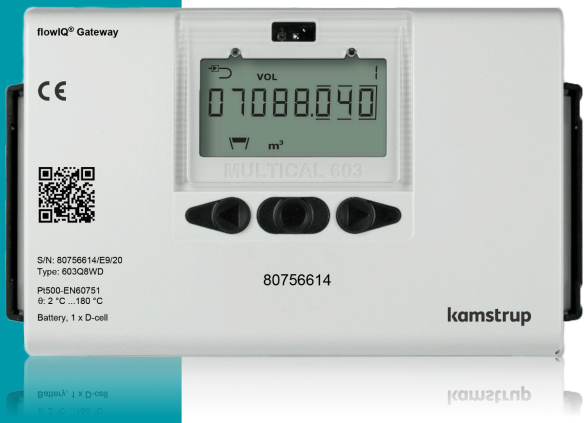
kamstrup

Installation and operation guide

flowIQ® Gateway



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Contents

1 Symbols used in this document 5
1.1 Warnings in the document 5
2 Abbreviations 7
3 Technical data 7
3.1 Product introduction 7
3.2 Electrical data 8
3.3 Mechanical data 8
3.4 Material 8
3.5 Communication 9
3.6 Input 9
3.7 Connections and inputs 9
3.7.1 Primary connection terminals 9
3.7.1.1 Supported flowIQ® meters 10
3.7.1.2 Supported data from flowIQ® 2200/3200 meters 10
3.7.1.3 Supported info codes from flowIQ® 2200/3200 meters 10
3.7.2 Module slot 1 and 2 11
3.7.2.1 Supported communication modules 11
4 Before you begin 12
4.1 What is in the box? 12
4.2 Accessories (ordered separately) 12
4.3 Deployment summary 12
5 Before field deployment 13
5.1 Import flowIQ® Gateway in meter data management systems 13
5.1.1 Automatic import in READy Manager 13
5.1.2 Manual import in READy Manager 13
5.1.3 Import in a third-party MDM system 13
6 Field deployment - installation 14
6.1 Installation 14
6.1.1 Wall installation 14
6.2 Connecting flowIQ® Gateway with flowIQ® 2200/3200 meter 15
6.3 Plugging in communication module(s) 16
6.3.1 Antenna mounting 16
6.4 Connecting additional accessories 17
6.4.1 Connecting Pt500 temperature sensors 17
6.4.2 Connecting pulse meters 18
6.4.3 Connecting Analog input 4...20 mA devices 18
6.5 Connecting the power supply 19
6.5.1 Battery supply 19
6.5.2 Mains supply 19
7 Field deployment – Configuration 21
7.1 Configuration of flowIQ® Gateway 21
7.1.1 Display loops 23
7.1.1.1 "USER loop" 23
7.1.1.2 "SETUP loop" 25
7.1.1.3 Overview of the "SETUP loop" index 26
7.1.1.4 "TECH loop" 26
7.1.2 Activation and deactivation of radio 27
7.2 Configuration of communication module(s) 27
7.2.1 Pulse configuration 28
7.2.1.1 Pulse In-A and In-B 28
7.2.1.2 Pulse cold water leakage 28
7.2.1.3 Pulse output 28

8 Operation **29**
8.1 Normal operation 29
8.2 Alarms and info codes 29
8.3 flowIQ® Gateway and meter exchanges in READy Manager 31
8.3.1 flowIQ® Gateway exchange 31
8.3.2 flowIQ® 2200/3200 meter exchange connected to flowIQ® Gateway 31
8.4 Kamstrup support 32
9 Disposal **32**
9.1 Disposal by Kamstrup A/S 32
9.2 The customer sends for disposal 32
9.3 Disposal by the customer 33
10 Communication module combinations and examples **34**

1 Symbols used in this document

Warning Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

Caution Indicates a hazardous situation which, if not avoided, could result in moderate injury, damage the product, or lead to loss of data.

Notice Indicates a hazardous situation which, if not avoided, may seriously impact operations.

1.1 Warnings in the document

Warning The contents of this guide and the guide included with the device must be followed at all times when installing, configuring or handling the device in general. If this guide is not followed, Kamstrup cannot be held accountable for any malfunctions or misuse of the product.

Warning Fire, explosion and severe burn hazard.
Please follow these guidelines in order to avoid injury to yourself and others:
- If not disposed of properly, the battery may cause fire or chemical burn
- Do NOT recharge, disassemble, crush, expose to water, heat above (100 °C) or incinerate the battery
- Keep away from children

Warning By connecting to 230 V supply, there is a risk of electric shock.

Warning Use only approved accessories with this device. Unapproved modifications or operation beyond or in conflict with these instructions for use may void authorization by the authorities to operate the device.

Warning Do not install outside of lightning protection zone 0C. 3 m height and depth around the building.

Warning By connecting to 24 V or 230 V supply, there is a risk of electric shock.

Warning Ensure proper disposal of the product.

Caution flowIQ® Gateway is designed to operate at temperatures of 5 °C...55 °C. Using the device outside the intended operating temperature range may cause deterioration of battery life or in worst case operating failure.

Caution If used with a radio module, the device must be installed to provide a separation distance of minimum 20 cm from all persons.

Caution Must NOT be co-located in conjunction with any other antenna or transmitter.

Caution Billing data can be corrupted if you do not follow the instructions found in section 8.3 "flowIQ® Gateway and meter exchanges in MDM" when performing exchanges of meters or gateways.

Caution If used with a radio module, mount flowIQ® Gateway at least 15 cm from pipes and conduits and several centimetres below the ceiling.

Caution If used with a radio module, mount flowIQ® Gateway at least 1.5 m away from any large metal objects (e.g. refrigerators, HVAC ducts, furnaces and hot-water heaters).

Caution If used with a radio module, do not mount flowIQ® Gateway directly under AC power wires, circuit breaker panels or telecommunications wires.

Caution Before replacing or mounting modules, the supply to the meter must be switched off. The same applies for mounting of an antenna.

Notice flowIQ® Gateway is an accessory gateway that syncs, shows and forwards meter data. The connected flowIQ® 2200/3200 meter is the solution's legally approved entity (MID) for billing data.

Notice Temperature and Advanced Leak Detection data is not forwarded from flowIQ® Gateway. If you wish to receive this data, import the flowIQ® meter in READy Manager.

Notice Kamstrup offers support for the flowIQ® Gateway modules listed below only.

Notice Modules are factory-mounted if ordered with flowIQ® Gateway.

Notice Only one installed radio module is supported at the time.

Notice Kamstrup recommends only importing flowIQ® Gateway or connected flowIQ® 2200/3200 meter in READy Manager. Not both.

Notice When using flowIQ® Gateway as an installation point in READy Manager, only the flow® Gateway serial number will be availbale in READy Manager.

Notice If used with a radio module with internal antenna, it is recommended that flowIQ® Gateway is mounted as high as possible near an exterior wall at/or above ground level.

Notice If used with a radio module with external antenna, it is recommended that the antenna is mounted as high as possible near an exterior wall at/or above ground level.

Notice If the modules are ordered with flowIQ® Gateway, they are factory-mounted.

Notice All radio-based modules must have either an internal or external antenna connected.

Notice Please note that it is only possible to configure the gateway 50 times via "SETUP loop". After 50 times, the gateway is locked against further configuration, and a total reset is required.

Notice Some items in "SETUP loop" are displayed as “OFF”. This means that the function is not available in the gateway.

Notice If the gateway's radio communication is switched off via "SETUP loop", the gateway subsequently switches on the radio communication again when the connected flowIQ® 2200/3200 meter registers water flow.

Notice The symbols for radio on/off indicate whether the gateway allows radio communication, not whether a radio module has activated its radio communication. Please be aware of this when troubleshooting the gateway's wireless communication.

Notice Remember to enable transport mode when exchanging or decommissioning a battery-driven flowIQ® Gateway. If this is not done, the gateway will keep sending data to the MDM system.

2 Abbreviations

MDM: meter data management

EKS: Encryption Key Service

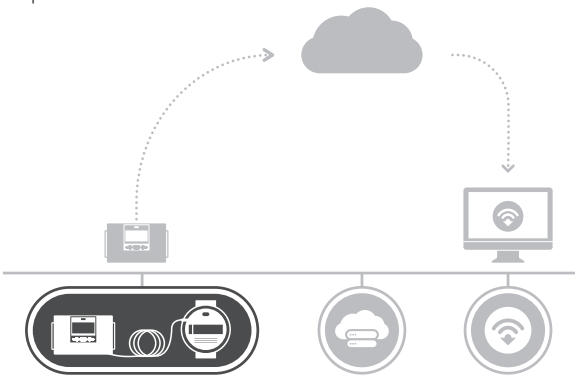
3 Technical data

3.1 Product introduction

Warning The contents of this guide and the guide included with the device must be followed at all times when installing, configuring or handling the device in general. If this guide is not followed, Kamstrup cannot be held accountable for any malfunctions or misuse of the product.

Notice flowIQ® Gateway is an accessory gateway that syncs, shows and forwards meter data. The connected flowIQ® 2200/3200 meter is the solution's legally approved entity (MID) for billing data.

flowIQ® Gateway is a universal communication module gateway that connects to flowIQ® 2200/3200 meters from Kamstrup and forwards data via the chosen module communication protocol.



flowIQ® Gateway works with popular industrial protocols such as Modbus, BACnet, LonWorks and integrates to Kamstrup's own meter data management system READy Manager with Wireless M-Bus, P2P 2G/4G or linkIQ®.

3.2 Electrical data

Fire, explosion and severe burn hazard.
Please follow these guidelines in order to avoid injury to yourself and others:

- If not disposed of properly, the battery may cause fire or chemical burn
- Do NOT recharge, disassemble, crush, expose to water, heat above (100 °C) or incinerate the battery
- Keep away from children

By connecting to 230 V supply, there is a risk of electric shock.

Battery

	3.65 VDC, D-cell lithium	3.65 VDC, 2xA-cell lithium
Battery lifetime	16 years @ tBAT < 30 °C	9 years @ tBAT < 30 °C

Note: Power supply choices depend on the inserted communication module and lifetime depends on the chosen communication modules and datagrams.

Mains supply	230 VAC +15/-30 %, 50/60 Hz 24 VAC ±50 %, 50/60 Hz 24 VDC +75/-25 % (24 VDC for High Power SMPS only)
Power consumption	< 1 w
Insulation voltage	3.75 kV

3.3 Mechanical data

flowIQ® Gateway is designed to operate at temperatures of 5 °C...55 °C. Using the device outside the intended operating temperature range may cause deterioration of battery life or in worst case operating failure.

Protection class	IP65-rated
Dimensions	166 mm x 102 mm x 47 mm Wall mount 74 mm x 58 mm
Weight	Approx. 450 g
Operating temperature	5 °C...55 °C non-condensing closed location (indoor installation)
Storage temperature	-25 °C...60 °C
Operating humidity	0 % - 100 % non-condensing

3.4 Material

Top and base	Thermoplastic, PC 10 % GF with TPE (thermoplastic elastomer)
Verification cover	ABS

3.5 Communication

Caution If used with a radio module, the device must be installed to provide a separation distance of minimum 20 cm from all persons.

Caution Must NOT be co-located in conjunction with any other antenna or transmitter.

Communication module	2 plug-in slots
Antenna	External/internal depending on communication module
Optical interface	Configuration interface

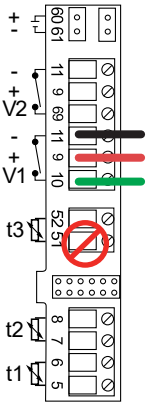
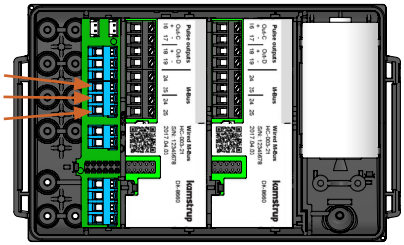
3.6 Input

flowIQ® 2200/3200 meter	Proprietary Kamstrup communication
Cable (ordered separately)	1.5 m 5000491 7.5 m (can be shortened) 5000493
Temperature sensors	3 x Pt500

3.7 Connections and inputs

3.7.1 Primary connection terminals

The primary connection terminals are reserved for connection of a flowIQ® 2200/3200 meter and 3 Pt500 temperature sensors.

Description	Schematic	Overview
The flowIQ® 2200/3200 meter cable is connected in the following way: Black → minus (-) input 11 Red → plus (+) input 9 Green → V1 input 10 The 3 Pt500 temperature sensors are connected to terminals t1...3		

3.7.1.1 Supported flowIQ® meters

flowIQ® meters	Proprietary Kamstrup communication flowIQ® 2200 with wM-Bus/linkIQ® module 61/62 flowIQ® 3200 with wM-Bus/linkIQ® module 63/64

3.7.1.2 Supported data from flowIQ® 2200/3200 meters

Notice Temperature and Advanced Leak Detection data is not forwarded from flowIQ® Gateway. If you wish to receive this data, import the flowIQ® meter in READy Manager

The following data is synced between flowIQ® Gateway and flowIQ® 2200/3200 meters:

- Volume 1
- Flow (V1)
- Info codes (see the following section)

Please refer to the specific communication module's data sheet on products.kamstrup.com for further information about data content.

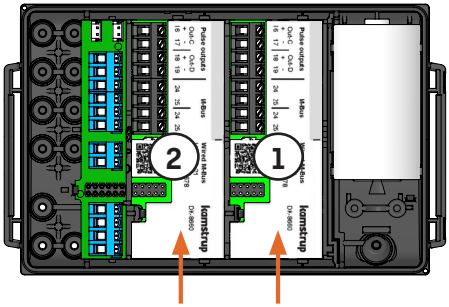
3.7.1.3 Supported info codes from flowIQ® 2200/3200 meters

The connected flowIQ® 2200/3200 meters can forward the following alarms/info codes to flowIQ® Gateway. The gateway maps the info codes to its own interpretation of the alarms/info codes:

flowIQ® meter info bit	flowIQ® meter description	flowIQ® Gateway info bit	flowIQ® Gateway description (MC603 description)
0	Dry	8	V1 Air
1	Reverse	9	V1 Wrong flow direction
2	Leak	30	V1/V2 Leakage, water loss (M1 > M2)
3	Burst	28	V1/V2 Burst, water loss (flow1 > flow2)
8	Flow Above Q_4	11	V1 Increased flow (flow1 > qs, for more than 1 hour)

See section 8.2 "Alarms and info codes" for a complete overview of alarms and info codes.

3.7.2 Module slot 1 and 2



Module slots 1 and 2 are for plugging in modules offering different communication types and protocols.

3.7.2.1 Supported communication modules

Notice Kamstrup offers support for the flowIQ® Gateway modules listed below only.

Notice Modules are factory-mounted if ordered with flowIQ® Gateway.

Notice Only one installed radio module is supported at the time.

The following communication modules are supported by flowIQ® Gateway.

For examples of combinations and usage, see section 10 "Communication module combinations and examples".

Article number	Module	Recommended datagram	
HC-003-10	Data Pulse, inputs (In-A, In-B)		
HC-003-11	Data Pulse, outputs (Out-C, Out-D)		
HC-003-20	Wired M-Bus, inputs (In-A, In-B)		
HC-003-21	Wired M-Bus, outputs (Out-C, Out-D)		
HC-003-32	linkIQ/wM-Bus, inputs (In-A, In-B), EU		&
HC-003-33	linkIQ/wM-Bus, outputs (Out-C, Out-D), EU		&
HC-003-41	Analog inputs 2 x 4...20 mA / 0...10 V	41-00-100	"
HC-003-60	LON TP/FT-10, inputs (In-A, In-B)	60-00-100	$
HC-003-66	BACnet MS/TP, inputs (In-A, In-B)	66-00-100	"
HC-003-67	Modbus RTU, inputs (In-A, In-B)		"

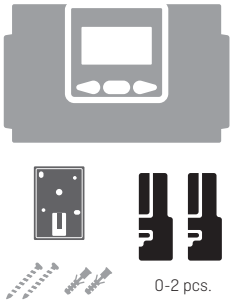
HC-003-80	2G/4G Network, inputs (In-A, In-B)	80-10-101	&$
HC-003-82	Modbus/KMP TCP/IP, inputs (In-A, In-B)		$
HC-003-83	READy Ethernet, inputs (In-A, In-B)	83-10-100	$

" The module requires that the meter is mains-supplied

$ The module requires that the meter is mains-supplied with a High Power supply

& The module requires an antenna

4 Before you begin



4.1 What is in the box?

- flowIQ® Gateway
- Wall bracket including screws and rawlplugs
- Ordered module(s) – mounted in gateway

4.2 Accessories (ordered separately)

See a complete list of accessories in the product data sheet.
The most commonly used are listed here:

- flowIQ® 2200/3200 meter connection cable
  1.5 m (5000491)
  7.5 m, can be shortened (5000493)
- Temperature sensors (Pt500)
  All Pt500 2-wired sensors can be used
  If a set of two or more sensors are bought from Kamstrup, the sensor set can be split to use one sensor per flowIQ® Gateway

4.3 Deployment summary

1 Before field deployment (section 5):
Import flowIQ® Gateway in the meter data management system (encryption keys)

2 Field deployment - Installation (section 6):
Install flowIQ® Gateway
Connect flowIQ® 2200/3200 meter with flowIQ® Gateway
Plug in or check the communication module(s)
Connect additional accessories
Connect power supply

3 Field deployment - Configuration (section 7):
Configure flowIQ® Gateway
Configure the communication module(s) (if applicable)

5 Before field deployment

If using a radio communication module in flowIQ® Gateway, it is required that you import the encryption key file from EKS at My Kamstrup in your MDM system. Please follow the steps below.

5.1 Import flowIQ® Gateway in meter data management systems

5.1.1 Automatic import in READy Manager

Caution Billing data can be corrupted if you do not follow the instructions found in section 8.3 "flowIQ® Gateway and meter exchanges in MDM" when performing exchanges of meters or gateways.

Notice Kamstrup recommends only importing flowIQ® Gateways or connected flowIQ® 2200/3200 meters in READy Manager. Not both.

Notice When using flowIQ® Gateway as an installation point in READy Manager, only the flow® Gateway serial number will be availbale in READy Manager.

If using Kamstrup's MDM system READy Manager, flowIQ® Gateway is automatically imported into READy Manager if you are logged in with your My Kamstrup account and the "Import new devices" checkbox is ticked.

More information can be found in the READy Manager user guide under "Automatically importing information for new devices".

5.1.2 Manual import in READy Manager

If not logged in, you can import flowIQ® Gateway directly from EKS found in My Kamstrup.

Click the "Import devices" button on the start page of READy Manager and import the downloaded encryption key file from EKS.

More information can be found in the READy Manager user guide under "Manually importing information for new devices".

5.1.3 Import in a third-party MDM system

If using another MDM system and radio communication, the encryption key file must be manually downloaded from EKS at My Kamstrup and imported in the MDM system.

If using a module with wired communication, data is not encrypted.

6 Field deployment - installation

Warning Use only approved accessories with this device. Unapproved modifications or operation beyond or in conflict with these instructions for use may void authorization by the authorities to operate the device.

Warning Do not install outside of lightning protection zone 0C. 3 m height and depth around the building.

6.1 Installation

flowIQ® Gateway is intended to be wall-mounted with the accompanying wall bracket in residential, commercial and industrial environments. The device is intended to be installed either at ground level or above ground on a wall. flowIQ® Gateway is IP65-rated and is resistant to harmful dust and water sprays.

6.1.1 Wall installation

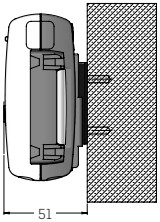
Caution If used with a radio module, mount flowIQ® Gateway at least 15 cm from pipes and conduits and several centimetres below the ceiling.

Caution If used with a radio module, mount flowIQ® Gateway at least 1.5 m away from any large metal objects (e.g. refrigerators, HVAC ducts, furnaces and hot-water heaters).

Caution If used with a radio module, do not mount flowIQ® Gateway directly under AC power wires, circuit breaker panels or telecommunications wires.

Notice If used with a radio module with internal antenna, it is recommended that flowIQ® Gateway is mounted as high as possible near an exterior wall at/or above ground level.

Notice If used with a radio module with external antenna, it is recommended that the antenna is mounted as high as possible near an exterior wall at/or above ground level.

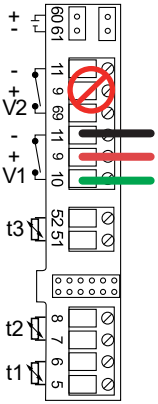
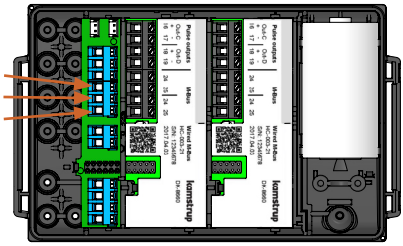


flowIQ® Gateway can be mounted on an even wall. Use the wall bracket as a template to mark and drill two 6 mm holes in the wall and mount the wall bracket with the enclosed screws and rawlplugs. Mount flowIQ® Gateway on the wall bracket by sliding the device onto the bracket.

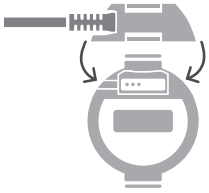
Mount the wall bracket and slide flowIQ® Gateway onto the bracket:

6.2 Connecting flowIQ® Gateway with flowIQ® 2200/3200 meter

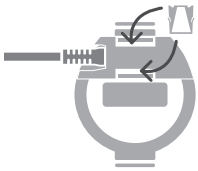
Follow the connection diagram below:

Description	Schematic	Overview
The flowIQ® 2200/3200 meter cable is connected in the following way: Black → minus (-) input 11 Red → plus (+) input 9 Green → V1 input 10 The 3 Pt500 temperature sensors are connected to terminals t1...3		

Connect the plug to the flowIQ® 2200/3200 meter:



Mount the connection cable on the flowIQ® 2200/3200 meter.



Insert the locking tabs in the assembly to secure the connection.

6.3 Plugging in communication module(s)

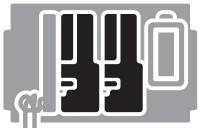
Caution Before replacing or mounting modules, the supply to the meter must be switched off. The same applies for mounting of an antenna.

Notice If the modules are ordered with flowIQ® Gateway, they are factory-mounted.

The communication modules are factory-mounted if ordered with flowIQ® Gateway.

If ordered separately, mount the modules as shown.

The communication modules are programmed with a data package at the factory and will send data according to the chosen package.

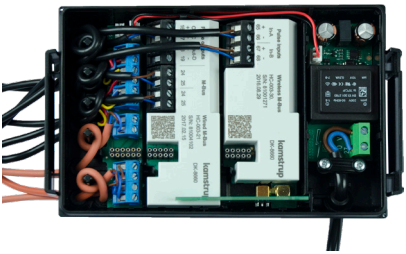


6.3.1 Antenna mounting

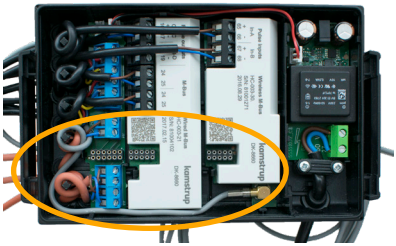
Notice All radio-based modules must have either an internal or external antenna connected.

When mounting an external antenna, please ensure that the antenna cable is arranged as shown to prevent damage of the cable when the gateway is assembled.

Before opening the gateway to mount a module or an antenna, the power supply must be disconnected.



Wireless M-Bus module with internal antenna.



Wireless M-Bus module with external antenna.

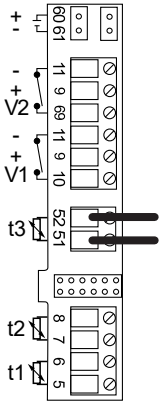
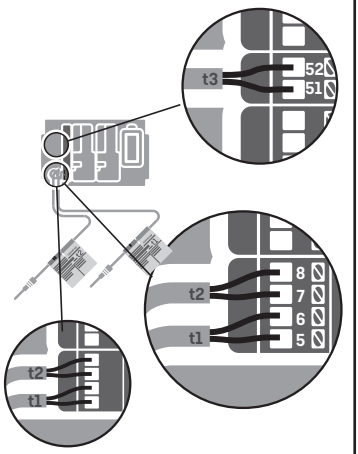
6.4 Connecting additional accessories

Additional devices can be connected to flowIQ® Gateway. These devices are dependent on the choice of communication module. The devices include:

- Up to 3 x Pt500 temperature sensors
- Up to 4 x pulse meters
- Up to 2 x analog input 4...20 mA devices, e.g. pressure sensors

6.4.1 Connecting Pt500 temperature sensors

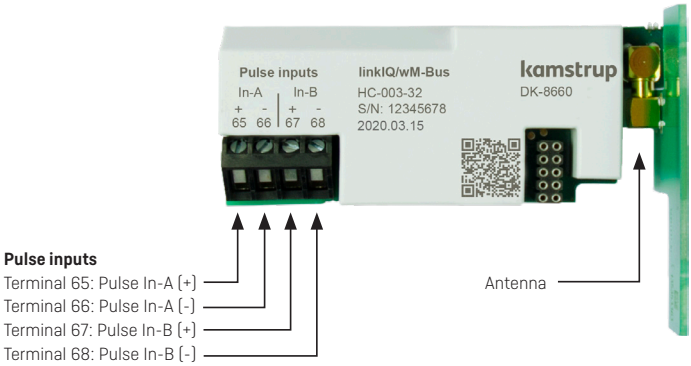
Up to 3 x Pt500 temperature sensors can be connected to flowIQ® Gateway.

Description	Schematic	Overview
The flowIQ® Gateway Pt500 temperature sensors are connected in the following way: • Connect the two wires to either the t1, t2, or t3 terminals as shown		

6.4.2 Connecting pulse meters

Some modules are equipped with two pulse inputs, In-A and In-B, to collect and accumulate pulses. The pulse inputs are physically placed on the module. However, the accumulation and logging are performed by flowIQ® Gateway. Depending on where the communication module is placed (slot 1 or slot 2), the pulse inputs will be registered as In-A1 and In-B1 or In-A2 and In-B2. Thus, you can install two communication modules with two pulse inputs each and connect up to four pulse meters to flowIQ® Gateway. For examples, see section 10 "Communication module combinations and examples".

Here is an example of the module HC-003-32: linkIQ®/wM-Bus module:

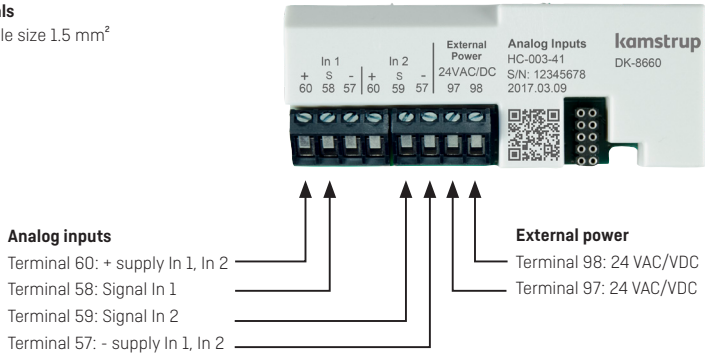


Upon delivery, the configurations of pulse inputs A and B can be changed with METERTOOL HCW. The preset value of In-A1 and In-B1 can be set via the front keys, see section 7 "Field deployment – Configuration".

6.4.3 Connecting Analog input 4...20 mA devices

Module HC-003-41 is equipped with Analog 2 x 4...20 mA inputs. The module writes the values of the analog signals to the P1 and P2 registers of flowIQ® Gateway. The inputs are physically placed on the module. However, the accumulation and logging are performed by flowIQ® Gateway. Only one analog input module is supported in flowIQ® Gateway.

Terminals
Max cable size 1.5 mm²



6.5 Connecting the power supply

By connecting to 24 V or 230 V supply, there is a risk of electric shock.

6.5.1 Battery supply

flowIQ® Gateway can be delivered with battery supply with a number of various batteries. Optimal battery lifetime is obtained by keeping the battery temperature below 30 °C. An info code/alarm indicates if the battery level is low. The battery cannot and must not be charged and must not be short-circuited. Used batteries must be handed in for approved destruction, e.g. to Kamstrup A/S.

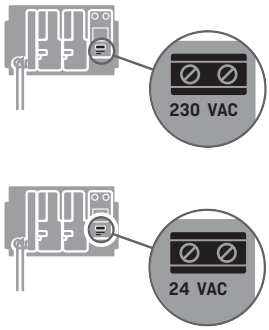
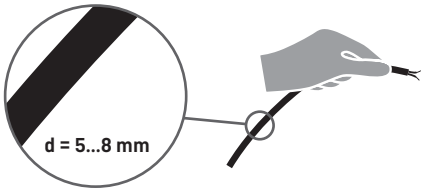
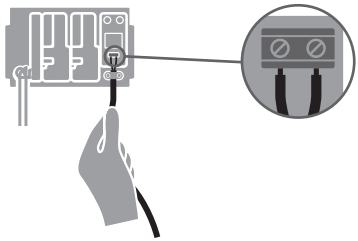
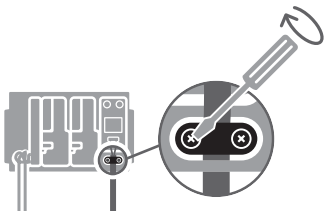
6.5.2 Mains supply

flowIQ® Gateway is available with supply modules for either 24 VAC/VDC or 230 VAC.

The supply modules are protection class II and are connected via a two-wire cable (without earth) through the big cable bush at the bottom of the connection base. Use connecting cable with an outer diameter of 5-8 mm and ensure correct cable stripping as well as correct mounting of cable relief. If connecting to 230 VAC, it is important to make sure that the whole installation complies with current regulations. The supply cable for the meter must never be protected by a fuse larger than the one permitted.

In case of doubt, it is recommended to take advice from an authorized electrician and get an individual assessment of the execution of the installation in question. In addition, note that work on fixed installations and any intervention in the fuse box must be done by an authorized electrician only.

If flowIQ® Gateway is ordered with 24 VAC/VDC or 230 VAC power supply, please follow the steps below to connect power.

1. flowIQ® Gateway can be ordered with a 24 VAC/VDC or 230 VAC power supply.	
2. Use a power cable with a diameter of 5-8 mm.	
3. Connect the power cable to the terminals on the right side of flowIQ® Gateway (seen from the front).	
4. Tighten the cable clamp.	
5. Assemble the top and bottom parts of flowIQ® Gateway.	

7 Field deployment – Configuration

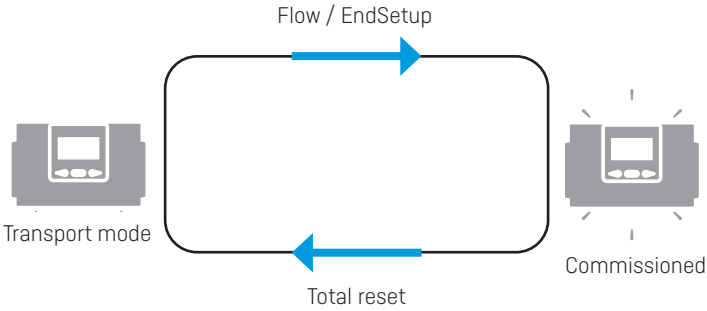
7.1 Configuration of flowIQ® Gateway

If all parameters have been decided during ordering, the gateway is configured from factory and there is no need for further configuration.

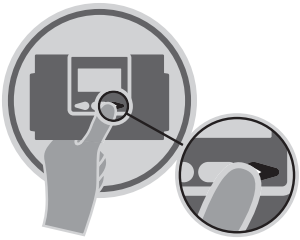
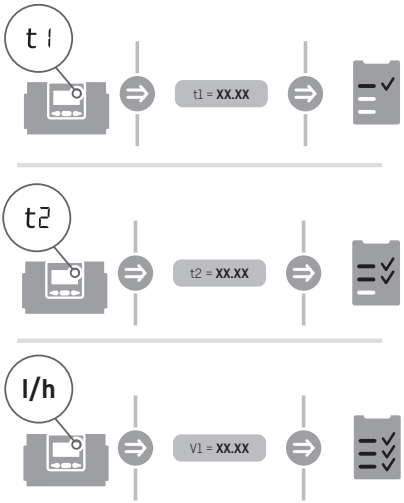
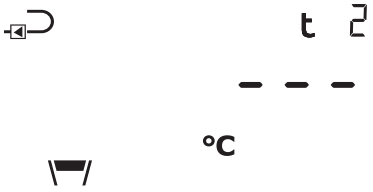
When you receive flowIQ® Gateway, the device is in transport mode. In transport mode, all wireless communication is deactivated. Wired communication modules respond on request.

Transport mode can be initiated by disassembling the top and bottom parts and assemble them again.

Transport mode can be left by allowing the connected flowIQ® 2200/3200 meter to register water flow or going to “EndSetup” in "SETUP loop". Synchronization between the meter and gateway can take up to 20 seconds.



Once flowIQ® Gateway turns on, check that everything is reading as intended:

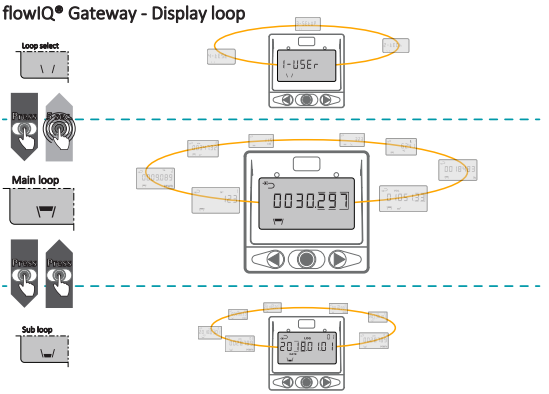
1. Turn on the water flow through the flowIQ® 2200/3200 meter	
2. Navigate through the user display loop by pressing the right or left arrow buttons	
3. Check the readings Up to 20 seconds can pass before the display is updated with the readings from the flowIQ® 2200/3200 meter	
4. In case no sensor is attached or an error has occured, the display will show " - - - "	

If further configuration is required, it can be done using "SETUP loop" (available in transport mode) or METERTOOL HCW.

7.1.1 Display loops

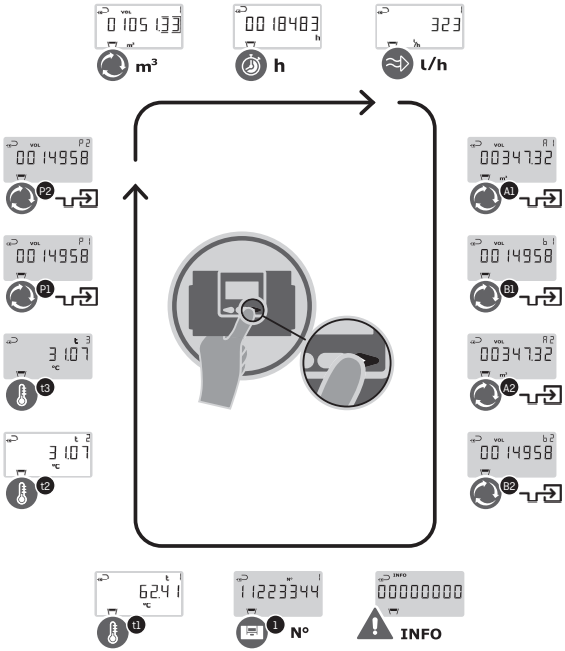
Display loops:
Shift between display loops by holding down the primary key for 5 seconds.

Main and subloops:
Switch between main and subloops by pressing the primary key once.



7.1.1.1 "USER loop"

The gateway's display loop is intended for the user. The layout of the readings in this loop is static. The loop shows you the readings from the attached devices.



Position	Main loop	Subloop
1	Volume 1	Date for yearly logger, Yearly logger data Date for monthly logger, Monthly logger data
2	Hour counter	Error hour counter
3	Flow (V1)	Date for max this year, Yearly max flow data Date for max this month, Monthly max flow data
4	Input A1	Meter no. of input A1 L/imp. of input A1 Date for yearly logger, Yearly logger data Date for monthly logger, Monthly logger data
5	Input B1	Meter no. of input B1 L/imp. of input B1 Date for yearly logger, Yearly logger data Date for monthly logger, Monthly logger data
6	Input A2	Meter no. of input A2 L/imp. of input A2 Date for yearly logger, Yearly logger data Date for monthly logger, Monthly logger data
7	Input B2	Meter no. of input B2 L/imp. of input B2 Date for yearly logger, Yearly logger data Date for monthly logger, Monthly logger data
8	Info code	Info event counter Date for info logger, Info logger data
9	Customer number (No. 1)	Customer number (No. 2)
10	t1	
11	t2	
12	t3	
13	P1 (analog input 1)	
14	P2 (analog input 2)	

7.1.1.2 "SETUP loop"

Notice Please note that it is only possible to configure the gateway 50 times via "SETUP loop". After 50 times, the gateway is locked against further configuration and a total reset is required.

"SETUP loop" is intended for the technician. In this loop, the technician can configure the gateway via the front keys. It is used for further configuration than done from the factory.

The loop is accessible in transport mode or until the configuration is ended by activating "EndSetup" or letting water flow through the connected flowIQ® 2200/3200 meter.

You can navigate from "USER loop" to "SETUP loop" by keeping the primary key activated for 5 seconds until the text "1-USER" appears in the display. Use the arrow keys to navigate to "3-SETUP" and press the primary key once to open "SETUP loop" in flowIQ® Gateway.

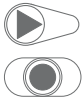
You can leave "SETUP loop" in the following ways:

- Keep the primary key activated and navigate to the gateway's other loops
- After 4 minutes without activation of the key, the gateway will time out and return to the first reading in "USER loop"
- Navigate to the menu item "EndSetup" and keep the primary key activated for 5 seconds until the display shows "OK"

Navigating and changing parameters in "SETUP loop"

You can change the parameters of "SETUP loop" as shown in the following example. If the parameter you wish to change is not part of the "SETUP loop", you must use METERTOOL HCW with an optical read-out head for configuration.

This example changes the preset values for the inputs In-A1 and In-B1. Navigation of the menu, and changing of the preset values, is similar when configuring other parameters. Navigate using the index menu listed in "SETUP loop" table below.

1. Enter "SETUP loop". Hold down the primary key and release it at "1-USER".	
2. Go to "3-SETUP" using the arrow keys. Enter by pressing the primary key.	
3. Go to index "3-016" for input In-A1 or index "3-017" for input In-B1 by pressing the arrow keys. Enter the setup by pressing the primary key.	
4. Use the primary key to increment the number and the arrow keys to navigate.	
5. Save your settings by holding down the primary key until "0K" appears in the bottom left corner.	
6. Return to "USER loop" by holding down the primary key and press once to enter "USER loop".	

7.1.1.3 Overview of the "SETUP loop" index

Notice Some items in "SETUP loop" are displayed as “OFF”. This means that the function is not available in the gateway.

"SETUP loop" menus		Index number in display
1.0	Customer number (No. 1)	3-001
2.0	Customer number (No. 2)	3-002
3.0	Date	3-003
4.0	Time*	3-004
5.0	Yearly target date 1 (MM.DD)	3-005
6.0	Monthly target date 1 (DD)	3-006
9.0	M-Bus primary address internal (No. 34)	3-009
10.0	Primary address module slot 1 (No. 34)	3-010
11.0	Primary address module slot 2 (No. 34)	3-011
14.0	t offset	3-014
15.0	Radio “ON” or “OFF”	3-015
16.0	Input A1 (preset register)	3-016
17.0	Input B1 (preset register)	3-017
18.0	Meter number of input A1	3-018
19.0	Meter number of input B1	3-019
24.0	EndSetup	3-024

* The clock can, under installation seal, be adjusted by all modules.

7.1.1.4 "TECH loop"

"TECH loop" includes a number of module readings which depend on the mounted module. These readings are described in the respective technical descriptions for the modules. Simple modules, however, only include the primary reading “Type/Config no.” (index number 2-101-00). If the meter is not fitted with a module, “Type/Config no.” is displayed as “00000000”.

For an overview of "TECH loop", please refer to the technical description of MULTICAL® 603. Information regarding registers not present in the gateway user loop are not relevant for flowIQ® Gateway.

7.1.2 Activation and deactivation of radio

Notice If the gateway's radio communication is switched off via "SETUP loop", the gateway subsequently switches on the radio communication again when the connected flowIQ® 2200/3200 meter registers water flow.

Notice The symbols for radio on/off indicate whether the gateway allows radio communication, not whether a radio module has activated its radio communication. Please be aware of this when troubleshooting the gateway's wireless communication.

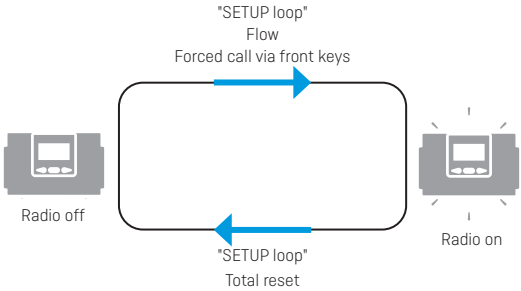
The gateways radio/wireless communication is automatically turned on when the gateway leaves the transport mode. The radio on/off function in the "SETUP loop" index “3-015” is primarily used for switching on the radio in transport state as well as for switching off the radio when the gateway is dismounted after having been in operation, e.g. if the gateway is to be sent by airfreight. The gateway's present radio state is indicated by two symbols in the bottom left corner of the display.

	Radio ON	Radio OFF	No module/not radio module
"SETUP loop"			
"USER loop"/ "TECH loop"			

7.2 Configuration of communication module(s)

Communication modules are ordered from the factory with a specified data package content and configuration.

The modules can be reconfigured using METERTOOL HCW with a optical read-out head with USB connection.



7.2.1 Pulse configuration

A number of different modules offer pulse inputs. The configuration is mainly done when ordering flowIQ® Gateway.

7.2.1.1 Pulse In-A and In-B

The pulse inputs on the communication modules are configured from the factory through the FF and GG codes in the configuration number entered during ordering. The FF and GG codes can be reconfigured on site with METERTOOL HCW.

For a detailed overview of pulse settings, refer to the order information or 5512-2029 "Pulse inputs A and B >FF-GG<".

Default configuration for FF/GG is code 24:

Max flow	Pre-counter	L/imp	Measuring unit and decimal place
10 m^3/h	1	10	vol A/vol B (m^3), 00000.00

7.2.1.2 Pulse cold water leakage

flowIQ® Gateway can perform water leakage monitoring on the pulse inputs. This is configured from the factory with configuration code N. Leakage is measured over 24 hours. The N code defines the resolution by which the 24 hours are divided; either 48 intervals of half an hour, 24 intervals of one hour or 12 intervals of two hours. If the gateway registers minimum one pulse during each of these intervals over the full period, info code 8, which indicates leakage, is activated. The info code is not activated until after the 24-hour period. However, it is reset again as soon as the gateway registers an interval without pulses.

For a detailed overview of water leakage settings, refer to the order information or 5512-2029 "Cold water leakage (In-A, In-B) >N<".

Default configuration for N code is code 2:

Cold water leakage search	N code
One hour without pulses	2

7.2.1.3 Pulse output

The pulse outputs on the communication modules are configured from the factory through the PP and GG codes in the configuration number. The PP code can be reconfigured on site with METERTOOL HCW.

For a detailed overview of pulse settings, refer to the order information or 5512-2029 "Pulse outputs C and D >PP<".

Default configuration for PP code is code 95:

Pulse outputs C and D	PP code
Meter count registers 32 ms	95

8 Operation

8.1 Normal operation

In operation mode, all communication modules are on. If a radio communication module is plugged in, it will send data at the specified interval. flowIQ® Gateway can at all times be accessed via the front keys, through the optical interface via READy App or METERTOOL HCW.

In normal operation, the user display loop is available for checking the current readings and status of flowIQ® Gateway and attached devices.

The synchronization between the flowIQ® 2200/3200 meter and flowIQ® Gateway is done every 20 seconds.

8.2 Alarms and info codes

flowIQ® Gateway constantly monitors a number of important functions. If an alarm/info code is triggered in the connected flowIQ® 2200/3200 meter, it is forwarded to flowIQ® Gateway. When an alarm/info code is active, a flashing "INFO" appears in the display. As long as the alarm/info code event is active, the display keeps flashing "INFO". When the event that has triggered the alarm/info code has been fixed, the "INFO" field in the display automatically stops flashing.

You can find information about the current "INFO" event by scrolling to position 8 in the display.

Display digits										
1	2	3	4	5	6	7	8			
Info	**N/A**	**N/A**	**N/A**	**V1**	**N/A**	**In-A**	**In-B**	**Description**	**Response time to active info**	**Applies to**
1								No voltage supply	-	flowIQ® Gateway
2								Low battery level	< 3 min.	
9								External alarm (e.g. via KMP)	< 1 sec.	
				1				No or invalid response from flowIQ® meter	< 1 min.	
				2				Unsupported unit/resolution from flowIQ® 2200/3200 meter or changed unit/resolution and config log full.	< 1 min.	
				3				Dry	< 1 min.	flowIQ® 2200 or 3200 meter
				4				Reverse	< 1 min.	
				5				Flow above Q_4	< 1 min.	
				7				Burst	< 1 min.	
				8				Leak	< 1 min.	
						7		In-A2 Leakage in the system	< 1 day	flowIQ® Gateway
						8		In-A1 Leakage in the system	< 1 day	
						9		In-A1/A2 External alarm	< 5 sec.	
							7	In-B2 Leakage in the system	< 1 day	
							8	In-B1 Leakage in the system	< 1 day	
							9	In-B1/B2 External alarm	< 5 sec.	

The alarms and info codes are transmitted by flowIQ® Gateway via the output communication module.

The connected flowIQ® meter's info codes are interpreted as follows by the MDM system:

flowIQ® meter info bit	flowIQ® meter description	flowIQ® Gateway info bit	flowIQ® Gateway description (MC603 description)
0	Dry	8	V1 Air
1	Reverse	9	V1 Wrong flow direction
2	Leak	30	V1/V2 Leakage, water loss (M1 > M2)
3	Burst	28	V1/V2 Burst, water loss (flow1 > flow2)
8	Flow Above Q_4	11	V1 Increased flow (flow1 > qs, for more than 1 hour)

8.3 flowIQ® Gateway and meter exchanges in READy Manager

Caution Billing data can be corrupted if you do not follow the instructions found in section 8.3 "flowIQ® Gateway and meter exchanges in MDM" when performing exchanges of meters or gateways.

Notice Remember to enable transport mode when exchanging or decommissioning a battery-driven flowIQ® Gateway. If this is not done, the gateway will keep sending data to the MDM system.

8.3.1 flowIQ® Gateway exchange

You can always exchange a flowIQ® Gateway device. It is recommended that you perform a “Meter exchange” in READy App if using Kamstrup's READy MDM solution.

8.3.2 flowIQ® 2200/3200 meter exchange connected to flowIQ® Gateway

If a meter exchange is required, it is recommended to exchange both the meter and the gateway at the same time if using READy Manager. If you do not exchange both devices, it has the following implications:

- Consumption graphs in READy Manager will show a potentially large fluctuation
- Make sure to correct data for billing manually in your billing system. flowIQ® Gateway will forward the current value displayed on the flowIQ® 2200/3200 meter, not add it to the existing consumption

8.4 Kamstrup support

Hotline:	+45 8993 1110
Email:	supportdesk@kamstrup.com
Support site:	https://support.kamstrup.dk

9 Disposal

Ensure proper disposal of the product.

Kamstrup A/S holds an environmental certification according to ISO 14001, and as part of our environmental policy, we use materials that can be disposed of in an environmentally sustainable manner to the greatest extent possible. Please ensure correct disposal of all parts of the device. The enclosure must be disassembled to dispose of the batteries, electronics and enclosure correctly.

9.1 Disposal by Kamstrup A/S

Kamstrup A/S accepts flowIQ® Gateways by the end of operation for environmentally correct disposal according to previous agreement. The disposal is free of charge to the customer, except for the cost of transportation to Kamstrup A/S.

9.2 The customer sends for disposal

flowIQ® Gateway must not be disassembled prior to dispatch, only the battery should always be disconnected. Hand in the complete flowIQ® Gateway for approved national/local disposal. Enclose a copy of this page in order to inform the recipient of the contents.

9.3 Disposal by the customer

Disassemble flowIQ® Gateway as described below and hand in the separate parts for approved destruction. Do not expose batteries to mechanical impact. Also avoid short-circuit of leading wires during transport. Also, see the table on the next page. Any questions about environmental conditions should be sent to:

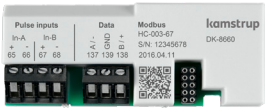
Kamstrup A/S
Att.: Miljø- og kvalitetsafd.
Fax.: +45 89 93 10 01
info@kamstrup.dk

Item	Material information	Recommended disposal
2 x A lithium cells	Lithium and thionyl chloride, approx. 2 x 0.96 g lithium	Approved deposit of lithium cells
D-cell lithium battery	Lithium and thionyl chloride, >UN 3090<: approx. 4.5 g lithium	Approved deposit of lithium cells
PCBs in flowIQ® Gateway (LC-display to be removed)	Coppered epoxy laminate, components soldered on	PCB scrap for metal recovery
LC-display	Glass and liquid crystals	Approved processing of LC-displays
Top cover	PC + 10 % GF	Plastic recycling or combustion
PCB case and connecting base	PC + 10 % GF with TPE gaskets	Plastic recycling or combustion
Wall bracket	PC + 20 % glass	Plastic recycling or combustion
Meter case Clamp plate Transducer/reflector	> 84 % brass or stainless steel, material no. 1.408 < 15 % common steel (St 37) < 1 % stainless steel	Metal recovery
Packaging	Environmental cardboard	Cardboard recycling
Packaging	Polystyrene	EPS recovery

Table 1 - Disposal table

10 Communication module combinations and examples

Depending on the chosen communication modules installed in module slots 1 and 2, up to 5 meters can be connected and data forwarded from flowIQ® Gateway:

Example 1		
Primary connection terminals	Module slot 1	Module slot 2
1 x flowIQ® 2200/3200 meter (serial V1 connection) 3 x Pt500 temperature sensors	**HC-003-67**  1 x Modbus RTU, 2 pulse inputs (In-A, In-B)	**HC-003-20/21/22**  1 x M-Bus module, 2 pulse inputs (In-A, In-B)

In example 1, the primary module is connected to 1 x flowIQ® 2200/3200 meter and up to 3 x Pt500 temperature sensors.

Module slot 1 has a Modbus output with 2 pulse inputs, In-A1 and In-B1.

Module slot 2 has an M-Bus module with 2 pulse inputs, In-A2 and In-B2.

Only V1 data is available on pulse input.

For further information, see the module data sheet.

Example 2		
Primary connection terminals	Module slot 1	Module slot 2
1 x flowIQ® 2200/3200 meter (serial V1 connection) 3 x Pt500 temperature sensors	**HC-003-60**  1 x LON TP/FT-10, pulse inputs (In-A, In-B)	**HC-003-20/21/22**  1 x M-Bus module, 2 pulse inputs (In-A, In-B)

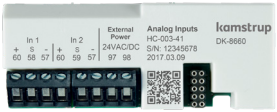
In example 2, the primary module is connected to 1 x flowIQ® 2200/3200 meter and up to 3 x Pt500 temperature sensors.

Module slot 1 has a LON output with 2 pulse inputs, In-A1 and In-B1.

Module slot 2 has an M-Bus module with 2 pulse inputs, In-A2 and In-B2.

Only V1 data is available on pulse input.

For further information, see the module data sheet.

Example 3		
Primary connection terminals	Module slot 1	Module slot 2
1 x flowIQ® 2200/3200 meter (serial V1 connection) 3 x Pt500 temperature sensors	**HC-003-32/33**  linkIQ/wM-Bus, pulse inputs (In-A, In-B)	**HC-003-41**  1 x Analog inputs 2 x 4...20 mA/0...10 V

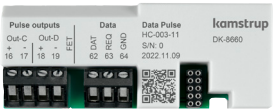
In example 3, the primary module is connected to 1 x flowIQ® 2200/3200 meter and up to 3 x Pt500 temperature sensors.

Module slot 1 has a Wireless M-Bus with 2 pulse inputs, In-A1 and In-B1.

Module slot 2 has 2 x 4...20mA inputs for e.g. pressure sensors P1 (analog input 1) and P2 (analog input 2).

Only V1 data is available on pulse input.

All the data can be forwarded from the Wireless M-Bus radio in module HC-003-32/33 placed in module slot 1. For further information, see the module data sheet.

Example 4		
Primary connection terminals	Module slot 1	Module slot 2
1 x flowIQ® 2200/3200 meter (serial V1 connection)	**HC-003-67**  1 x Modbus RTU, 2 pulse inputs (In-A, In-B)	**HC-003-11**  1 x Data Pulse, 2 pulse outputs (Out-C, Out-D)

In example 4, the primary module is connected to 1 x flowIQ® 2200/3200 meter.

Module slot 1 has a Modbus module with 2 pulse inputs, In-A1 and In-B1. The Modbus module can forward all data from connected flowIQ® meters and additional accessories such as temperature sensors.

Module slot 2 has two pulse outputs (Out-C and Out-D). The pulse outputs can send out counter pulses based on increments of the least significant digit in the display. If the connected flowIQ® 2200, for example, registers 90 liters and syncs its data with flowIQ® Gateway (20 seconds integration time), the least significant digit will have shifted 9 digits. flowIQ® Gateway will send out 9 pulses based on the count register's PP code configuration of the meter.

For further information, see the module data sheet.

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