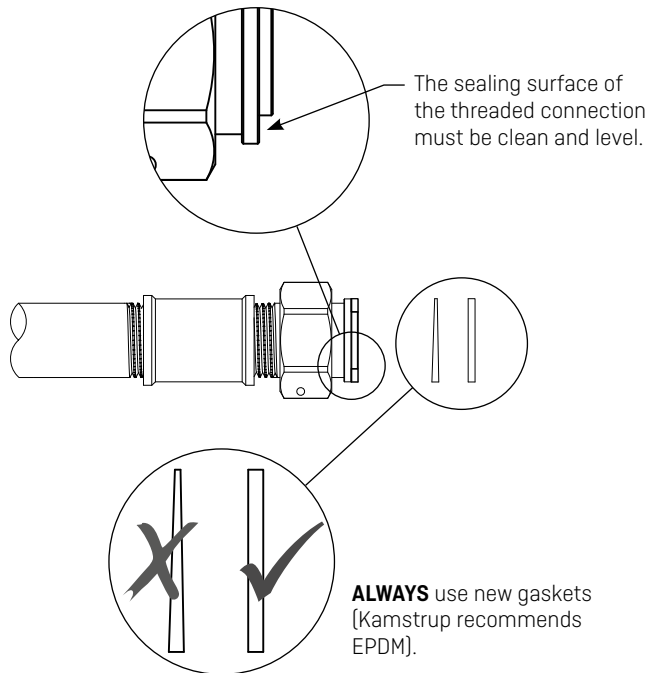


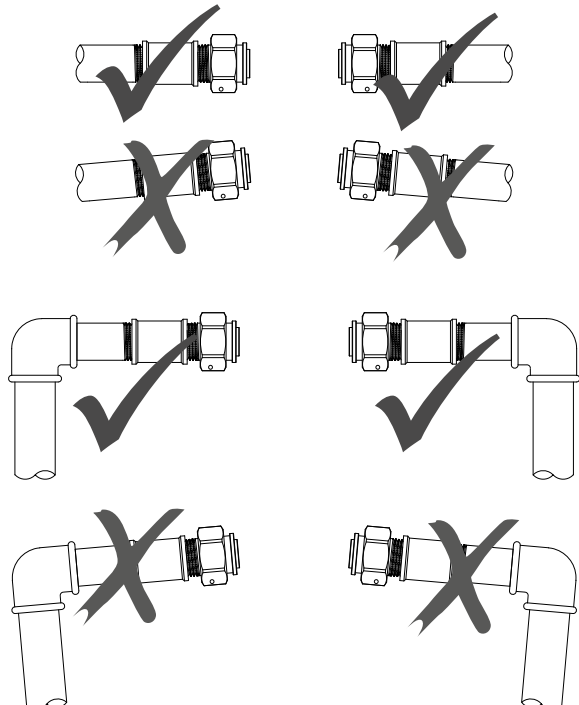
flowIQ® 2100 - Encoded Output version

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FCC Cautions
 Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
 RF Exposure compliance statement: This device may be used with no restrictions, since the source-based time-averaged output power is $\leq 60/f(\text{GHz})$ mW.
 This device complies with Part 15 of the FCC Rules.
 Operation is subject to the following two conditions:
 1 This device may not cause harmful interference, and
 2 This device must accept any interference received, including interference that may cause undesired operation.

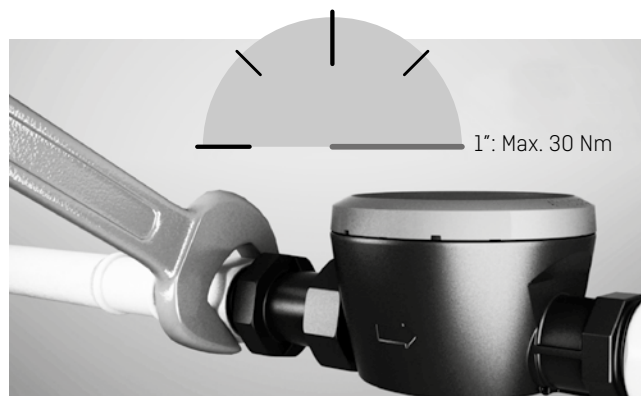
The adjacent piping must be parallel and match the meter in- and outlet.



Torque

If a pipe installation is skewed to the effect that the prescribed tightening torques would be exceeded, a meter setter or yoke should be installed.

1" Max. 30 Nm



Do not overtighten; max 30 Nm or 1/4 turn beyond handtight.

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flowIQ® 2100 - RF & flowIQ® 2100 - Encoded Output Installation guide

Kamstrup A/S · 55121224_F2_US_12.2016



1 General information

Read this guide before installing the water meter.

flowIQ® 2100 is a compact electronic water meter used for water consumption measurement in the tap water supplies of homes, commercial and industrial buildings.

flowIQ® 2100 is hermetically closed, and it is, therefore, impossible to service the meter without breaking the seal. This means that all service, must be carried out at Kamstrup Headquarters.

Certain changes of configuration, however, are possible via the built-in optical eye without dismounting the meter from the installation. Further details appear in the data sheet.

1.1 Permissible operating conditions / measuring ranges

Temperature media

- the water meter: 33 °F...140 °F

Pressure stage: 250 PSI

Mechanical environment: Fixed installation with minimum vibration.

Electromagnetic

environmental class: Residential and commercial

Protection class: IP68-rated (waterproof-submersible)

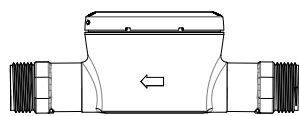
Climatic environment: 35 °F...140 °F. Condensing humidity. (indoors mounted in utility rooms and outdoors in meter pits). Installation in direct sunlight must be avoided. The meter must be protected from freezing as well.

1.2 Installation requirements

Prior to installation of flowIQ® 2100 the system should be cleaned and flushed thoroughly. Then, install the meter with matching couplings.

If installed in an existing system, remove all traces of old gaskets and insert new gaskets in original quality. Kamstrup recommends EPDM gaskets, which are included.

Install the meter according to the flow direction indicated by an arrow on the side of the meter housing. An electrical grounding wire must be installed according to local electrical regulation and for safety reasons.



During installation it must be secured that the meter is mounted without mechanical tension in the connection pipes. The piping must be in line and match the meter. Do not attempt to install the meter in a misaligned pipe system or in an opening that is too long. Jacking the piping into place with the meter will seriously damage the meter.

In a properly aligned piping system with new gaskets, you should be able to mount and tighten the couplings by hand.

After hand-tightening the coupling nuts, using an open-end wrench, tighten an extra ¼ to ½ turn on each coupling. Maximum allowable torque is 30 Nm.

If a tight connection cannot be obtained within these limits, the

pipe installation must be corrected in order to remove strains. Alternatively a meter setter or yoke must be installed.

Mounting the meter you must make sure that the threaded length of the couplings does not prevent proper tightening of the sealing surface and that couplings with similar pressure ratings are used.

For sealing, use the sealing wire holes on the lower side of the threaded connections.

Service

When the meter has been mounted in the system neither welding nor freezing is allowed. Dismount the meter from the system before starting such work.

In order to facilitate replacement of the meter, shut off valves should be mounted on both sides of the meter.

The meter is supplied with a strainer in the inlet. Check valves must be mounted according to local regulations.



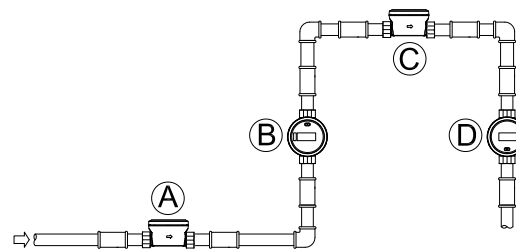
1.3 Installation angle of flowIQ® 2100

flowIQ® 2100 can be mounted at all angles and positions.

Kamstrup Headquarters recommend that the display is mounted so that it is easy to read, if possible.

Thus, the meter can be mounted in a plain horizontal installation. It can be mounted vertically in an ascending pipe, it can be mounted at any angle and it can be mounted with the display pointing downwards, e.g under a roof.

Mounting the meter in a downpipe, you must be aware that the display in that case will be 'upside down'.



A Recommended water meter position.

B Recommended water meter position.

C Used for 'well installation'. Air build-up may occur.

D The meter functions optimally, but the display is 'upside down'.

1.4 Encoded Output

Ground Connection 'GND' must be connected to the reading device 'GND'.

The connection 'Power/CLK' must be connected to the reading device 'CLK'.

The connection 'Data Out' must be connected to reading device 'data input'.



The reading unit must comply with the electrical requirements of the specification for the Sensus protocol UI I203R20, September 2009.

Most important issues are listed below:

| | |
|------------------------|----------------|
| Type: | Open Drain |
| Maximum input voltage: | 15V |
| Maximum current sink: | 5mA |
| On voltage: | < 0.4V @ 3.2mA |
| OFF condition: | R > 6MΩ |

Frequent reading, more than once per hour, will reduce battery life.

Compatibility table

| | Sensus | ITRON | NEPTUNE |
|---------------|--------|-------|---------|
| Data | Grn | Red | Red |
| Ground | Blk | White | Green |
| Power | Red | Black | Black |

1.5 Straight inlet

flowIQ® 2100 requires neither straight inlet nor straight outlet to meet applicable AWWA standards. A straight inlet section will only be necessary in case of heavy flow disturbances before the meter.

1.6 Operating pressure

In order to avoid cavitation and secure correct measurement under all circumstances the operating pressure in the pipe installation should observe the test conditions of AWWA M6 manual. The static pressure, immediately after the meter (downstream), must always be minimum 5 PSI (0.3 bar).

1.7 Info codes and display



When flowIQ® 2100 leaves Kamstrup Headquarters, it has been tested and verified and the counter has been reset. The number of gallons or CuFt are displayed by nine large digits (Bars over and under digits indicates decimals after the comma). A number of info codes can be displayed, of which 'DRY' and 'RADIO OFF' will be activated and flash upon delivery. Furthermore, the small square in the bottom right-hand corner flashes to indicate that the meter is active.

Info code 'DRY' indicates air in the meter, the info code disappears when the meter is water-filled.

The info code 'RADIO OFF' indicates that the meter is still in transport mode with the built-in radio transmitter turned off. The transmitter turns on automatically when the first quarter gallon of water has run through the meter. The radio transmitter remains on, and the info code signal in the display switches off. The Encoded Output version will not display 'RADIO OFF'.

When the water is running, the symbol 'FLOW' will turn on in the display. If the water is stagnant, the symbol will be off.

The table below describes the different info codes in the display.

| Info code flashes in the display | Meaning |
|----------------------------------|---|
| LEAK | The water has not been stagnant in the meter during the last few days. This can be a sign of a leaky faucet or toilet cistern. |
| BURST | The water flow has exceeded a preprogrammed limit for minimum 30 minutes which is a sign of a burst pipe. |
| TAMPER | Attempt of fraud. The meter is no longer valid for billing purposes. |
| DRY | The meter is not water-filled. |
| 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 1/4 gallon of water has run through the meter. |
| ■ [Square 'dot'] | One small flashing square indicates that the meter is active. |

* RF version only