

Data Sheet

MULTICAL® 21 & flowIQ® 2101

- Pinpoint accuracy
- Temperature measurement
- Low leakage limit
- Long range
- Long life
- Simple installation
- Environment-friendly
- Drive-by' or network
- **Wireless M-Bus**
- **Wired M-Bus**

NEW!



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Smart water meter – ultrasonic compact meter for measurement of cold and hot water consumption in households, apartment buildings and small commercial properties

Pinpoint accuracy

Ultrasonic flow measurement guarantees pinpoint measuring accuracy. The electronic meter has no moving parts, meaning that there is no wear and that MULTICAL® 21/flowIQ® 2101 is resistant to any impurities in the water.

'Drive-by' or network

The water meter comes with the newest radio technology to meet increasing market demands for smart metering, both for 'drive-by' and network installations. Radio packages are available with transmission intervals of 16 or 96 seconds. Consumption data can be read manually directly from the display or using an optical eye. Furthermore, consumption data can be remotely read by means of Wireless M-Bus, which is built into the meter.

Temperature

The meter measures both water and ambient temperatures - combinations of these can be defined in the optional radio packages.

Low leakage limits

MULTICAL® 21/flowIQ® 2101 has built-in sensitive leak monitoring, as low as 0.1% of Q_3 , which means that even the smallest water losses are detected very quickly. The unique combination of pinpoint measuring accuracy, longevity and built-in wireless radio communication – Wireless M-Bus – reduces the operating costs for the water company continuously and contingencies, caused by any leakage, are minimized, as waste of water is discovered immediately.

Long range

MULTICAL® 21/flowIQ® 2101 is equipped with a long range antenna that transmits strong radio signals with intelligent coding to the network. The meter can also be read from a long distance with 'drive-by'.

Installation

The water meter is easy to install in all operating environments, horizontally as well as vertically, independent of piping and installation conditions.

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

User-friendly

The meter comes with a large and easy to read display and the meter is constructed as a hermetically vacuumsealed unit, which prevents humidity from reaching the electronics. Therefore condensation water between the glass and the large display is avoided.

Environment-friendly meter

The compact water meter has been approved for drinking water in several countries. Meter housing and flow parts are made of the synthetic material PPS, which means that the meter does not contain lead or other heavy metals. The environmental report for the water meter, documents that the meter has low environmental impact, and high recyclability of materials when the meter is taken out of service.

General description

MULTICAL® 21/flowIQ® 2101 is a hermetically closed compact static water meter intended for the registration of cold and hot water consumption. The water meter uses the ultrasonic principle and has been constructed on the basis of Kamstrup's experience since 1991 with the development and production of static ultrasonic meters.

MULTICAL® 21/flowIQ® 2101 has been subjected to a very comprehensive OIML R49 type test with a view to securing a long-term stable, accurate and reliable meter. One of the water meter's many advantages is the fact that it has no wearing parts, which entails high immunity towards particles and thereby longevity.

Furthermore, the meter has a low-flow cut-off (start flow) of only 2 l/h for $Q_3 = 1.6 \text{ m}^3/\text{h}$ and $2.5 \text{ m}^3/\text{h}$ and 3.2 l/h for $Q_3 = 4.0 \text{ m}^3/\text{h}$, which provides accurate measurement also at low water flows.

This water meter is constructed as a vacuum chamber of moulded composite material. Thus, the electronics are fully protected against penetration of water. This means that the meter can without problems be placed in e.g. bathrooms where it is sprayed with water daily, and it is also suitable for mounting in meter pits, which are frequently filled with water.

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

Furthermore, the factory guarantee no longer applies.

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

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

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

The meter measures continuously both water and ambient temperature, and stores minimum, mean and maximum temperatures daily. All registers are saved daily in the meter's memory for 460 days. Furthermore, monthly data for the latest 36 months are saved.

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

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

The meter comes with the newest radio technology to meet increasing market demands for smart metering. It has built-in data communication for Wireless M-Bus and the built-in radio can be configured for both 'drive-by' reading and reading in 'Fixed network' – e.g. Kamstrup Radio Link network

Wired M-Bus

MULTICAL® 21/flowIQ® 2101 is also available in a version with Wired M-Bus, providing a comprehensive datagram acc. to EN 13757:2013 - used in applications using M-Bus protocol.

Characteristics in short:

- accurate and reliable
- ultrasonic metering
- low start flow
- measuring water and ambient temperatures
- remote reading
- no moving parts – no wear
- long-term stable – long life
- powered by a lithium battery
- multiple info codes
- large clear display
- hermetically sealed
- fully waterproof
- suitable for mounting in pits.

Approved meter data

MID classifications

| | |
|-----------------------------|---|
| Approval | DK-0200-MI001-015 |
| Mechanical environment | Class M1 |
| Electromagnetic environment | Class E1 and E2 for Wireless M-Bus version Class E1 for Wired M-Bus version |
| Climatic environment | 5...55 °C, condensing humidity (indoors mounted in utility rooms and outdoors in meter pits – mounting in direct prolonged sunlight must be avoided) |

OIML R49 designations

| | |
|--------------------------------|--|
| Accuracy class | 2 |
| Ambient class | Fulfills OIML R49 class B and C (indoors/outdoors) |
| Medium temperature, cold water | 0.1...30 °C (T30) or 0.1...50 °C (T50) |
| Medium temperature, hot water | 0.1...70 °C (T70) or T30/70 |
| Meter types | Q3 = 1.6 m³/h, 2.5 m³/h and 4.0 m³/h |

Material

Wetted parts

| | |
|------------------------------|--|
| Meter housing and meter pipe | Polyphenylene sulfide PPS with 40 % fibreglass |
| Reflectors | Stainless steel, W.no. 1,4306 |

Technical data

Electrical data

| | |
|-----------------|--|
| 16-year battery | 3.65 VDC, one C-cell lithium |
| EMC data | Fulfills MID class: E1 and E2 for Wireless M-Bus version E1 for Wired M-Bus version |

Mechanical data

| | |
|----------------------------|--|
| Metrological class | 2 |
| Ambient class | Fulfills OIML R49 class B and C (indoors/outdoors) |
| Ambient temperature | 2...55 °C |
| Protection class | IP68 |
| Medium temperature | 0.1...30 °C (T30); 0.1...50 °C (T50); 0.1...70 °C (T70) or T30/70. |
| Storage temp. empty sensor | -25...60 °C |
| Pressure stage | PN16 |

Technical data

Accuracy

MPE (maximum permissible error)

MPE according to OIML R49

Meter approved 0.1...30 °C

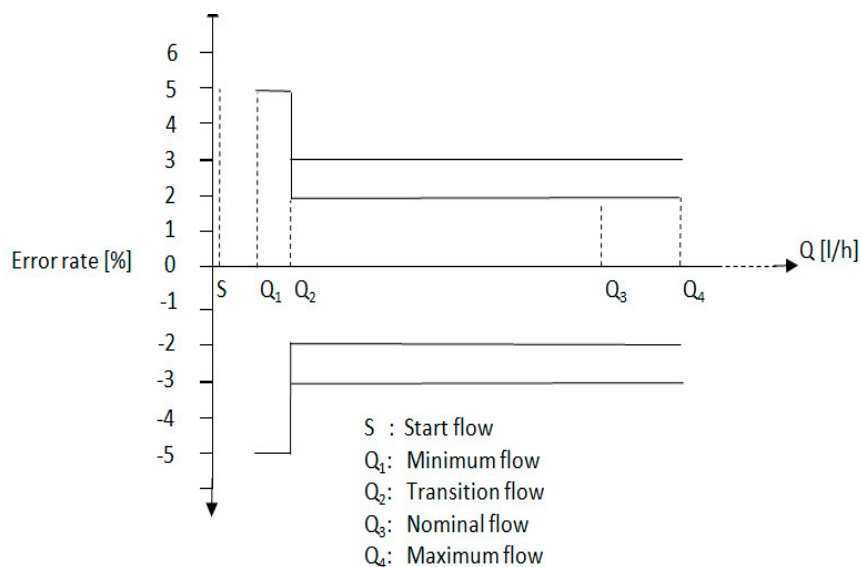
± 5 % in range $Q_1 \leq Q < Q_2$

± 2 % in range $Q_2 \leq Q \leq Q_4$

At 30 °C < t < 70 °C

± 5 % in range $Q_1 \leq Q < Q_2$

± 3 % in range $Q_2 \leq Q \leq Q_4$



Meter sizes

MULTICAL® 21/flowIQ® 2101 is available in different combinations of overall length and nominal flow Q_3 .

| Type number | Nom. flow Q_3 [m ³ /h] | Min. flow Q_1 [l/h] | Max. flow Q_4 [m ³ /h] | Dynamic range Q_3/Q_1 | Min. cutoff [l/h] | Max. cutoff [m ³ /h] | Pressure loss Δp at Q_3 [bar] | Connection on meter | Length [mm] |
|----------------|---|-----------------------------|---|-------------------------------|-------------------------|---------------------------------------|--|------------------------|----------------|
| 021-YY-COA-8XX | 1.6 | 10 | 2.0 | 160 | 2 | 4.6 | 0.25 | G3/4B | 110 |
| 021-YY-COD-8XX | 2.5 | 10 | 3.1 | 250 | 2 | 4.6 | 0.55 | G3/4B | 110 |
| 021-YY-COG-8XX | 2.5 | 10 | 3.1 | 250 | 2 | 4.6 | 0.55 | G1B | 105 |
| 021-YY-COH-8XX | 2.5 | 10 | 3.1 | 250 | 2 | 4.6 | 0.55 | G1B | 130 |
| 021-YY-COE-8XX | 2.5 | 10 | 3.1 | 250 | 2 | 4.6 | 0.55 | G1B | 190 |
| 021-YY-COL-8XX | 4.0 | 16 | 5 | 250 | 3.2 | 8.5 | 0.38 | G1B | 130 |
| 021-YY-CON-8XX | 4.0 | 16 | 5 | 250 | 3.2 | 8.5 | 0.38 | G1B | 190 |

The meter is available in cold and hot water versions,

controlled by the type number, which is

8XX for cold water and 7XX for hot water.

XX = country code

YY = choice of communication

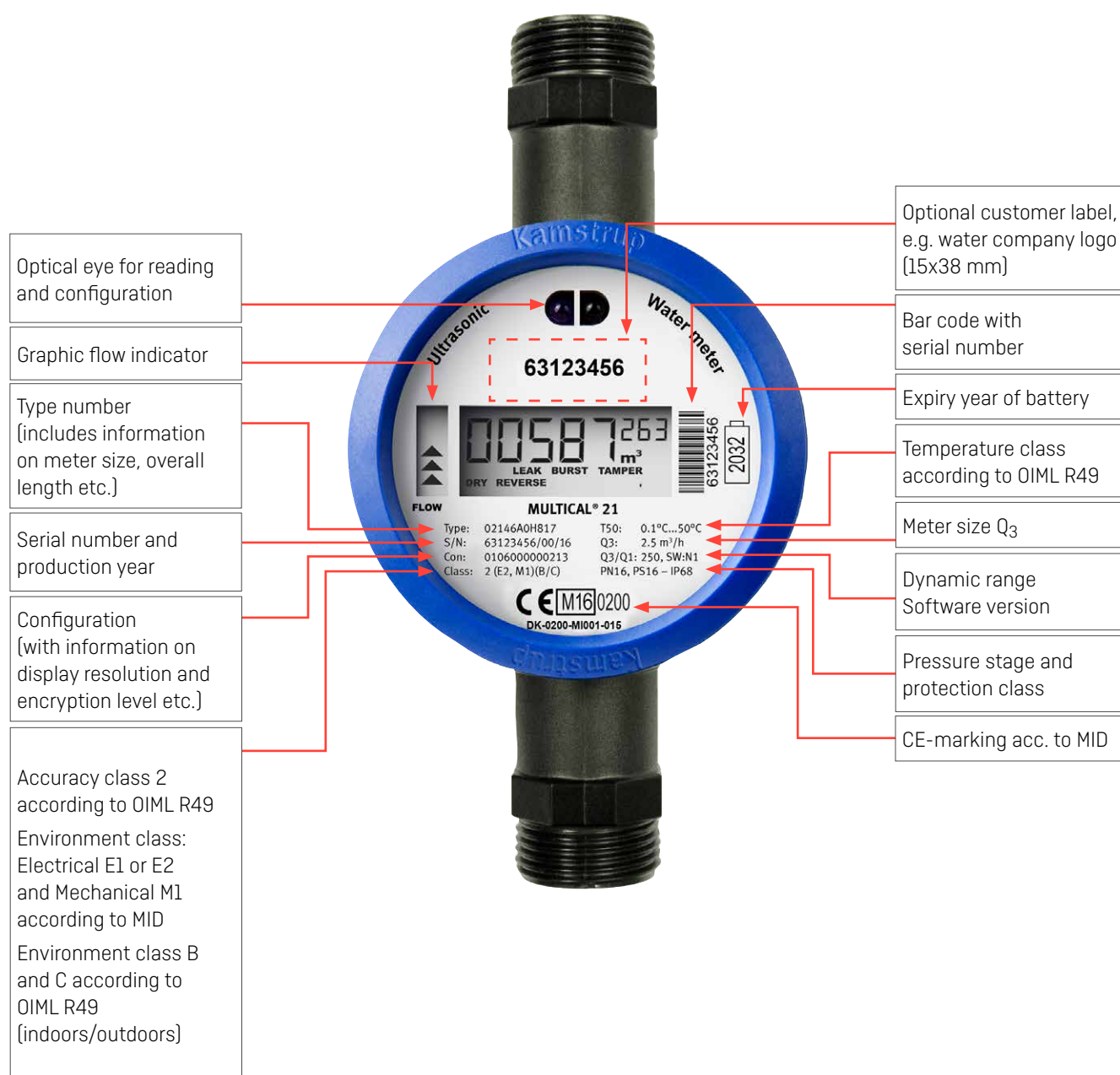
– also see section ‘Ordering Details’

Different extension pipes can be enclosed as accessories.

These extension pipes make it possible to adjust the meter to most existing current overall lengths. [See Accessories for Water Meters: 58101270].

Meter details

Meter information in permanent laser engraved text.



Display and info codes



The water meter can be read from the large, easily readable, specially designed display. The five large figures indicate number of cubic meters. The three small figures are decimals. The sign L (to the right of m³) will always be off when the meter is in operation as it is solely used during factory control and verification of the meter. The flow arrows in the left side of the display indicate water flow through the meter. If there is no flow, all arrows will be off.

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

| Info code flashes in the display | Meaning |
|-------------------------------------|--|
| LEAK | The water in the meter has not been stagnant for one continuous hour during the latest 24 hours. This can be a sign of a leaky faucet or toilet cistern. |
| BURST | The water consumption has been consistently high for half an hour, which indicates a pipe burst. |
| TAMPER | Attempt of fraud. The meter is no longer valid for billing. |
| DRY | The meter is not water-filled. In this case nothing will be measured. |
| REVERSE | The water flows through the meter in the wrong direction. |
| RADIO OFF | 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. |
| ■■ (two squared 'dots') | Two small squares flashing alternately indicate that the meter is active. |
| 'A' followed by a number | Indicates the number of metrologic changes the meter has gone through after factory verification. If no adjustments have been made both the 'A' symbol and the digit are inactive. |

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

Measurement of temperatures

Temperature monitoring

MULTICAL® 21/flowIQ® 2101 measures water and ambient temperatures respectively.

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

Both temperatures are logged in the daily and monthly records.

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

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

Temperature values are referred to in °C and can be read via the optical eye and sent by the Wireless M-Bus radio signal. Optional temperature combinations in the radio package are described in the section '*Optional registers in data logger*'.

Ambient temperatures

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

Water temperatures

Water temperature is measured as an indirect measurement of the water using the ultrasound signal. The water temperature is measured every 32 seconds.

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

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

Consumption values

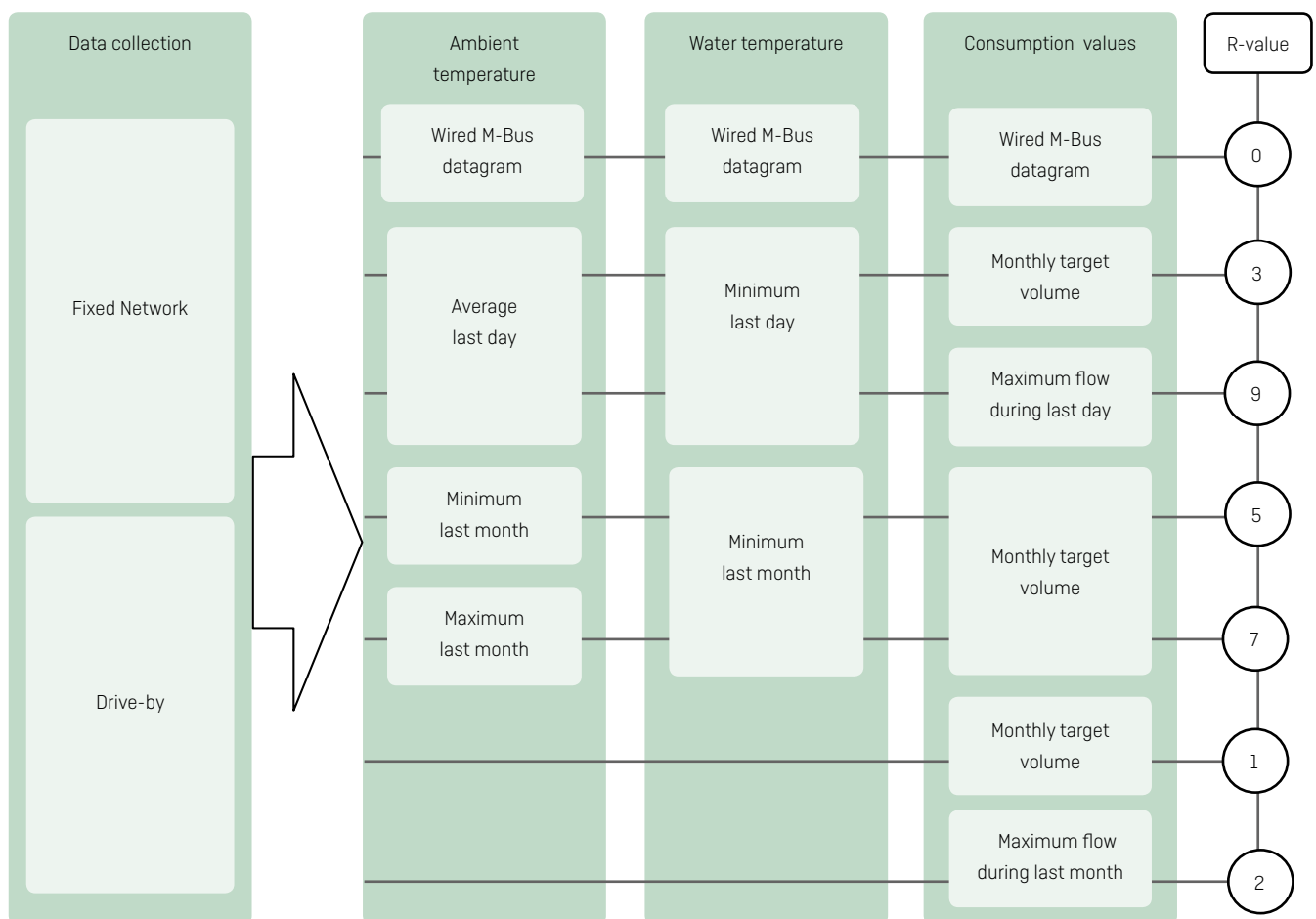
Besides readout of the current totally registered water use the meter saves a number of other consumption data.

Following values are stored:

- Target Volume - i.e. meter reading the first day of the month
- Maximum flow - daily
- Maximum flow - monthly
- Selected values of water temperatures and ambient/meter temperatures.

Optional registers in data logger

Some of the data sent via the Wireless M-Bus radio is optional. It is possible to select one data package; content is illustrated below. The choices are determined by means of the selected R-value when ordering a water meter – as shown to the right in the figure below.



Wireless M-Bus – wireless radio communication

The water meter communicates via built-in Wireless M-Bus, which gives access to quick and easy wireless reading of the meter.

The meter has a long range antenna. Via Wireless M-Bus a data package is transmitted every 16 or 96 seconds – according to the selected radio package.

The options are 'Drive-by' or '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.

The following details are transmitted:

- Current meter reading
- Optional register combination of:
Target volume – monthly / max flow / water and ambient temperatures
- List of active info codes
- List of info codes which have been active within the latest 30 days.

The list of info codes which have been active also includes information on how long they have been active.

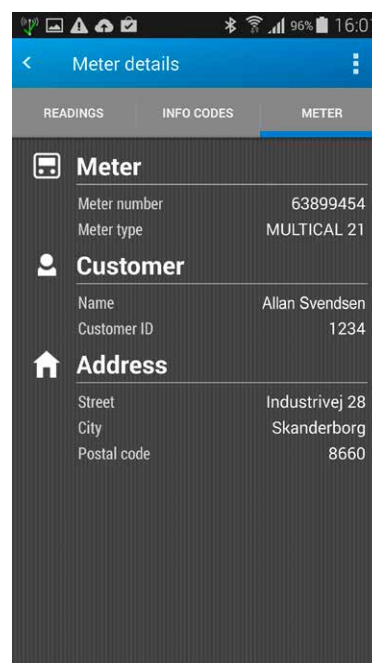
Wireless M-Bus is an open standard, which means that the meter can be configured with or without encryption of the Wireless M-Bus signal.

Encryption protects personal data against unauthorised monitoring. Furthermore, the encryption file provides easy access to import of meter data into reading programs.

Kamstrup A/S recommends encryption.

The meter can be read by using for example the 'READY' – Kamstrup's mobile Android app – which is ideal for 'walk-by' and 'drive-by' reading.

To the right are previews of how a reading may appear on the user's smart phone.



Wireless M-Bus – wireless radio communication

Below, an example of the graphics from a meter reading using the USB Meter Reader.



Views

- ☒ List view
- ☐ Detail view

Show only

Navigation

Drag and drop a column here to group the list by that column

| Info | Serial number | Name | Meter type | Consumption type | Volume - V1 | Receive time |
|------|---------------|----------------|------------|------------------|-------------|---------------------|
| ! | 67288822 | City Center 72 | MC21 | Cold water | 0,956 m³ | 09-09-2016 08:39... |
| ! | 67000455 | City Center 49 | MC21 | Cold water | 4470,14 m³ | 09-09-2016 08:39... |
| | 8454762 | City Center 37 | MC21 | Cold water | 0 m³ | 09-09-2016 08:39... |
| | 68500076 | City Center 33 | MC21 | Cold water | 0,346 m³ | 09-09-2016 08:39... |
| | 63000496 | City Center 31 | MC21 | Cold water | 0,338 m³ | 09-09-2016 08:39... |

MULTICAL 21

Water meter

CE 0102 0000

Data registers

The water meter has a permanent memory [EEPROM], in which the values of various data loggers are saved.

The meter includes the following registers:

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

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

The following registers are logged:

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

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

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.

Pressure loss

According to OIML R49 the maximum pressure loss must not exceed 0.63 bar (0.063 MPa) in the range Q_1 to Q_3 .

The pressure loss in a meter increases with the square of the flow and can be stated as:

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

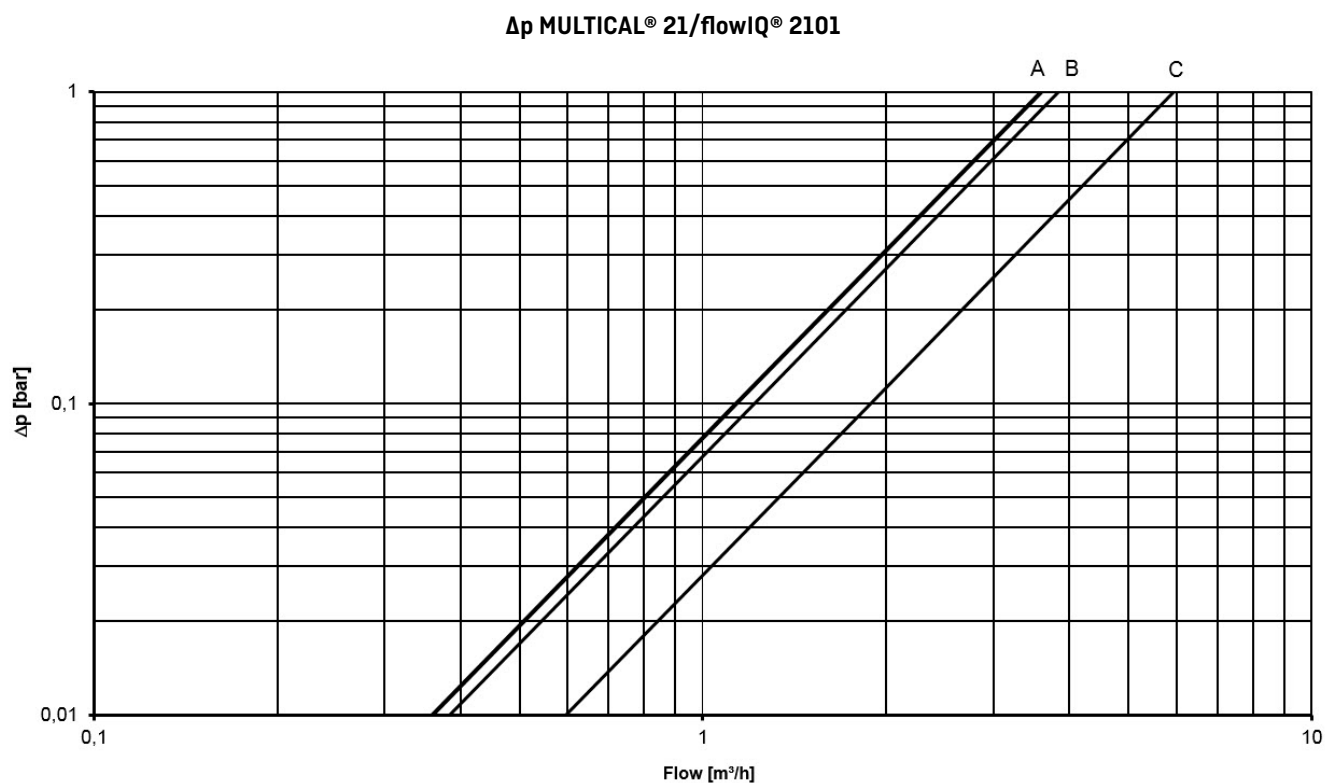
where:

Q = volume flow rate [m^3/h]

k_v = volume flow rate at 1 bar pressure loss

Δp = pressure loss [bar]

| Graph | Q_3 [m^3/h] | Nom. diameter [mm] | k_v | Q at 0.63 bar [m^3/h] |
|-------|------------------------------------|-----------------------|-------|--|
| A | 1.6 | DN15 | 3.6 | 2.7 |
| B | 2.5 | DN20 | 3.8 | 2.7 |
| C | 4.0 | DN20 | 6.0 | 5.1 |



Ordering details

An order is initiated by stating the type number of the selected model of MULTICAL® 21/flowIQ® 2101.

The type number includes information on meter type - cold or hot water, meter size, overall length, battery life, country code etc.

Some of the features included in the type number cannot be changed.

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

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

Accessories are enclosed separately to be mounted by the installer.

| | | | | | | | | | | | |
|---|-------------------|--------------------|-----------------|--------------------------|--------------------------|--------------------------|----------|--------------------------|--------------------------|--------------------------|--------------------------|
| MULTICAL® 21 /flowIQ® 2101 | | | Type 021 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 0 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Communication | | | | | | | | | | | |
| Wireless M-Bus. 868 MHz. mode C1 | | | | | | | | | | | |
| Wireless M-Bus. 868 MHz. mode T1 - OMS ¹⁾ | | | | | | | | | | | |
| 865,5 MHz. ²⁾ | | | | | | | | | | | |
| Wired M-Bus | | | | | | | | | | | |
| ¹⁾ only for selected markets ²⁾ only for flowIQ® 2101 | | | | | | | | | | | |
| Supply | | | | | | | | | | | |
| 16 years' battery life | | | | | | | | | | | |
| Meter size | | | | | | | | | | | |
| Q₃ [m³/h] | Connection | Length [mm] | | | | | | | | | |
| 1.6 | G¾B (R½) | 110 | | | | | | | | | A |
| 2.5 | G¾B (R½) | 110 | | | | | | | | | D |
| 2.5 | G1B (R¾) | 105 | | | | | | | | | G |
| 2.5 | G1B (R¾) | 130 | | | | | | | | | H |
| 2.5 | G1B (R¾) | 190 | | | | | | | | | E |
| 4.0 | G1B (R¾) | 130 | | | | | | | | | L |
| 4.0 | G1B(R¾) | 190 | | | | | | | | | N |
| Meter type | | | | | | | | | | | |
| Hot water meter | | | | | | | | | | | 7 |
| Cold water meter | | | | | | | | | | | 8 |
| Country code [language on label etc.] | | | | | | | | | | | XX |

The country code is used for:

- Language and approval on type label
- Temperature class of water meter. cold water (T30 and T50) or hot water (T70 and T30/70)

Configuration

| | KK | LLL | MMM | N | P | R | S | T |
|---|----|-----|-----|---|---|---|---|---|
| Target date (fixed) | 01 | | | | | | | |
| Average time of max. values | | | | | | | | |
| 2 minutes | | 002 | | | | | | |
| Customer label 2005-MMM | | | MMM | | | | | |
| Leakage message limit | | | | | | | | |
| OFF | | | | 0 | | | | |
| Flow continuously > 0.5 % of Q ₃ | | | | 1 | | | | |
| Flow continuously > 1.0 % of Q ₃ | | | | 2 | | | | |
| Flow continuously > 2.0 % of Q ₃ | | | | 3 | | | | |
| Flow continuously > 0.25 % of Q ₃ | | | | 4 | | | | |
| Flow continuously > 0.1 % of Q ₃ | | | | 5 | | | | |
| Pipe burst limit | | | | | | | | |
| OFF | | | | | 0 | | | |
| Flow > 5 % of Q ₃ for 30 minutes | | | | | 1 | | | |
| Flow > 10 % of Q ₃ for 30 minutes | | | | | 2 | | | |
| Flow > 20 % of Q ₃ for 30 minutes | | | | | 3 | | | |
| Optional register in data logger * Recommended for 'Drive-by' ** Recommended for 'Fixed Network' | | | | | | | | |
| Wired M-Bus datagram | | | | | | 0 | | |
| Meter reading target date | | | | | | 1 | | |
| Max. flow during last month | | | | | | 2 | | |
| Monthly target volume / Min.temp.water - daily / Time weighted average temp. meter - daily ** | | | | | | 3 | | |
| Monthly max. flow / Average temp.water - daily / Time weighted average temp. meter-daily ** | | | | | | 4 | | |
| Monthly target volume / Min. water Temperature - Monthly / Min. temp. meter - latest month * | | | | | | 5 | | |
| Monthly target volume / Min. water Temperature - Monthly / Max. temp. meter - latest month * | | | | | | 7 | | |
| Daily max. flow / Min.temp.water-daily / Time weighted average temp. meter- daily ** | | | | | | 9 | | |
| Display resolution | | | | | | | | |
| 00001 m ³ | | | | | | | 0 | |
| 00000.1 m ³ | | | | | | | 1 | |
| 00000.01 m ³ | | | | | | | 2 | |
| 00000.001 m ³ | | | | | | | 3 | |
| Encryption level | | | | | | | | |
| No encryption | | | | | | | | 0 |
| Utility encryption (only available for selected markets) | | | | | | | | 2 |
| Encryption with separately forwarded key | | | | | | | | 3 |

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

| | | | | | | | |
|----|-----|-----|---|---|---|---|---|
| 01 | 002 | 000 | 1 | 3 | 5 | 3 | 3 |
|----|-----|-----|---|---|---|---|---|

Wired M-Bus version

For billing and analysis

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

Introduction

flowIQ® 2101 is available with Wired M-Bus offering easy reading of the water meter via, for example, an M-Bus Master. Also electricity meters or heat/cool meter with a built-in M-Bus micro-master can be used.

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

Applications

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

Analysis

The water meter supports high quantities of data in a fixed datagram. This is valid for both actual meter data as well as for historical logger data.

Billing

All relevant data for billing purposes can be read out from flowIQ® 2101.

M-Bus Addressing

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

Primary addressing – (000-250)

When nothing else is specified, the M-Bus interface will automatically use the last 2-3 digits of the water meter serial number as the primary address.

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

Secondary addressing

– [M-Bus ID No. 00000000-99999999]

The last eight digits of the serial number are used as M-Bus ID number for secondary addressing.

Enhanced Secondary addressing

– [M-Bus ID No. 00000000-99999999]/[M-Bus fabrication No. 00000000-99999999]

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



Wired M-Bus version

Installation

The meter is delivered with a 1,5 meter long standard polarity independent connection.

Communication

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

Communication speed

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

Communication interval

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

Communication via optical read-out head

Apart from the configurations in the flowIQ® 2101 itself, the primary M-Bus address can be configured via the optical readout head and METERTOOL HCW.

Communication from M-Bus master

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

- Primary address
- Meter clock synchronization.

Communication from flowIQ® 2101 M-Bus

Available data (fixed datagram)

| flowIQ® 2101 | | | |
|--------------------------|-------------------------------------|------------------------------|------------------------------|
| M-Bus data header | Actual data | Monthly data | Meter data |
| M-Bus ID | Water meter reading (volume) | Monthly target meter reading | Information codes |
| Manufacturer ID | Volume reverse | Min. flow 1 Month | Config number |
| Version ID | Hour counter | Max. flow 1 Month | Meter Type (main / sub type) |
| Device type | Actual flow | Min. water temp Month | Meter SW Revision |
| Access counter | Actual water temperature | Avg. water temp Month | |
| Status (info codes) | Actual ambient temperature | Min. Ambient temp Month | |
| Configuration (not used) | Min. flow Day ¹⁾ | Max. ambient temp Month | |
| | Max. flow Day ¹⁾ | Avg. ambient temp Month | |
| | Min. water temp Day ¹⁾ | Target date | |
| | Avg. water temp Day ¹⁾ | | |
| | Min. ambient temp Day ¹⁾ | | |
| | Max. ambient temp Day ¹⁾ | | |
| | Avg. ambient temp Day ¹⁾ | | |
| | Date/Time | | |

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

Wired M-Bus version

Technical specifications

| | |
|------------------------|---|
| Physical | Fully integrated M-Bus interface |
| Communication | |
| Readout speed | 300/2400/9600 baud with automatical speed detection |
| Communication interval | Longer than 1 minute (recommended) |
| Protocol | EN 13757:2013 |
| Configuration | METERTOOL HCW via optical read-out head |

Supply

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

Markings/approvals

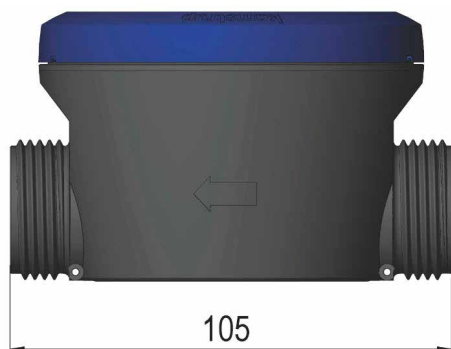
- EN 13757CE approval
- MID

Ordering

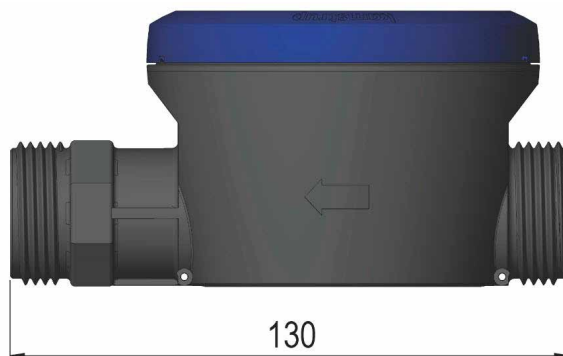
See sections: 'Type overview' and 'Configuration'

Dimensioned sketches

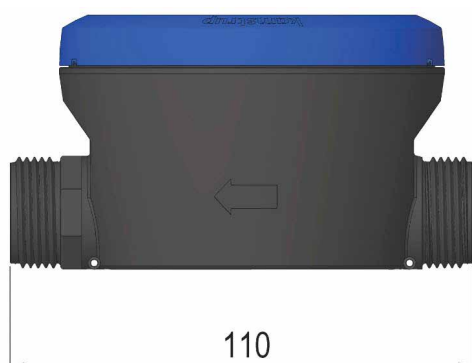
Type A and D – G3/4B x 110 mm



Type H – G1B x 130 mm



Type G – G1B x 105 mm



Type L – G1B x 130 mm



Type E and N – G1B x 190 mm



Accessories

See Accessories for Water Meters: 58101270-GB.

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