kamstrup

Data Sheet

flowIQ® 2200

- Acoustic leakage detection in service connections
- Pinpoint accuracy
- Integrated communication
- Wireless M-Bus and linkIQ®
- Intelligent info codes assists you with your operations, asset management and customer service
- Temperature measurement

Contents

Taking smart metering to the next level

flowIQ® 2200 raises the bar for what you can expect from a static ultrasonic water meter.

Founded on our more than 25 years of experience, the meter provides modern water utilites with the knowledge needed to make informed decisions and prioritise daily efforts.

flowIQ® 2200 introduces integrated acoustic leakage detection. Acting like a fine-meshed network of noise-loggers, the meters listen to the surrounding pipes and detect noise patterns and acoustic changes that indicate potential leaks.

Thanks to low start flow of 2 l/hour, flowIQ® 2200 measures even the smallest consumption. The meter is highly stable throughout the entire dynamic range with a very low error margin – and as a static meter with no moving parts, it maintains the same high accuracy throughout its lifetime of up to 16 years.

Other key features include intelligent alarms and info codes as well as a configurable log to match your data needs.

All of this ensures fair and accurate billing, improves the data quality and helps to reduce the non-revenue water.

Hygiene

Security and hygiene are high priority areas in both the development and production.

Our water meters are approved for use with drinking water and are disinfected, dried and packed in airtight packaging so they are not subject to environmental influences before their application. Moreover, we continuously test for disinfection effectiveness through frequent audits both internally and by external accredited laboratories.

All these steps are carried out to ensure that only water meters of the highest quality leave our production facilities.

Approved meter data

MID classifications

Approval	DK-0200-MI001-022
Mechanical environment	Class M1
Electromagnetic environment	Class E1 and E2 for Wireless M-Bus and linkIQ® version
Climatic environment	5…55 °C, condensing humidity (indoors mounted in utility rooms and outdoors in meter pits – mounting in direct prolonged sunligt must be avoided)

OIML R49 designations

Accuracy class	2
Sensitivity class	U0/D0
Ambient class	Fulfils OIML R49 class B and O (building/outdoor)
Medium temperature, cold water	0.1…30 °C (T30) or 0.1…50 °C (T50)
Meter types	Q_3 = 1.6 m³/h, 2.5 m³/h and 4.0 m³/h
Drinking water approvals	KTW/W270

Material

Wetted parts

Meter housing and meter pipe	PPS with 40 % fibreglass and PSU
Reflectors	Stainless steel
Strainer	PES

Technical data

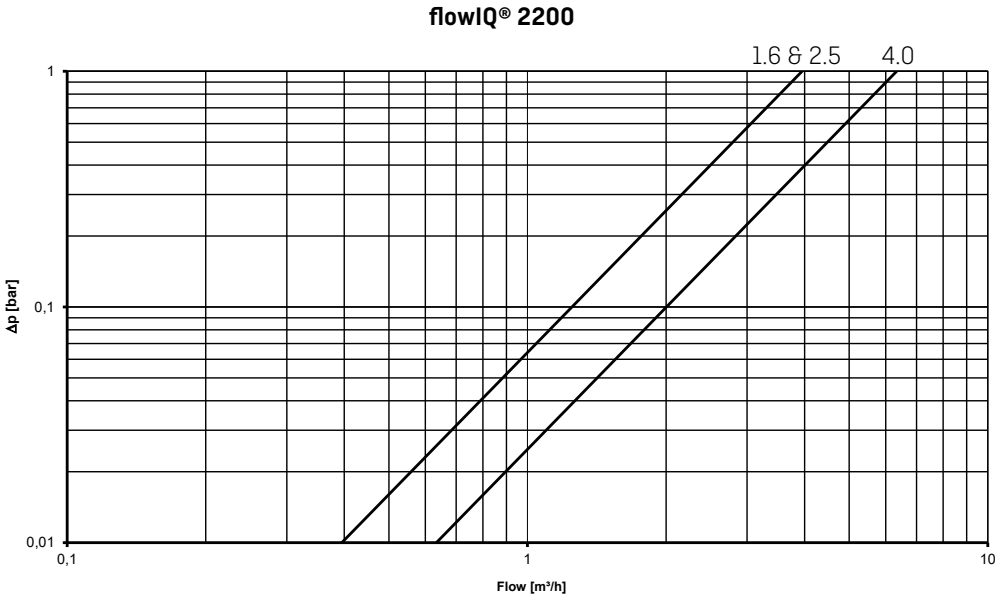
Electrical data

Battery	3.65 VDC lithium
Battery lifetime:	up to 16 years at tBAT < 30 °C depending on selected data package up to 8 years at tBAT < 55 °C
EMC data	Fulfils MID class: - E1 and E2

Mechanical data

Metrological class	2
Ambient class	Fulfils OIML R49 class B and O (building/outdoor)
Ambient temperature	2…55 °C
Protection class	IP68
Storage temp. empty sensor	-25…60 °C
Pressure stage	PN16

Pressure loss



Meter sizes

flowIQ® 2200 is available in different combinations of length and nominal flow Q_3.

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 Δp at Q_3 [bar]	Connection on meter
1.6	10	2.0	2	4.6	0.17	G¾B
2.5	10	3.1	2	4.6	0.4	G¾B
2.5	10	3.1	2	4.6	0.4	G1B
4.0	16	5.0	3.2	8.5	0.4	G1B

See section 'Ordering details' for combination possibilities

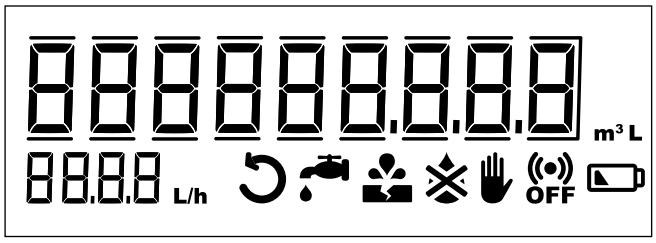
Customer logo

The meter can be customized with a laser engraved logo of the customer. Contact Kamstrup for further details.

For further information about the details on the top label, please see the technical description.

Optional customer label, e.g. water company logo (14x38 mm)

Display and info codes



The large display with totalized volume, flow rate and intuitive info codes on flowIQ® 2200 makes it easy for end users to understand their own consumption data.

flowIQ® 2200 includes a large number of intelligent info codes and alarms. 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. The info codes provide you with the exact knowledge you need to target your efforts within operations optimisation, customer information, water loss and tampering. The info codes in the display have the following meaning and function:

Info code	Meaning
	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 or indicate a leakage after the meter.
	The water consumption has been consistently high for half an hour, which indicates a pipe burst.
	Attempt of fraud. The meter is no longer valid for billing.
	The meter is dry. In this case nothing will be measured.
	The water flows through the meter in the wrong direction.
OFF	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 liter of water has run through the meter.
OFF	RADIO OFF lights permanently. The radio is switched off permanently. Can be activated via METERTOOL or DataTool.
	The symbol appears when the expected capacity left is 6 months (or when the voltage drops below 2.9V).

Info codes , , and switch off automatically, when the conditions that activated them no longer exist. In other words, disappears when the water has been stagnant for one hour, disappears when the consumption falls to normal level, disappears when the water no longer flows in the wrong direction, and disappears when the meter is filled with water.

Sensor information

Water meters placed throughout the network make it possible to gather information that can be of vital importance for an effective water supply, asset management and improved customer service.

Acoustic leakage detection
flowIQ® 2200 water meter introduces integrated acoustic leak detection that allows you to monitor your service connections for possible leaks. Like a fine-meshed network of noise-loggers, all your meters monitor the noise in the distribution lines and service connections to detect possible leaks – 24/7.

Water flowing through a leaking pipe creates a different sound pattern than water flowing through an intact pipe. And changes to the size of a leakage or burst will also cause the sound pattern to change. flowIQ® 2200 detects these sounds and changes while filtering out background noises such as the traffic aboveground or the normal daily water consumption within the house.

In other words, you can let your meters work for you instead of installing separate noise-loggers around your supply area.

Temperature monitoring
flowIQ® 2200 measures water and ambient temperatures respectively.

Information on temperatures above or below configurable in the meter will warn the utility on potentiel frost damages or quality issues.

The measurements can be used to monitor the installation and to give an indication of the quality of the water.

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 for a given installation is correct.

Consumption profile
The meter tracks consumptions in different flow intervals for further analysis of the consumption patterns for the specific installation.

No consumption
If no consumption has been measured for 15 days the meter will indicate this, in order to inform the utility that the consumption at a specific customer might be unusual.

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	1440 hours
Operating hours	✓	✓	✓	✓
Info codes incl. hour counter	✓	✓	✓	✓
Volume	✓	✓	✓	✓
Volume reverse	✓	✓	✓	✓
Volume net	✓	✓	✓	✓
Acoustic Noise Value Day			✓	
Flow max year incl. Date	✓			
Flow min year incl. Date	✓			
Flow max month incl. Date		✓		
Flow min month incl. Date		✓		
Flow max day incl. Timestamp			✓	
Flow min day incl. Timestamp			✓	
Water temp. Max. Year	✓			
Water temp. Min. Year	✓			
Water temp. Avg. Year	✓			
Ambient temp. Max. Year	✓			
Ambient temp. Min. Year	✓			
Ambient temp. Avg. Year	✓			
Water temp. Max. Month		✓		
Water temp. Min. Month		✓		
Water temp. Avg. Month		✓		
Ambient temp. Max. Month		✓		
Ambient temp. Min. Month		✓		
Ambient temp. Avg. Month		✓		
Water temp. Max. Day			✓	
Water temp. Min. Day			✓	
Water temp. Avg. Day			✓	
Ambient temp. Max. Day			✓	
Ambient temp. Min. Day			✓	
Ambient temp. Avg. Day			✓	

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.

Integrated communication

The meter is delivered with integrated radio communication and supports both Wireless M-Bus and Kamstrup linkIQ®.

For both linkIQ® and Wireless M-Bus, you can select different transmission properties and data packages. Wireless M-Bus is available with the C1 or T1 protocol and various reading intervals. The lifetime for C1 is up to 16 years. The lifetime for T1 and T1 BSI is up to 12 years. You MUST choose one data package.

Wireless M-Bus
A Wireless M-Bus data package is transmitted every 16 seconds ('drive-by') or 96 seconds ('fixed network').

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.

16 or 96 second intervals need to be chosen when ordering, and can be re-programmed by METERTOOL or DataTool.

If needed, it is also possible to disable the radio permanently.

linkIQ® communication*
linkIQ® is a Wireless M-Bus protocol which contains hourly data and is designed for a very high data performance in a fixed network by using turbo coding supported by Kamstrups READy Concentrator 1M.

This increases the range for the data collection devices, meaning that only a few sites are needed.

With Kamstrups new READy Concentrator 1M, linkIQ® can be used in an existing Wireless M-Bus network and will perform with a higher range.

linkIQ® transmits on the 868 MHz band at 25 mW.

On flowIQ® 2200, it is not possible to change the choice of communication module XX, see "Communication" under "Ordering details".

However, protocol and data package (YY-ZZZ) can be changed subsequently with METERTOOL.

For communication options see document 5512-2521 at kamstrup.com.

*) *For selected markets only.*

Ordering details

An order is initiated by stating the type number of the selected model of flowIQ® 2200.

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.

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

Accessories are enclosed separately to be mounted by the installer.

flowIQ® 2200	**KWM2210-**	☐☐	☐	☐☐	☐	☐☐	☐☐	☐	☐☐
Meter generation									
Second generation		02							
Mechanical design									
1-part PPS body			K						
Communication									
Wireless M-Bus 868 MHz				13					
linkIQ®, Wireless M-Bus C1/T1 *(for selected markets only)*				59					
Power supply									
C-Cell					C				
Dynamic range									
100						A			
250						C			
Meter size									
¾" 110mm, 1.6 m³/h							1A		
¾" 110mm, 2.5 m³/h							1B		
¾" 170mm, 1.6 m³/h							1E		
¾" 170mm, 2.5 m³/h							1D		
1" 105mm, 2.5 m³/h							2A		
1" 130mm, 2.5 m³/h							2B		
1" 130mm, 4.0 m³/h							2C		
1" 190mm, 2.5 m³/h							2D		
1" 190mm, 4.0 m³/h							2E		
Meter type									
Cold water meter								8	
Country code									XX

The country code is used for:

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

Configuration

	DDD	JJ	KK	LLL	MMMM	N	P	S	U	RR	CCC	V	T	YY	ZZZ
	□□□	□□	□□	□□□	□□□□	□	□	□	□	□□	□□□	□	□	□□	□□□
Display views															
Default	803														
GMT offset – time zone															
(GMT+1)		52													
(GMT+2)		56													
Target date															
1st of the month			01												
Max values – average over time (1...120 min.)															
2 minutes				002											
Customer label															
2060-MMMM					MMMM										
Leakage message limit															
Flow continuously...															
> 0.1 % of Q_3/max flow (US)						1									
> 0.25 % of Q_3/max flow						2									
> 0.5 % of Q_3/max flow						3									
> 1.0 % of Q_3/max flow						4									
> 2.0 % of Q_3/max flow						5									
OFF						0									
Pipe burst limit															
OFF							0								
Flow > 5 % of Q_3							1								
Flow > 10 % of Q_3							2								
Flow > 20 % of Q_3							3								
...of max flow for 30 minutes															
Ambient temperature low limit															
Ambient temp. < 3 °C								3							
Ambient temp. < 6 °C								6							
OFF								0							
Ambient temperature high limit															
Ambient temp. > 35 °C									3						
Ambient temp. > 45 °C									6						
OFF									0						
Data logger profile															
Standard & Accoustic Leak Detection										03					
Display resolution (alphanumeric) – decimal markings															
000000,001 m³ – 0000 l/h											010				
0000000,01 m³ – 0000 l/h											020				
00000000,1 m³ – 0000 l/h											030				
000000001 m³ – 0000 l/h											040				

To be continued on the next page...

Configuration

	DDD □□□	JJ □□	KK □□	LLL □□□	MMMM □□□□	N □	P □	S □	U □	RR □□	CCC □□□	V □	T □	YY □□	ZZZ □□□
Continued from previous page															
Temperature units of measure															
Celcius												0			
Encryption level															
Encryption with separately forwarded key													3		
Encryption with separately key, with encrypted access to logs													4		
Transmission behaviour															
See note below [1]														YY	
RADIO OFF														90	
Data packages															
See below [2]															ZZZ

	DDD	JJ	KK	LLL	MMMM	N	P	S	U	RR	CCC	V	T	YY	ZZZ
Unless otherwise stated in the order, Kamstrup supplies this configuration:	**803**	**JJ**	**01**	**002**	**0000**	**3**	**3**	**3**	**3**	**03**	**CCC**	**1**	**3**	**YY**	**ZZZ**

NOTE! [1] JJ (timezone), CCC (unit, display resolution and billing units) and YYZZZ (datagram) are not pre-defined and has to be chosen in the ordering system.

[2] Overview of datagrams, see 'Communicaton Modules and Data Packages Overview' here: 5512-2521.

Accessories

All of the below mentioned documents can be found on kamstrup.com.

See Accessories list for Water Meters: 58101270-GB.

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

For information about Kamstrups hygiene concept see 5518-319-GB Hygiene Concept Kamstrup.

For more datagram options see document 5512-2521 Communication Modules and Data Packages Overview.

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