kamstrup

Data sheet

flowIQ® 2200

- Acoustic leakage detection in service connections
- Nominal flow from 1.6 m^3/h up to 10 m^3/h
- Approved with dynamic range up to R1600
- Pinpoint accuracy
- Integrated communication
  - Wireless M-Bus C1, T1
  - linkIQ®
- Wired interface for selected modules:
  - Communication with flowIQ® Gateway
  - Configuration of volume pulses
- External antenna option
- Intelligent info codes assist you with your operations, asset management and customer service
- Water and ambient temperature measurement
- Up to 20 years of battery life time
- Designed for operation in submerged environments

Contents

Taking smart metering to the next level

flowIQ® 2200 raises the bar for what you can expect from a static ultrasonic water meter. flowIQ® 2200 consists of several variants, all specifically named with a prefix e.g. KWM2230.

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

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

Thanks to the low minimum cut-off flow down to 0.9 L/hour for some of the smallest meter sizes, flowIQ® 2200 measures even the smallest consumption. The meter has no built-in moving parts and is therefore less sensitive to impurities in the water and to wear and tear.

This ensures increased longevity and better performance compared to traditional mechanical meters.

The flowIQ® 2200 series comes with several battery supply options depending on the communication and lifetime needs. Battery lifetime can be as high as 20 years.

Other key features include intelligent alarms and info codes, water and ambient temperature measurements, as well as consumption profiles. The wired interface option gives the possibility to connect to flowIQ® Gateway. flowIQ® Gateway gives a lot of options for variants of plug-in communication modules.

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 within both development and production.

Our water meters are approved for use with drinking water and are disinfected, dried and packed in airtight packaging so that they are not subject to environmental influences before their application. Moreover, we continuously are testing 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.

The wired interface is plug-and-play for connection to flowIQ® Gateway.

Some meter sizes come in a warm-water version.

Platform overview

flowIQ® 2200 (KWM2231). Composite meter powered by 2 A-cell batteries.

flowIQ® 2200 (KWM2230)

Composite meter – comes with or without wired interface and is powered by one D-cell battery.

flowIQ® 2200 (KWM3230) Stainless steel with or without wired interface and powered by one D-cell battery.

Approved meter data

MID classifications according to MID 2014/32/EU, based on OIML R 49/ISO 4064

Approval	flowIQ® 2200 - KWM2231: DK-0200-MI001-041 flowIQ® 2200 - KWM2230: DK-0200-MI001-038 flowIQ® 2200 - KWM3230: DK-0200-MI001-039
Mechanical environment	Class M1
Electromagnetic environment	flowIQ® 2200 - KWM2231, KWM2230, KWM3230: Class E2

OIML R 49 designations

Accuracy class	2
Sensitivity class	U0/D0
Ambient class	Fulfils OIML R 49 class B and O (building/outdoor)
Water temperature, cold water	0.1...30 °C (T30) or 0.1...50 °C (T50)
Water temperature, warm water	0.1...70 °C (T70) (selected meter sizes only)
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)
Meter types	- Composite (KWM2231, KWM2230) Q_3 = 1.6 m³/h, 2.5 m³/h and 4.0 m³/h - Stainless steel (KWM3230) Q_3 = 2.5 m³/h, 4.0 m³/h, 6.3 m³/h and 10.0 m³/h
Radio communication	RE-D (Radio Equipment Directive)
Drinking water approvals	KIWA, KTW-BWGL, ACS (All parts are suitable for drinking water)

Technical data

Electrical data

Battery	3.65 VDC lithium - 2 x A-cell, flowIQ® 2200 (KWM2231) - 1 x D-cell, flowIQ® 2200 (KWM2230 & 3230)
Battery lifetime: 2xA-cell (KWM2231) D-cell (KWM2230, KWM3230)	Up to 16 years Up to 20 years } depending on selected data package and ambient installation temperature
EMC data	Fulfils MID class: E1 and E2
MID approved electronic operating temperature range	-25...55 °C

Mechanical data

Metrological class	2
Ambient class	Fulfils OIML R 49 class B and O (building/outdoor)
Ambient temperature	2...55 °C
Protection class	IP68
Impact energy levels (KWM2230, KWM3230)	IK08 according to IEC62262 / IK07 for wired interface
Storage temp. empty sensor (dry meter)	-25...60 °C (< 40 °C for a prolonged storage time) Specially for APET packaging: A packaged water meter must not be stored at temperatures > 40 °C for periods exceeding 24 hours
Pressure stage	PN16
Connection	Thread EN/ISO 228-1

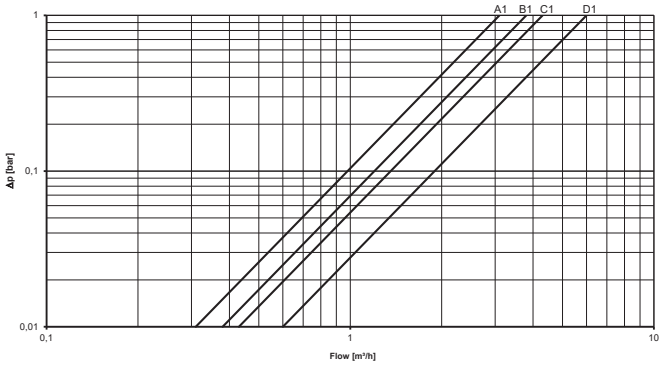
Materials

Wetted parts

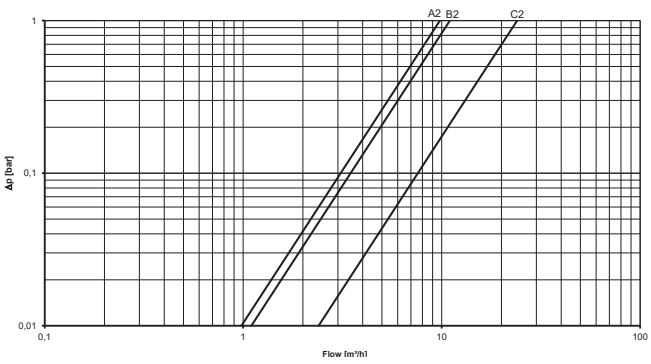
Meter flow parts, composite	PPS with 40 % fibreglass reinforcement
Meter flow parts, metal	Stainless steel, W.no. 1.4408
Measuring pipe	PPS with fibreglass (40 %) reinforcement
Reflectors	Stainless steel, W.no. 1.4401 and 1.4404 (316/316L)
O-ring/gasket	EPDM
Strainer	PES and PPO

Pressure loss

Δp flowIQ® 2200 (KWM2231 and 2230)



Δp flowIQ® 2200 (KWM3230)



Meter variant	Graph	Q_3 [m³/h]	Nom. diameter	kv	Q @ 0.63 bar [m³/h]
KWM2231 & 2230	A1	1.6	¾" (DN15)	3.1	2.5
KWM2231 & 2230	B1	2.5	¾" (DN15)	3.8	3.0
KWM2231 & 2230	C1	2.5	1" (DN20)	4.3	3.4
KWM2231 & 2230	D1	4.0	1" (DN20)	6	4.8
KWM3230	A2	2.5 4.0 6.3	1" (DN20)	11	8.7
KWM3230	B2	4.0	1¼" (DN25)	9.8	7.8
KWM3230	C2	4.0 6.3 10.0	1¼" (DN25)	24	19

Meter sizes

flowIQ® 2200 composite (KWM2231) is available in these combinations:

Meter type	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]	Dynamic range	Connection on meter and length [mm]
2A	2.5	25	3.1	2	4.6	0.17	100	G1B 105
2B	2.5	25	3.1	2	4.6	0.17	100	G1B 130
2C	4.0	40	5.0	3.2	8.5	0.4	100	G1B 130
2D	2.5	25	3.1	2	4.6	0.17	100	G1B 190
2E	4.0	40	5.0	3.2	8.5	0.4	100	G1B 190
1A	1.6	6.4	2.0	2	4.6	0.17	250	G¾B 110
1B	2.5	10	3.1	2	4.6	0.17	250	G¾B 110
1F	2.5	10	3.1	2	4.6	0.17	250	G¾B 165
1D	2.5	10	3.1	2	4.6	0.17	250	G¾B 170
2A	2.5	10	3.1	2	4.6	0.17	250	G1B 105
2B	2.5	10	3.1	2	4.6	0.17	250	G1B 130
2C	4.0	16	5.0	3.2	8.5	0.4	250	G1B 130
2D	2.5	10	3.1	3.2	4.6	0.17	250	G1B 190
2E	4.0	16	5.0	3.2	8.5	0.4	250	G1B 190

flowIQ® 2200 composite (KWM2230) is available in these combinations:

Meter type	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]	Dynamic range	Connection on meter and length [mm]
1A	1.6	10	2.0	0.9	2.8	0.27	160	G¾B 110
2A	2.5	15.6	3.1	0.9	4.4	0.44	160	G1B 105
2D	2.5	15.6	3.1	0.9	4.4	0.35	160	G1B 190
1A	1.6	4	2.0	0.9	2.8	0.27	400	G¾B 110
1B	2.5	6.3	3.1	0.9	4.4	0.44	400	G¾B 110
2A	2.5	6.3	3.1	0.9	4.4	0.35	400	G1B 105
2B	2.5	6.3	3.1	0.9	4.4	0.35	400	G1B 130
2C	4.0	10	5.0	1.5	7	0.44	400	G1B 130
2D	2.5	6.3	3.1	0.9	4.4	0.35	400	G1B 190
2E	4.0	10	5.0	1.5	7	0.44	400	G1B 190

Meter sizes

flowIQ® 2200 metal (KWM3230) is available in these combinations:

Meter type	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]	Dynamic range	Connection on meter and length [mm]
2D	2.5	25	3.1	3	4.4	0.05	100	G1B 190
2D	2.5	15.6	3.1	3	4.4	0.05	160	G1B 190
3B	4.0	25	5	3	7	0.17	160	G1¼B 175
3C	4.0	25	5	5	7	0.03	160	G1¼B 260
3D	6.3	40	7.8	5	11	0.07	160	G1¼B 260
3E	10	63	12.5	5	17.5	0.17	160	G1¼B 260
2E	4.0	16	5	5	7	0.13	250	G1B 190
3D	6.3	25.2	7.8	5	11	0.07	250	G1¼B 260
2J	6.3	15.8	7.8	5	11	0.33	400	G1B 190
3E	10	25	12.5	5	17.5	0.17	400	G1¼B 260

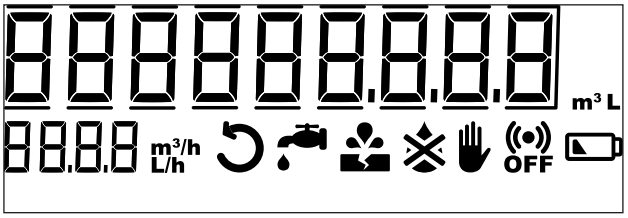
See the section "Ordering details" for combination possibilities.

Measurements occurs in the range from 'Min. cutoff' to 'Max cutoff' – however, the accuracy is only guaranteed in the range from Q_1 to Q_4. Max cut-off is an indicative flow value, which depends on the hydraulic conditions.

Display and Info codes

The large display of flowIQ® 2200 showing totalized volume, flow rate and intuitive info codes 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 operation optimization, customer information, water loss and tampering.



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

Info icon	Condition
	The water in the meter has not been stagnant for more than one continuous hour during the last 24 hours. This can be a sign of a leakage downstream the meter such as a leaky faucet, toilet cistern or pipe leakage.
	The water consumption has been consistently high for half an hour, which indicates a pipe burst downstream of the meter.
	Attempt at 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.
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 continuously. 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 a specific voltage).

	Switch off automatically when the conditions that activated them no longer exist.
	Disappears when the water has been stagnant for one hour.
	Disappears when the consumption falls to normal level.
	Disappears when the water is no longer flowing in the wrong direction.
	Disappears when the meter is filled with water.

Core features

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 *
The flowIQ® 2200 water meter introduces integrated Acoustic Leakage 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.

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

**Not available for warm water meters.*

Current flow display
Besides the consumed volume, flowIQ® 2200 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 stabilize after about half a minute of constant flow and thereafter to be consistent with volume growth.

Temperature monitoring
flowIQ® 2200 measures water and ambient temperatures, respectively. Information on temperatures above or below configurable values in the meter will warn the utility about any potential high and low temperature issues.

The measurements can be used to monitor the installation and to give an indication if something is unusual.

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

No consumption
If no consumption has been measured for a long period of time in a household installation, an info code will inform the utility as this indicates that there might be a problem with the installation.

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 (KWM2231) 2400 hours (KWM2230 & 3230)
Operating hours	✓	✓	✓	✓
Info codes incl. hour counter	✓	✓	✓	✓
Volume	✓	✓	✓	✓
Volume reverse	✓	✓	✓	✓
Acoustic noise value day			✓	
Flow max incl. date	✓	✓		
Flow min. incl. date	✓	✓		
Flow max incl. timestamp			✓	
Flow min. incl. timestamp			✓	
Water temp. max	✓	✓	✓	
Water temp. min.	✓	✓	✓	
Water temp. avg.	✓	✓	✓	
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.

LoRaWAN®
LoRaWAN® (Long Range Wide Area Network) is an open technology with wide adaptation and as such not tied to a company. It can be rolled out as a public or private network. The technology is ready and available and has the benefit of long range and low-cost hardware. Automatic meter reading using a LoRaWAN® network delivers frequent consumption data to your customers from the meters installed at their premises.

NB-IoT
NB-IoT (Narrow Band Internet of Things) is an emerging communication technology offered by almost all main mobile operators (telcos) in the world. Unlike 2G, 3G and 4G, which are designed for high-speed communications at the expense of high power consumption, NB-IoT supports low data rate communications, but in return offers superior power efficiency and this feature makes battery operation possible.

Sigfox
Sigfox is a global communications service provider that specializes in low-power wide-area network (LPWAN) technology for Internet of Things (IoT). It enables devices to connect and transmit small amounts of data over long distances while consuming minimal energy, making it ideal for applications like smart water meter solutions. Sigfox operates a dedicated network, allowing for scalable and cost-effective connectivity solutions for millions of devices.

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

flowIQ® Gateway
All flowIQ® 2200 meters (KWM2230 & 3230) can be ordered with 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 for connecting to flowIQ® Gateway.

flowIQ® Gateway is a modular and upgradeable device which allows multiple communication and power options (for details, see the flowIQ® Gateway data sheet on kamstrup.com).

On the cable connected to the wired interface, the pulse output is between the black and the red wire. The green wire is not used for pulses.

Pulse output options
It is possible to change the wired interface from serial communication to send volume pulses. This can be done by utilizing the optical IR interface and METERTOOL.

It is also possible to choose different pulse values and pulse lengths.

METERTOOL options

METERTOOL drop-down menu
Disabled
1 (L/imp)
10 (L/imp)
100 (L/imp)
1000 (L/imp)
imp/L depending on meter size Q_3 Kamstrup meter pulses
Serial KMP

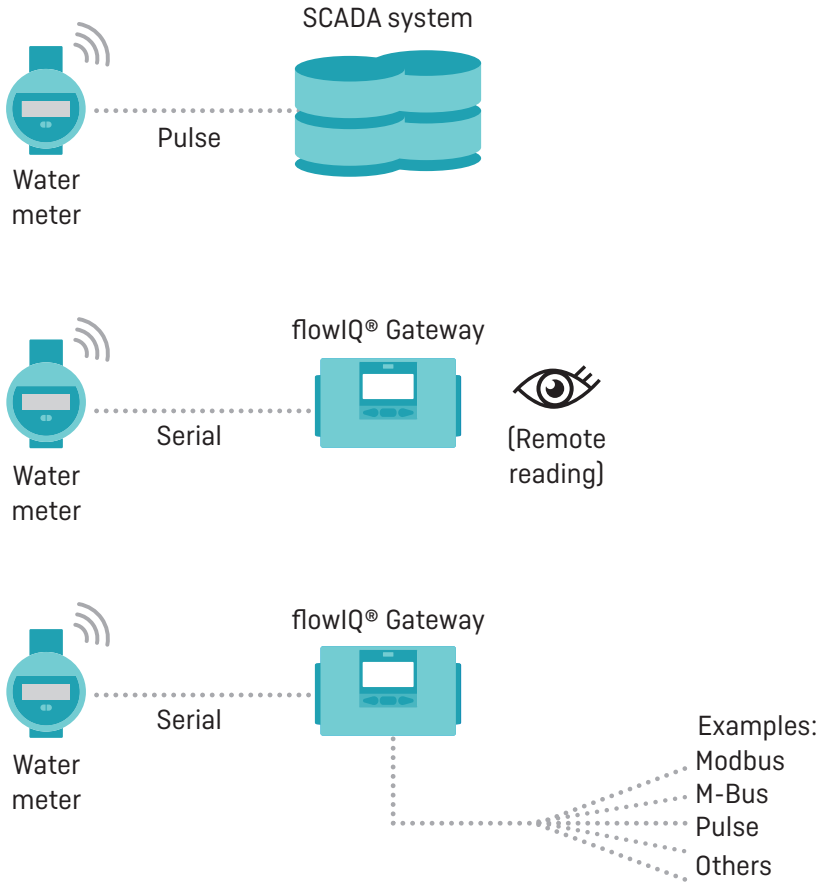
The pulse length is linked to the output pulse configuration and can be programmed to settings shown in the table below.

Pulse length options

3.9 ms	Recommended for Kamstrup meter pulses
10 ms	
32 ms	
100 ms	
250 ms	

Wired interface

Solution overview



Pit antenna options

In installation scenarios where better radio signals are needed, external antennas are available for all flowIQ® 2200 meters without wired interface, defined by the module choice in the type number (see ordering details).

Meters without wired interface include:

- KWM2230 with XX communication module 60
- KWM3230 with XX communication module 60

For flowIQ® 2200 without wired interface the following external antenna is available:

– Pit antenna II 2.0 meters 6697926

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, check valve and standard couplings are selected.

Accessories are enclosed separately to be mounted by the installer.

flowIQ® 2200 – **KWM2231**	**KWM2231-**	☐☐	☐	☐☐	☐	☐	☐☐	☐	☐☐
Meter generation									
Second generation		02							
Mechanical design									
Composite PPS			K						
Communication module									
Wireless M-Bus C1/T1, linkIQ®, 868 MHz				51					
Sigfox Class 0, RC1				18					
LoRaWAN OMS *)				73					
Power supply									
2 x A-cell					A				
Dynamic range (for selected sizes)									
100						A			
250						C			
Meter size									
¾" 110 mm, 1.6 m³/h [1]	DN15						1A		
¾" 110 mm, 2.5 m³/h [1]	DN15						1B		
¾" 165 mm, 2.5 m³/h	DN15						1F		
¾" 170 mm, 2.5 m³/h	DN15						1D		
1" 105 mm, 2.5 m³/h	DN20						2A		
1" 130 mm, 2.5 m³/h [1]	DN20						2B		
1" 130 mm, 4.0 m³/h [1]	DN20						2C		
1" 190 mm, 2.5 m³/h	DN20						2D		
1" 190 mm, 4.0 m³/h	DN20						2E		
Meter type									
Warm-water meter								7	
Cold-water meter								8	
Country code									XX

[1] *Also available as a warm-water meter*

*) *Not available for warm-water meters*

The country code is used for:

- Language and approval on type label
- Temperature class for the water meter, cold water (T30 and T50) and warm water (T70)

Ordering details

flowIQ® 2200 – **KWM2230**	**KWM2230-**	☐☐	☐	☐☐	☐	☐	☐☐	☐	☐☐
Meter generation									
Second generation		02							
Mechanical design									
Composite PPS			K						
Communication module									
linkIQ® – Wireless M-Bus, for antenna connection (no wired output)				60					
Wireless M-Bus C1/T1, linkIQ®, 868 MHz - Cold (wired output) [1]				61					
Wireless M-Bus C1/T1, linkIQ®, 868 MHz - Warm (wired output) [1]				62					
NB-IoT [2]				82					
Power supply									
D-cell					D				
Dynamic range (for selected sizes)									
R160						B			
R400						E			
Meter size									
¾" 110 mm, 1.6 m³/h [3]	DN15						1A		
¾" 110 mm, 2.5 m³/h	DN15						1B		
1" 105 mm, 2.5 m³/h [3]	DN20						2A		
1" 130 mm, 2.5 m³/h	DN20						2B		
1" 130 mm, 4.0 m³/h	DN20						2C		
1" 190 mm, 2.5 m³/h [3]	DN20						2D		
1" 190 mm, 4.0 m³/h	DN20						2E		
Meter type									
Warm-water meter								7	
Cold-water meter								8	
Country code									XX

[1] *Default setting (serial communication for flowIQ® Gateway) cold/warm*

[2] *Not available for warm-water meters*

[3] *Also available as a warm-water meter*

Ordering details

flowIQ® 2200 – **KWM3230**		**KWM3230-**	☐☐	☐	☐☐	☐	☐	☐☐	☐	☐☐
Meter generation										
Second generation			02							
Mechanical design										
Stainless steel				L						
Communication module										
linkIQ® – Wireless M-Bus, for antenna connection (no wire output)					60					
Wireless M-Bus C1/T1, linkIQ®, 868 MHz metal - Cold (wired output) [1]					63					
Wireless M-Bus C1/T1, linkIQ®, 868 MHz metal - Warm (wired output) [1]					64					
NB-IoT [2]					82					
Power supply										
D-cell						D				
Dynamic range (for selected sizes)										
R100							A			
R160							B			
R250							C			
R400							E			
Meter size										
1" 190 mm, 2.5 m³/h	DN20							2D		
1" 190 mm, 4.0 m³/h	DN20							2E		
1" 190 mm, 6.3 m³/h	DN20							2J		
1¼" 175 mm, 4.0 m³/h	DN25							3B		
1¼" 260 mm, 4.0 m³/h [3]	DN25							3C		
1¼" 260 mm, 6.3 m³/h [3]	DN25							3D		
1¼" 260 mm, 10 m³/h	DN25							3E		
Meter type										
Warm-water meter									7	
Cold-water meter									8	
Country code										XX

[1] *Default setting (serial communication for flowIQ® Gateway) cold/warm*

[2] *Not available for warm-water meters*

[3] *Also available as a warm-water meter*

Configuration

flowIQ® 2200 – **KWM2231, KWM2230, KWM3230**

	DDD	JJ	LLL	MMMM	N	P	S	U	RR	CCC	V	T	YY	ZZZ
	□□□	□□	□□□	□□□□	□	□	□	□	□□	□□□	□	□	□□	□□□
Display views														
KWM2231, KWM2230, KWM3230	804													
GMT offset – time zone														
(GMT+1) default		52												
(GMT+2)		56												
(GMT-2)		40												
Target date														
1st of the month														
Max values – average over time (1...120 min.)														
2 minutes			002											
Customer label														
Options are defined in order system				MMMM										
Leakage message limit														
Flow continuously > 0.25 % of Q_3/nom. flow					2									
Flow continuously > 0.5 % of Q_3/nom. flow (default)					3									
Flow continuously > 1.0 % of Q_3/nom. flow					4									
Flow continuously > 2.0 % of Q_3/nom. flow					5									
OFF					9									
Pipe burst limit														
OFF						0								
Flow > 5 % of Q_3/nom. flow for 30 minutes						1								
Flow > 10 % of Q_3/nom. flow for 30 minutes						2								
Flow > 20 % of Q_3/nom. flow for 30 minutes (default)						3								
Ambient temperature low limit														
Ambient temp. < 2 °C (default)							2							
OFF							0							
Ambient temperature high limit														
Ambient temp. > 35 °C (default)								3						
Ambient temp. > 45 °C								6						
OFF								0						
Data logger profile														
Standard & Accoustic Leakage Detection (default)									05					
Display resolution (alphanumeric) – decimal markings (options defined by meter size**														
000000.000 m³ – 0000 L/h										010				
0000000.00 m³ – 0000 L/h										020				
00000000.0 m³ – 0000 L/h										030				
000000000 m³ – 0000 L/h										040				
000000.000 m³ – 00.00 m³/h										052				
0000000.00 m³ – 000.0 m³/h										061				
0000000.00 m³ – 00.00 m³/h										062				
00000000.0 m³ – 00.00 m³/h										072				
***please see FILE 100004388 for available CCC-codes in relation to meter flow size*														

To be continued on the next page...

Configuration

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

Unless otherwise stated in the order, Kamstrup supplies this configuration:

Leak	N = 3
Burst	P = 3
Ambient temp. low	S = 2
Ambient temp. high	U = 3
Temperature units	V = 0 (Celsius)
Encryption level	T = 3

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

[2] Your Kamstrup sales contact can provide relevant module datasheets that give an overview of communication modules and data packages.

Accessories

See "Accessories list for Water Meters" on www.kamstrup.com.

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