3</sup> /h 070														
00000000.0 m <sup>3</sup> – 000.0 m <sup>3</sup> /h 071														
000000000 m <sup>3</sup> – 0000 m <sup>3</sup> /h 080														
** See FILE100004388 for available CCC-codes in relation to meter flow size														
<b>Temperature units of measure</b>														
Celsius 0														
<b>Encryption level</b>														
Encryption with separately forwarded key 3														
<b>Transmission behaviour</b>														
See note 1 below YY														
<b>Data packages</b>														
See note 2 below ZZZ														

**Unless otherwise stated in the order, Kamstrup supplies the following configuration:**

Ambient temp. low	S = 3
Ambient temp. high	U = 3
Temperature units	V = 0 (Celsius)
Encryption level	T = 3

<sup>1)</sup> JJ (time zone), CCC (unit, display resolution and billing units) and YYZZZ (datagram) are not predefined and must be chosen in the ordering system.

<sup>2)</sup> Contact your Kamstrup sales contact for relevant module datasheets that provide an overview of comm. modules and data packages.

## Accessories

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All of the below-mentioned documents can be found at [kamstrup.com](http://kamstrup.com).

See "Accessories list for Water Meters": [FILE100002499\\_EN](#).

### Related hardware for separate ordering

Optical IR interface head w. USB	6699099
Holder for optical IR interface	3026909.CP
Lid for flowIQ® 4200 w/wired interface	6699645.CP
Flying lead cable 1.5 m	5000549
Flying lead cable 7.5 m	5000550
flowIQ Gateway no.	603-xWxxxx
Battery replacement kit	6699821

For further information about READy, USB Meter Reader and Wireless M-Bus, please see the technical description and the installation guide.

For information about Kamstrup's hygiene concept, see [FILE100000816\\_A\\_EN](#) "Hygiene Concept Kamstrup".

For datagram options, see the relevant communication module data sheet.

flowIQ® 4200

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