

## Data sheet

### flowIQ® 2200 - South Africa

- Your advanced smart water meter for maximum insights
- Acoustic Leak Detection in service connections
- Nominal flow from 1.5 m³/h up to 2.5 m³/h
- Pinpoint accuracy over the meter's entire lifetime
- Integrated communication:
  - Wireless M-Bus C1/C2/T1
  - Wired M-Bus
  - linkIQ®
  - LoRaWAN®
  - Sigfox
  - NB-IoT
- 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 lifetime
- Designed for operation in submerged environments



## Contents

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|                                         |    |
|-----------------------------------------|----|
| Taking smart metering to the next level | 3  |
| Approved meter data                     | 4  |
| Technical data                          | 4  |
| Materials                               | 5  |
| Pressure loss                           | 5  |
| Meter sizes                             | 6  |
| Display and info codes                  | 7  |
| Core features                           | 8  |
| Data registers                          | 9  |
| Integrated communication                | 10 |
| Wired interface                         | 11 |
| Antenna options                         | 12 |
| Ordering details                        | 13 |
| Configuration                           | 15 |
| Accessories                             | 16 |

## Taking smart metering to the next level

flowIQ® 2200 raises the bar for static ultrasonic water meters. The series includes several variants, identified by prefixes such as KWM2230.

Built on more than 30 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 Leak 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, enabling early leak detection through constant night flow monitoring and helping reduce non-revenue water.

The meter has no moving parts, making it less sensitive to impurities and wear, ensuring longer lifetime and more stable performance than mechanical meters.

The flowIQ® 2200 series offers multiple battery options depending on communication and lifetime needs, with up to 20 years of battery life.

Key features include intelligent alarms and info codes, temperature measurements, and consumption profiles. Some modules include a wired interface, which enables connection to flowIQ® Gateway, supporting various plug-in communication modules.

These features ensure accurate billing, improved data quality, and reduced non-revenue water. Through its integrated Acoustic Leak Detection, flowIQ® 2200 can improve return on investment by enabling rapid leak identification and reducing the operational risks associated with leaks. This functionality is particularly valuable in distribution zones with high levels of non-revenue water, where early leak detection can significantly improve network efficiency and reduce losses.

### 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 to prevent environmental impact before installation. We continuously verify disinfection effectiveness through frequent internal and external audits by accredited laboratories 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

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### OIML R49:2013 designations

|                               |                                                                                                                                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mechanical environment        | Class M1, flowIQ® 2200 (KWM2230)<br>Class M3, flowIQ® 2200 (KWM2231)                                                                                       |
| Electromagnetic environment   | Class E2                                                                                                                                                   |
| Sensitivity class             | U0/D0                                                                                                                                                      |
| 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<br>[Mounted indoors in utility rooms and outdoors in meter pits –<br>mounting in direct prolonged sunlight must be avoided] |

### SANS 1529-1:2019 ed. 2.4 designations

|                        |                                     |
|------------------------|-------------------------------------|
| flowIQ® 2200 - KWM2231 | SA 1642                             |
| flowIQ® 2200 - KWM2230 | SA 1642                             |
| Accuracy class         | C                                   |
| Meter nominal flows    | Q <sub>p</sub> = 1.5 m³/h, 2.5 m³/h |

|                                 |                                           |
|---------------------------------|-------------------------------------------|
| <b>Drinking water approvals</b> | All parts are suitable for drinking water |
|---------------------------------|-------------------------------------------|

## Technical data

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### Electrical data

|                                                                  |                                                                                                              |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Battery                                                          | 3.65 VDC lithium<br>- 2 x A-cell, flowIQ® 2200 (KWM2231)<br>- 1 x D-cell, flowIQ® 2200 (KWM2230)             |
| Battery lifetime<br>2 x A-cell (KWM2231)<br>1 x D-cell (KWM2230) | Up to 16 years }<br>Up to 20 years } depending on selected data package and ambient installation temperature |

|                                                     |                               |
|-----------------------------------------------------|-------------------------------|
| EMC data                                            | Fulfills MID class: E1 and E2 |
| MID approved electronic operating temperature range | -25...55 °C                   |

### Mechanical data

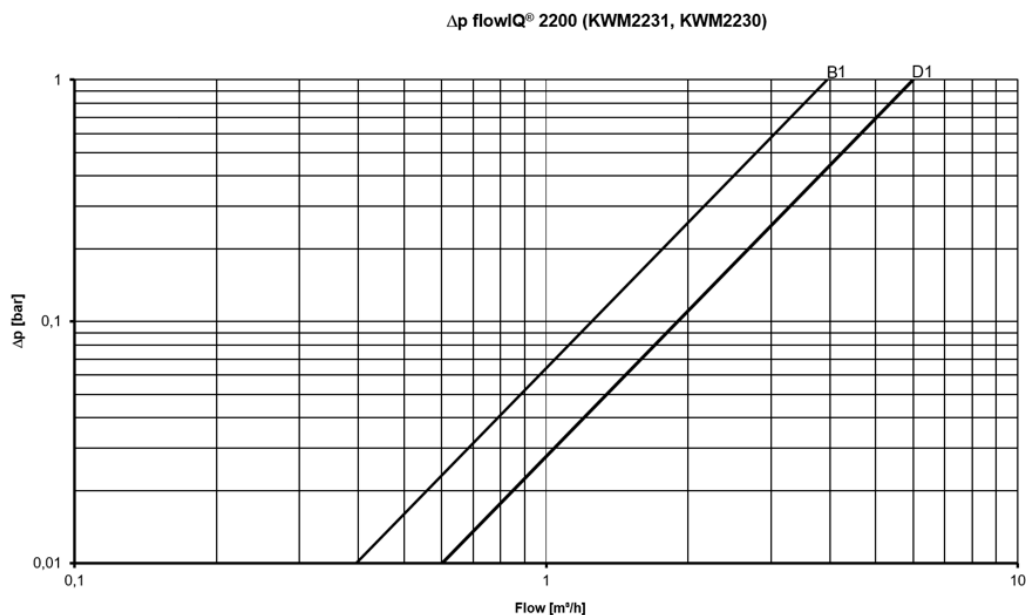
|                                        |                                                                                                                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accuracy class                         | C                                                                                                                                                                                    |
| Ambient class                          | Fulfills OIML R 49 class B and O (building/outdoor)                                                                                                                                  |
| Ambient temperature                    | 2...55 °C                                                                                                                                                                            |
| Protection class                       | IP68                                                                                                                                                                                 |
| Impact energy levels (KWM2230)         | IK08 according to IEC62262 / IK07 for wired interface                                                                                                                                |
| Storage temp. empty sensor (dry meter) | -25...60 °C (< 40 °C for a prolonged storage time)<br>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



| Meter variant  | Graph | $Q_p$<br>[m <sup>3</sup> /h] | Nom. diameter | kv  | Q @ 0.63 bar<br>[m <sup>3</sup> /h] |
|----------------|-------|------------------------------|---------------|-----|-------------------------------------|
| KWM2231 & 2230 | B1    | 1.5                          | ¾" (DN15)     | 4.2 | 3.0                                 |
| KWM2231 & 2230 | D1    | 2.5                          | 1" (DN20)     | 6.3 | 4.8                                 |

## Meter sizes

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

| Meter type | Nom. flow<br>$Q_p$  | Min. flow<br>$Q_{min}$ | Max flow<br>$Q_{max}$ | Min. cutoff | Q at $\Delta P$ 1 bar<br>(kv) | Pressure loss<br>$\Delta p$ at $Q_p$ | Connection<br>on meter and<br>length |
|------------|---------------------|------------------------|-----------------------|-------------|-------------------------------|--------------------------------------|--------------------------------------|
|            | [m <sup>3</sup> /h] | [L/h]                  | [m <sup>3</sup> /h]   | [L/h]       | [m <sup>3</sup> /h]           | [bar]                                | [mm]                                 |
| 6B         | 1.5                 | 15                     | 3                     | 0.9         | 4.2                           | 0.17                                 | DN15 (G½B) 110                       |
| 6G         | 2.5                 | 25                     | 5                     | 1.5         | 6.3                           | 0.4                                  | DN20 (G1B) 130                       |

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

| Meter type | Nom. flow<br>$Q_p$  | Min. flow<br>$Q_{min}$ | Max flow<br>$Q_{max}$ | Min. cutoff | Q at $\Delta P$ 1 bar<br>(kv) | Pressure loss<br>$\Delta p$ at $Q_p$ | Connection<br>on meter and<br>length |
|------------|---------------------|------------------------|-----------------------|-------------|-------------------------------|--------------------------------------|--------------------------------------|
|            | [m <sup>3</sup> /h] | [L/h]                  | [m <sup>3</sup> /h]   | [L/h]       | [m <sup>3</sup> /h]           | [bar]                                | [mm]                                 |
| 6B         | 1.5                 | 15                     | 3                     | 0.9         | 4.2                           | 0.44                                 | DN15 (G½B) 110                       |
| 6G         | 2.5                 | 25                     | 5                     | 1.5         | 6.3                           | 0.35                                 | DN20 (G1B) 130                       |

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  $Q_{min}$  to  $Q_{max}$ .

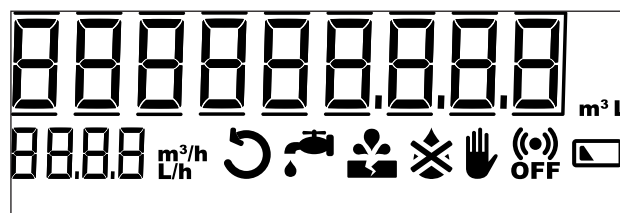
The kv value expresses how much water can pass through a meter at a given pressure drop, and therefore indicates the maximum achievable flow rate. At around 1 bar  $\Delta P$ , cavitation may occur inside the meter, which can impair measurement accuracy.

## 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.                                                                                                                                                             |
|           | 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.               |
|           | RADIO OFF lights continuously. The radio is switched off permanently. Can be activated via METERTOOL.                                                                                                                 |
|           | 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

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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 Leak Detection\***

The 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.

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.

### **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     | 2400 hours    |
| 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

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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/C2-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.

### Wired M-Bus

Wired M-Bus is a communication standard, which provides stable high-speed and reliable data collection between meters and a master unit. Kamstrup Wired M-Bus is capable of fast data reading, responding to requests as often as every 30 seconds, which guarantees timely and accurate data collection, despite being engineered for low power consumption.

### 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

flowIQ® 2200 meters (KWM2230) 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 [www.kamstrup.com](http://www.kamstrup.com)).

### 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.



**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.**

### 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<sub>3</sub> 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.

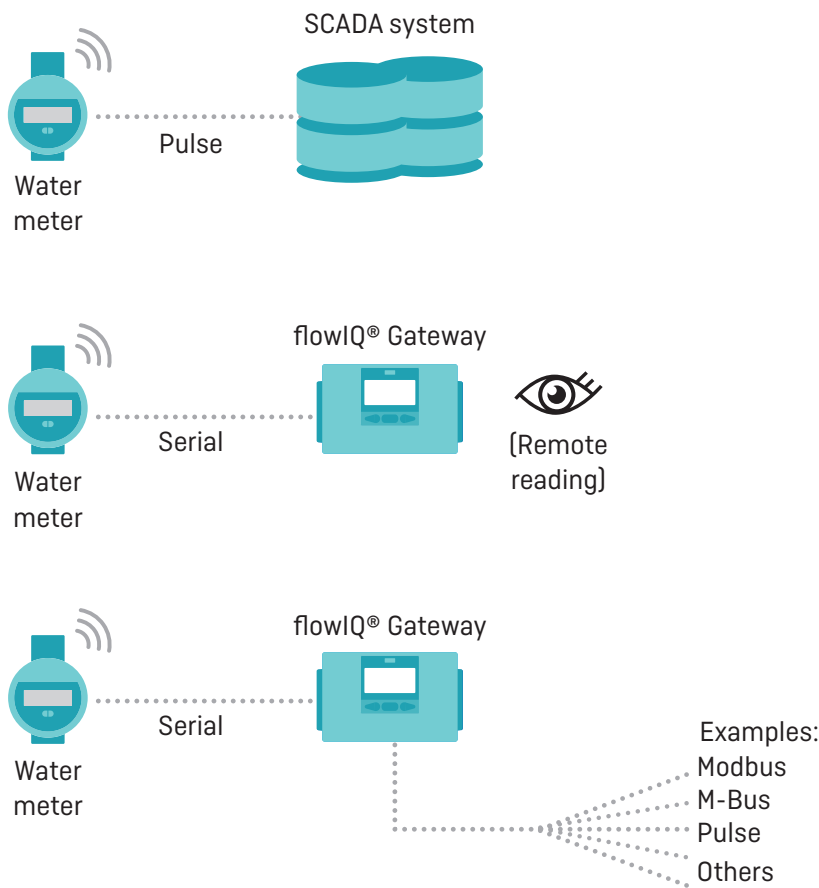
### Pulse length options

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

## Wired interface

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### Solution overview



## Antenna options

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In installation scenarios where better radio signals are needed, external antennas are available for flowIQ® 2200 meters depending on communication protocol. Please see Accessories List (FILE100002499) for more information.

## 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- | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Meter generation</b>                   |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Second generation                         |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 02                       |
| <b>Mechanical design</b>                  |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Composite PPS                             |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | K                        |
| <b>Communication module</b>               |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Sigfox Class O, RC1 <sup>1)</sup>         |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 18                       |
| Wireless M-Bus C1/C2/T1, linkIQ®, 868 MHz |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 52                       |
| LoRaWAN® OMS <sup>1)</sup>                |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 73                       |
| <b>Power supply</b>                       |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 2 x A-cell                                |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | A                        |
| <b>Dynamic range</b>                      |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| 250                                       |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | C                        |
| <b>Meter size</b>                         |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| ¾" 110 mm, 1.5 m³/h                       |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | DN15 6B                  |
| 1" 130 mm, 2.5 m³/h                       |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | DN20 6G                  |
| <b>Meter type</b>                         |          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |
| Warm water meter                          |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 7                        |
| Cold water meter                          |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | 8                        |
| <b>Country code</b>                       |          |                          |                          |                          |                          |                          |                          |                          |                          |                          | ZA                       |

<sup>1)</sup> 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- |  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |  |
| <b>Meter generation</b>                                                |  |          |  | 02                       |                          | K                        |                          | 32                       |                          | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |  |
| Second generation                                                      |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| <b>Mechanical design</b>                                               |  |          |  | K                        |                          | 32                       |                          | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |  |
| Composite PPS                                                          |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| <b>Communication module</b>                                            |  |          |  | 32                       |                          | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |  |
| Wired M-Bus                                                            |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| linkIQ® – Wireless M-Bus, for antenna connection (no wired output)     |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| Wireless M-Bus C1/C2/T1, linkIQ®, 868 MHz (wired output) <sup>1)</sup> |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| NB-IoT                                                                 |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| Power supply                                                           |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| D-cell                                                                 |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| Dynamic range                                                          |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| R400                                                                   |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| Meter size                                                             |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| ¾" 110 mm, 1.5 m³/h                                                    |  | DN15     |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| 1" 130 mm, 2.5 m³/h                                                    |  | DN20     |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| <b>Meter type</b>                                                      |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| Cold water meter                                                       |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |
| <b>Country code</b>                                                    |  |          |  | 60                       |                          | 61                       |                          | 82                       |                          | 90                       |                          | 99                       |                          | 99                       |                          | 99                       |  |
| ZA                                                                     |  |          |  |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |                          |  |

<sup>1)</sup> Default setting (serial communication for flowIQ® Gateway) cold

The country code is used for:

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

## Configuration

flowIQ® 2200 – **KWM2231 & KWM2230**

|                                                                   | DDD | JJ | LLL | MMMM | N | P | S | U | RR | CCC | V | T | YY | ZZZ |
|-------------------------------------------------------------------|-----|----|-----|------|---|---|---|---|----|-----|---|---|----|-----|
|                                                                   | □□□ | □□ | □□□ | □□□□ | □ | □ | □ | □ | □□ | □□□ | □ | □ | □□ | □□□ |
| <b>Display views</b>                                              |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| flowIQ® x2xx Standard                                             | 804 |    |     |      |   |   |   |   |    |     |   |   |    |     |
| flowIQ® x2xx NB-IoT                                               | 806 |    |     |      |   |   |   |   |    |     |   |   |    |     |
| flowIQ® x2xx LoRaWAN                                              | 807 |    |     |      |   |   |   |   |    |     |   |   |    |     |
| <b>GMT offset – time zone</b>                                     |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| [GMT+1] (default)                                                 |     | 52 |     |      |   |   |   |   |    |     |   |   |    |     |
| [GMT+2]                                                           |     | 56 |     |      |   |   |   |   |    |     |   |   |    |     |
| [GMT-2]                                                           |     | 40 |     |      |   |   |   |   |    |     |   |   |    |     |
| <b>Target date</b>                                                |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| 1 <sup>st</sup> of the month                                      |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| <b>Max values – average over time (1...120 min.)</b>              |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| 2 minutes                                                         |     |    | 002 |      |   |   |   |   |    |     |   |   |    |     |
| <b>Customer label</b>                                             |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| Options are defined in order system                               |     |    |     | MMMM |   |   |   |   |    |     |   |   |    |     |
| <b>Leakage message limit</b>                                      |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| Flow continuously > 0.25 % of Q <sub>3</sub> /nom. flow           |     |    |     |      | 2 |   |   |   |    |     |   |   |    |     |
| Flow continuously > 0.5 % of Q <sub>3</sub> /nom. flow (default)  |     |    |     |      | 3 |   |   |   |    |     |   |   |    |     |
| Flow continuously > 1.0 % of Q <sub>3</sub> /nom. flow            |     |    |     |      | 4 |   |   |   |    |     |   |   |    |     |
| Flow continuously > 2.0 % of Q <sub>3</sub> /nom. flow            |     |    |     |      | 5 |   |   |   |    |     |   |   |    |     |
| OFF                                                               |     |    |     |      | 9 |   |   |   |    |     |   |   |    |     |
| <b>Pipe burst limit</b>                                           |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| OFF                                                               |     |    |     |      |   | 0 |   |   |    |     |   |   |    |     |
| Flow > 5 % of Q <sub>3</sub> /nom. flow for 30 minutes            |     |    |     |      |   | 1 |   |   |    |     |   |   |    |     |
| Flow > 10 % of Q <sub>3</sub> /nom. flow for 30 minutes           |     |    |     |      |   | 2 |   |   |    |     |   |   |    |     |
| Flow > 20 % of Q <sub>3</sub> /nom. flow for 30 minutes (default) |     |    |     |      |   | 3 |   |   |    |     |   |   |    |     |
| <b>Ambient temperature low limit</b>                              |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| Ambient temp. < 2 °C (default)                                    |     |    |     |      |   |   | 2 |   |    |     |   |   |    |     |
| OFF                                                               |     |    |     |      |   |   | 0 |   |    |     |   |   |    |     |
| <b>Ambient temperature high limit</b>                             |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| Ambient temp. > 35 °C (default)                                   |     |    |     |      |   |   |   | 3 |    |     |   |   |    |     |
| Ambient temp. > 45 °C                                             |     |    |     |      |   |   |   | 6 |    |     |   |   |    |     |
| OFF                                                               |     |    |     |      |   |   |   | 0 |    |     |   |   |    |     |
| <b>Data logger profile</b>                                        |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| KWMx23x Standard                                                  |     |    |     |      |   |   |   |   | 05 |     |   |   |    |     |
| KWMx23x NB-IoT                                                    |     |    |     |      |   |   |   |   | 14 |     |   |   |    |     |
| KWMx23x Extended                                                  |     |    |     |      |   |   |   |   | 17 |     |   |   |    |     |
| KWMx231 Sigfox                                                    |     |    |     |      |   |   |   |   | 19 |     |   |   |    |     |
| <i>To be continued on the next page...</i>                        |     |    |     |      |   |   |   |   |    |     |   |   |    |     |

Configuration

|                                                                                       | DDD | JJ | LLL | MMMM | N | P | S | U | RR | CCC | V | T | YY | ZZZ |
|---------------------------------------------------------------------------------------|-----|----|-----|------|---|---|---|---|----|-----|---|---|----|-----|
|                                                                                       | □□□ | □□ | □□□ | □□□□ | □ | □ | □ | □ | □□ | □□□ | □ | □ | □□ | □□□ |
| Continued from previous page                                                          |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| Display resolution (alphanumeric) – decimal markings (options defined by meter size)* |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
|                                                                                       |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| 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 |   |   |    |     |
| *please see FILE100004388 for available CCC-codes in relation to meter flow size      |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| 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 <sup>1)</sup> below                                                          |     |    |     |      |   |   |   |   |    |     |   |   | YY |     |
| Data packages                                                                         |     |    |     |      |   |   |   |   |    |     |   |   |    |     |
| See note <sup>2)</sup> 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           |
| Temp. 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> For an overview of datagrams, please contact Kamstrup.

\* T = 4 is only available for NB-IoT module 82 and is mandatory

Accessories

See "Accessories list for Water Meters" on [www.kamstrup.com](http://www.kamstrup.com).

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