



**Bid Number 50-00116113**

**TWO (2) YEAR CONTRACT FOR THE SUPPLY OF RESIDENTIAL WATER METERS AND ASSEMBLIES FOR THE JEFFERSON PARISH DEPARTMENT OF ENGINEERING**

**BID DUE: THURSDAY, APRIL 14, 2016 AT 2:00 PM**

**ATTENTION VENDORS!!!**

**Please review all pages and respond accordingly, complying with all provisions in the technical specifications and Jefferson Parish Instructions for Bidders and General Terms and Conditions. All bids must be received in the Purchasing Department by the bid due date and time.**

**Jefferson Parish Purchasing Department  
200 Derbigny Street  
General Government Building, Suite 4400  
Gretna, LA 70053**

**Buyer Name: Misty A. Camardelle  
Buyer Email: [mcamardelle@jeffparish.net](mailto:mcamardelle@jeffparish.net)  
Buyer Phone: 504-364-2683**

**BID FORM**  
Non Public Works

**All Public Work Projects are required to use the Louisiana Uniform Public Work Bid Form**

All prices must be held firm unless an escalation provision is requested in this bid. Jefferson Parish will allow one escalation during the term of the contract, which may not exceed the U.S. Bureau of Labor Statistics National Index for all Urban Consumers, unadjusted 12 month figure. The most recently published figure issued at the time an adjustment is requested will be used. A request must be made in writing by the vendor, and the escalation will only be applied to purchases made after the request is made.

Are you requesting an escalation provision?

YES \_\_\_\_\_ NO X

MAXIMUM ESCALATION PERCENTAGE REQUESTED \_\_\_\_\_%

INITIAL BID PRICES WILL REMAIN FIRM THROUGH THE DATE OF 2018

For the purposes of comparison of bids when an escalation provision is requested, Jefferson Parish will apply the maximum escalation percentage quoted by the bidder to the period to which it is applied in the bid. The initial price and the escalation will be used to calculate the total bid price. It will be assumed, for comparison of prices only, that an equal amount of material or labor is purchased each month throughout the entire contract.

**DELIVERY: FOB JEFFERSON PARISH**

INDICATE DELIVERY DATE ON EQUIPMENT AND SUPPLIES

45 DAYS

LOUISIANA CONTRACTOR'S LICENSE NO.: (if applicable)

N/A

**THIS SECTION MUST BE COMPLETED BY BIDDER:**

FIRM NAME: S & J METER INC.

ADDRESS: 12434 CUDE CEMETERY

CITY, STATE: WILLIS, TEXAS ZIP: 77318

TELEPHONE: (936) 228-3498 FAX: (936) 228-3651

EMAIL ADDRESS: MICKEY @ SANDJMETER.COM

In the event that addenda are issued with this bid, bidders MUST acknowledge all addenda on the bid form. Bidder must acknowledge receipt of an addendum on the bid form as indicated. Failure to acknowledge any addendum on the bid form will result in bid rejection.

Acknowledge Receipt of Addenda: NUMBER: \_\_\_\_\_  
NUMBER: \_\_\_\_\_  
NUMBER: \_\_\_\_\_  
NUMBER: \_\_\_\_\_

TOTAL PRICE OF ALL BID ITEMS: \$ 417,500.<sup>00</sup>

AUTHORIZED SIGNATURE: [Signature]

MICKEY L. JORDAN  
Printed Name

TITLE: PRESIDENT

SIGNING INDICATES YOU HAVE READ AND COMPLY WITH THE INSTRUCTIONS AND CONDITIONS.

NOTE: All bids should be returned with the BID NUMBER and BID OPENING DATE indicated on the outside of the envelope submitted to the Purchasing Department.

ITEM NUMBER	QUANTITY	U/M	DESCRIPTION OF ARTICLES	UNIT PRICE QUOTED	TOTALS
1	3,000.00	EA	TWO (2) YEAR CONTRACT FOR THE SUPPLY OF RESIDENTIAL WATER METERS AND ASSEMBLIES FOR THE JEFFERSON PARISH DEPARTMENT OF ENGINEERING  0010 5/8 INCH X 3/4 INCH POSITIVE DISPLACEMENT WATER METER RATED AT 25 GPM  TYPICAL OPERATING RANGE - GROUP 1	\$95.00	\$285,000.00
2	500.00	EA	RCDL M25, HR-E W/5' ITRON CONNECTOR OR EQUAL <u>KAMSTRUP ULTRASONIC MODEL FLOW IQ 200</u> 0020 1 INCH POSITIVE DISPLACEMENT WATER METER RATED AT 70 GPM TYPICAL OPERATING RANGE - GROUP 1	\$185.00	\$92,500.00
3	100.00	EA	RCDL M70, HR-E W/5' ITRON CONNECTOR OR EQUAL <u>KAMSTRUP ULTRASONIC MODEL FLOW IQ 3101</u> 0030 2 INCH WATER POSITIVE DISPLACEMENT WATER METER RATED AT 170 GPM TYPICAL OPERATING RANGE - GROUP 1	\$400.00	\$40,000.00
			RCDL M170, HR-E W/5' ITRON CONNECTOR OR EQUAL <u>KAMSTRUP ULTRASONIC MODEL FLOW IQ 3101</u>  21 YEAR ACCURACY AND BATTERY WARRANTY  SEE ATTACHED WARRANTY & DATA SHEETS*		

**CORPORATE RESOLUTION**

EXCERPT FROM MINUTES OF MEETING OF THE BOARD OF DIRECTORS OF  
S & J METER INC.  
INCORPORATED.

AT THE MEETING OF DIRECTORS OF S & J METER INC  
INCORPORATED, DULY NOTICED AND HELD ON APRIL 5, 2016.  
A QUORUM BEING THERE PRESENT, ON MOTION DULY MADE AND SECONDED. IT  
WAS:

RESOLVED THAT MICKEY L. JORDAN, BE AND IS HEREBY  
APPOINTED, CONSTITUTED AND DESIGNATED AS AGENT AND ATTORNEY-IN-  
FACT OF THE CORPORATION WITH FULL POWER AND AUTHORITY TO ACT ON  
BEHALF OF THIS CORPORATION IN ALL NEGOTIATIONS, BIDDING, CONCERNS  
AND TRANSACTIONS WITH THE PARISH OF JEFFERSON OR ANY OF ITS AGENCIES,  
DEPARTMENTS, EMPLOYEES OR AGENTS, INCLUDING BUT NOT LIMITED TO, THE  
EXECUTION OF ALL BIDS, PAPERS, DOCUMENTS, AFFIDAVITS, BONDS, SURETIES,  
CONTRACTS AND ACTS AND TO RECEIVE ALL PURCHASE ORDERS AND NOTICES  
ISSUED PURSUANT TO THE PROVISIONS OF ANY SUCH BID OR CONTRACT, THIS  
CORPORATION HEREBY RATIFYING, APPROVING, CONFIRMING, AND ACCEPTING  
EACH AND EVERY SUCH ACT PERFORMED BY SAID AGENT AND ATTORNEY-IN-  
FACT.

I HEREBY CERTIFY THE FOREGOING TO BE  
A TRUE AND CORRECT COPY OF AN  
EXCERPT OF THE MINUTES OF THE ABOVE  
DATED MEETING OF THE BOARD OF  
DIRECTORS OF SAID CORPORATION, AND  
THE SAME HAS NOT BEEN REVOKED OR  
RESCINDED.

  
\_\_\_\_\_  
SECRETARY-TREASURER

4/5/2016  
\_\_\_\_\_  
DATE

**Non-Public Works Bid**

**AFFIDAVIT**

STATE OF TEXAS

PARISH/COUNTY OF MONTGOMERY

BEFORE ME, the undersigned authority, personally came and appeared: MICKEY L. JORDAN, (Affiant) who after being by me duly sworn, deposed and said that he is the fully authorized PRESIDENT of S&J METEOR W (Entity), the party who submitted a bid in response to Bid Number 50-00116113, to the Parish of Jefferson.

Affiant further said:

Campaign Contribution Disclosures

**(Choose A or B, if option A is indicated please include the required attachment):**

Choice A \_\_\_\_\_ Attached hereto is a list of all campaign contributions, including the date and amount of each contribution, made to current or former elected officials of the Parish of Jefferson by Entity, Affiant, and/or officers, directors and owners, including employees, owning 25% or more of the Entity during the two-year period immediately preceding the date of this affidavit or the current term of the elected official, whichever is greater. Further, Entity, Affiant, and/or Entity Owners have not made any contributions to or in support of current or former members of the Jefferson Parish Council or the Jefferson Parish President through or in the name of another person or legal entity, either directly or indirectly.

Choice B  there are **NO** campaign contributions made which would require disclosure under Choice A of this section.

Debt Disclosures

**(Choose A or B, if option A is indicated please include the required attachment):**

**Choice A** \_\_\_\_\_ Attached hereto is a list of all debts owed by the affiant to any elected or appointed official of the Parish of Jefferson, and any and all debts owed by any elected or appointed official of the Parish to the Affiant.

**Choice B**  There are **NO** debts which would require disclosure under Choice A of this section.

Affiant further said:

That Affiant has employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project or in securing the public contract were in the regular course of their duties for Affiant; and

*[The remainder of this page is intentionally left blank.]*

That no part of the contract price received by Affiant was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the Affiant whose services in connection with the construction, alteration or demolition of the public building or project were in the regular course of their duties for Affiant.

*Mickey L. Toloman*  
Signature of Affiant

MICKEY L. TOLOMAN  
Printed Name of Affiant

SWORN AND SUBSCRIBED TO BEFORE ME  
ON THE 12<sup>th</sup> DAY OF APRIL, 2016.

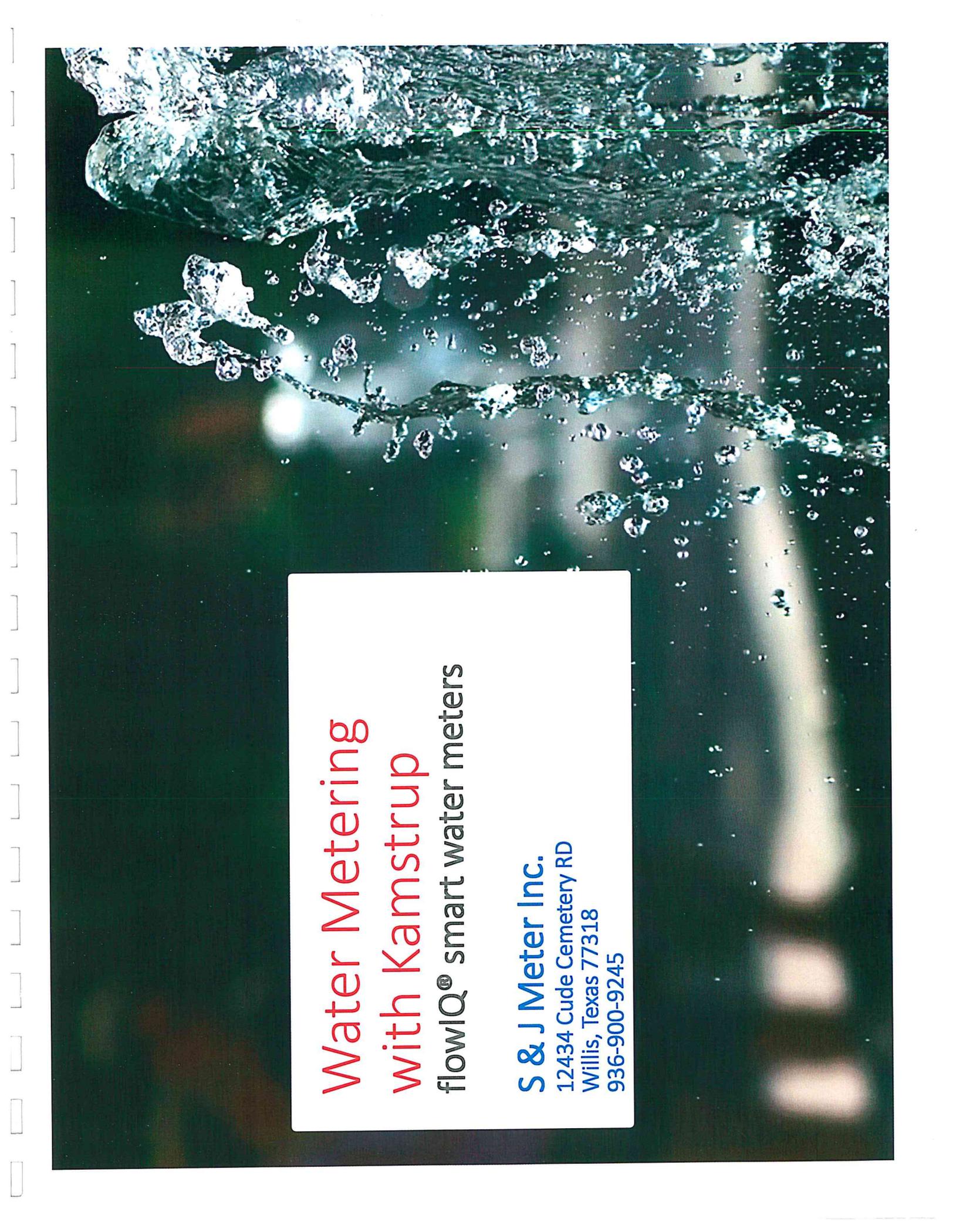
*Diana Garner*  
Notary Public

DIANA GARNER  
Printed Name of Notary

12899887-9  
Notary/Bar Roll Number

My commission expires 5/23/2016.





**Water Metering**  
**with Kamstrup**  
flowIQ® smart water meters

**S & J Meter Inc.**  
12434 Cude Cemetery RD  
Willis, Texas 77318  
936-900-9245

# Kamstrup Water Metering L.L.C. Limited Warranty for Products and Services sold by Authorized Resellers

**1.0 Definitions.** Definitions. As used herein: (a) **Seller.** Seller shall refer to the authorized reseller that is selling Products to Buyer on behalf of Kamstrup Water Metering L.L.C. (b) **Buyer.** Buyer shall refer to the purchaser of goods sold by Seller on behalf of Kamstrup Water Metering L.L.C., as set forth in the particular Sales Order, and shall include all agents, subsidiaries, parent company, and any affiliated entity of Buyer. (c) **Sales Order.** Sales Order shall refer to the purchase order acceptance, order confirmation or invoice issued by Seller reflecting the sale of the Products sold on behalf of Kamstrup Water Metering L.L.C. to Buyer. (d) **Products.** Products shall refer to the products, and related services if any, sold by Seller on behalf of Kamstrup Water Metering L.L.C. to Buyer as identified in the Sales Order.

**2.0 Limited Warranty**

**2.1 General.** Kamstrup Water Metering L.L.C. warrants that the Products shall be free from defects in Materials and Workmanship for a period of two (2) years from the date of delivery to Buyer (the "Warranty Period").

**2.2. Special Limited Warranty Terms For flowIQ® 2100 Series, flow IQ® 3101 Series Cold Water Meters.** Notwithstanding Section 12.1, with regard to flowIQ® 2100 Series, flowIQ® 3101 Series Cold Water Meters and USB Meter Readers which are delivered to Buyer directly from Kamstrup Water Metering L.L.C., the following warranty terms shall apply:

**Accuracy**

The Seller warrants that the flowIQ 2100 Water Meters and flowIQ 3101 Water Meters will perform to the accuracy as defined in applicable AWWA standards for a period of twenty (20) years from date of delivery to Buyer. In the absence of published AWWA standards specific to cold water ultrasonic revenue meters the new meter accuracy refers to AWWA standard C708-11 [section 4.2.8] and to AWWA M6 manual [chapter 5, Testing new meters and table 5-3 defining test rates in accordance with AWWA C708].

Kamstrup Water Metering L.L.C. shall, at its sole discretion, repair or replace the meter at no cost for year one (1) through year ten (10) following the date of delivery. For year eleven (11) through year twenty (20) following the date of delivery, Kamstrup Water Metering L.L.C. will repair or

replace the meter at the following discounted product list prices in effect at the time of the product return according to the following schedule:

Year	Replacement Price	Year	Replacement Price
1 - 10	no charge	16	50%
11	20%	17	60%
12	25%	18	70%
13	30%	19	80%
14	35%	20	90%
15	40%	21	95%

The Limited Warranty is valid for normal meter operation and installation only in accordance with Product documentation provided by Kamstrup Water Metering L.L.C. with the Products and on its website.

Any meter accuracy claims shall be subject to verification through testing by a NIST Traceable laboratories or ISO 17025 accredited laboratories.

**Battery Life**

Based on operation of the meter with either communication via the three wire encoded output OR with communication via the embedded radio, the warranty on the system battery in the flowIQ Water Meters shall be for a period of twenty (20) years. Kamstrup Water Metering L.L.C. shall, at sole discretion, repair or replace the meter at no cost for year one (1) through year ten (10) following the date of delivery. For year eleven (11) through year twenty (20) following the date of delivery, Kamstrup Water Metering L.L.C. shall, at sole discretion, repair or replace the meter at the following discounted product list prices in effect at the time of the product return according to the following schedule:

Year	Replacement Price	Year	Replacement Price
1 - 10	no charge	16	50%
11	20%	17	60%
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15	40%	21	95%

Kamstrup Water Metering L.L.C.  
Limited Warranty for Products and Services sold by Authorized Resellers

The Limited Warranty is valid for normal meter operation and installation only in accordance with product documentation provided by Seller.

- 2.3. **Product Return.** IF, WITHIN THE APPLICABLE WARRANTY PERIOD, (i) BUYER DISCOVERS ANY DEFECTS IN MATERIALS OR WORKMANSHIP, ACCURACY OR BATTERY LIFE AND (ii) NOTIFIES KAMSTRUP WATER METERING L.L.C. IN WRITING OF SUCH DEFECTS, AND (iii) RETURNS THE DEFECTIVE PRODUCTS TO KAMSTRUP WATER METERING L.L.C., KAMSTRUP WATER METERING L.L.C. SHALL, AT ITS SOLE DISCRETION, REPAIR OR REPLACE THE DEFECTIVE PRODUCTS OR BATTERIES AS NOTED ABOVE, OR REFUND THE PURCHASE PRICE FOR THE DEFECTIVE PRODUCTS OR BATTERIES. THIS WARRANTY SHALL NOT APPLY TO ANY OF THE FOLLOWING: (A) PRODUCTS THAT HAVE BEEN ALTERED; (B) PRODUCTS THAT HAVE BEEN DAMAGED BY NEGLIGENCE OR ACCIDENT OR BY OTHER CIRCUMSTANCES BEYOND THE REASONABLE CONTROL OF KAMSTRUP WATER METERING L.L.C.; OR (C) PRODUCTS THAT HAVE BEEN IMPROPERLY USED OR MAINTAINED BY BUYER, OR THAT HAVE BEEN SUBJECTED TO ABNORMAL CONDITIONS OF USE OR MAINTENANCE NOT IN CONFORMITY WITH ACCEPTED INDUSTRIAL PRACTICES OR ANY INSTRUCTIONS, MANUALS OR OTHER DOCUMENTATION PROVIDED BY KAMSTRUP WATER METERING L.L.C.. NO WARRANTY CLAIMS WILL BE PROCESSED IF RECEIVED AFTER THE WARRANTY PERIOD. REJECTED PRODUCTS MAY BE RETURNED ONLY WITH KAMSTRUP WATER METERING L.L.C.'S PRIOR EXPRESS WRITTEN CONSENT AND AT BUYER'S COST AND RISK. IF PRODUCTS ARE RETURNED WITHOUT KAMSTRUP WATER METERING L.L.C.'S PRIOR CONSENT, KAMSTRUP WATER METERING L.L.C. MAY REFUSE TO ACCEPT THE RETURNED PRODUCTS AND MAY RETURN THEM TO BUYER AT BUYER'S COST AND EXPENSE. IN ADDITION, IF BUYER RETURNS PRODUCT TO KAMSTRUP THAT, AFTER TESTING, IS FOUND NOT TO BE DEFECTIVE, THEN BUYER AGREES TO PAY FOR THE COSTS OF TESTING THE PRODUCT INCURRED BY KAMSTRUP WATER METERING, LLC.
- 2.4. **Set-Off.** IN NO CASE WHATSOEVER, INCLUDING JUSTIFIED WARRANTY CLAIMS, IS THE BUYER ENTITLED TO RETAIN ANY MONIES OWED TO KAMSTRUP WATER METERING L.L.C., EXCEPT UPON THE WRITTEN CONSENT OF KAMSTRUP WATER METERING L.L.C. FURTHER, THE WARRANTIES PROVIDED FOR HEREIN SHALL NOT APPLY IN THE EVENT BUYER HAS FAILED TO REMIT PAYMENT IN FULL FOR SUCH PRODUCTS.
- 2.5. **WARRANTY DISCLAIMER. THE FOREGOING LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR NON-INFRINGEMENT, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED.**
- 2.6. **LIMITATION OF LIABILITY. IN ALL EVENTS, THE LIABILITY OF KAMSTRUP WATER METERING L.L.C., WHETHER BASED IN TORT, BREACH OF CONTRACT, BREACH OF WARRANTY, OR OTHERWISE, SHALL NOT EXCEED THE PRICE OF THE PRODUCTS OR BATTERIES IN QUESTION OR WITH RESPECT TO WHICH SUCH BREACH, DEFAULT, OR NEGLIGENCE IS CLAIMED. BUYER ACKNOWLEDGES THAT THE REMEDIES PROVIDED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER REMEDIES. IN NO EVENT SHALL KAMSTRUP WATER METERING L.L.C. BE LIABLE TO BUYER OR ANY THIRD PARTY, IN CONTRACT, TORT OR OTHERWISE, FOR ANY LOSS OF PROFITS OR BUSINESS, OR FOR ANY SPECIAL, INCIDENTAL, INDIRECT, EXEMPLARY, PUNITIVE OR CONSEQUENTIAL DAMAGES RELATING TO THE PRODUCTS, EVEN IF KAMSTRUP WATER METERING L.L.C. HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, IN THE EVENT THAT ANY CLAIM IS BROUGHT AGAINST KAMSTRUP WATER METERING L.L.C. FOR PRODUCT LIABILITY, KAMSTRUP WATER METERING L.L.C.'S LIABILITY SHALL BE LIMITED TO A MAXIMUM OF KAMSTRUP WATER METERING L.L.C.'S AVAILABLE INSURANCE COVERAGE AVAILABLE FOR SUCH DAMAGE, IF ANY. ANY AMOUNT IN EXCESS THEREOF SHALL BE BORNE BY THE BUYER. KAMSTRUP WATER METERING L.L.C. SHALL NOT BE LIABLE FOR ANY DEFECT THAT WAS CAUSED BY THE PRODUCTS HAVING BEEN INTEGRATED INTO PRODUCTS OF BUYER OR THOSE OF ITS CUSTOMERS. KAMSTRUP WATER METERING L.L.C. SHALL NOT BE LIABLE IN THE EVENT THE PRODUCTS SUPPLIED WERE IMPROPERLY USED, TREATED, HANDLED, STORED OR SUPPLIED BASED ON BUYER'S INSTRUCTIONS (INCLUDING, WITHOUT LIMITATION, DESIGN DETAILS, SPECIFICATIONS, PLANS, TEMPLATES OR STORAGE AND TRANSPORT RULES).**
- 2.7. **Damages Disclaimer and Limitation. BUYER HEREBY EXPRESSLY WAIVES ANY AND ALL CLAIMS FOR ANY AND ALL INDIRECT, INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO ANY CLAIMS FOR DAMAGES FOR LOSS OF USE, LOSS OF TIME, LOSS OF PROFITS, OR LOSS OF INCOME RELATING TO THE PURCHASE OR USE OF THE PRODUCTS.**

# History



Olaf Kamstrup

started out in 1946 as a self-employed technician in a small workshop in Aarhus, Denmark, where he manufactured measuring instruments and process equipment for the industry. Olaf Kamstrup was driven by a tireless will to fulfil the needs and wishes of his customers. This resulted in a number of products with very limited editions on which he and his staff kept developing out of pure enthusiasm. Loyal and satisfied customers is the long lasting result of his focus on high quality products and first-class service.

The introduction of the heat meter in 1959 laid the ground for today's success.

The Kamstrup Company grew rapidly and has ever since developed its heat meter production in accordance with the development and expansion of district heating worldwide. A close cooperation with the district heating utilities secures a valuable feedback for improvements and innovations.

Olaf Kamstrup took pride in a fast delivery and in delivering everything as required, but by himself he knew that there would be a still better solution. So he kept improving his inventions. At the Kamstrup Company today we honor the spirit of our founder by not only delivering metering solutions as requested, but also by still striving to make better solutions for the benefit of our customers.

Acquired by OK

In 1990 The Danish energy company OK acquired Kamstrup and now owns 100 % of the company.

**The ultrasonic heat meter**

**In 1991 the ultrasonic heat meter made its entrance into the product line which meant a technological quantum leap to the heat meter business. The ultrasonic measuring principle guarantees long life and measuring stability due to the static flow part without movable parts.**

Since then we have started manufacturing cooling meters and water meters based on the same ultrasonic measuring principle. Today Kamstrup is the world's largest manufacturer of ultrasonic heat meters.

Electricity meters

In 1998 we launched the production of electricity meters and meter reading systems. The Kamstrup electricity meter series comprises the total range from residential to industrial meters containing state of art smart metering features.

We have specialized in smart metering systems based on wireless technologies. Wireless meter reading has proven to be the more flexible and reliable meter reading solution. Sweden was among the first countries to carry out nationwide smart metering.

Introducing RF Communication

First step was a walk-by/drive by system, reading with handheld terminal.

Second step was developing the radio network, one for electricity and one for heat

Third step was developing combi radio network, reading both electricity, water and heat in the same network55

Introducing Multical® 21 water meter

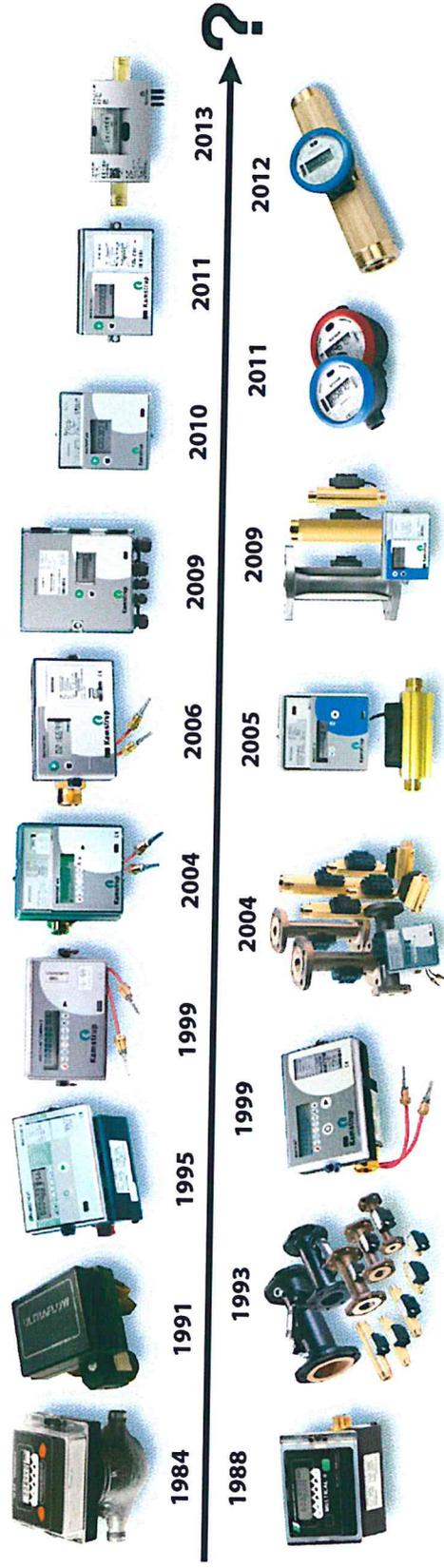
Multical® 21 was introduced in 2010. Has won IF design award for the compact design.

Introducing Omnia Suite

The OMNIA Suite is an all-comprising Smart Grid platform offering a full line of smart technology, support and knowledge. It includes smart meters, network communication, Meter Data Management and Smart Grid features tailored to the business of utilities today. As a true multi-utility platform it integrates all supply types – power, water, gas, heating and cooling – and all modern communication technologies. It is an open standard, high performance solution, complying with international market requirements and regulatory mandates and supporting new energy supply sources.

25 years and over 10 million meters sold worldwide  
(Jan 2015) – 4,6 million remotely read meters

**kamstrup**



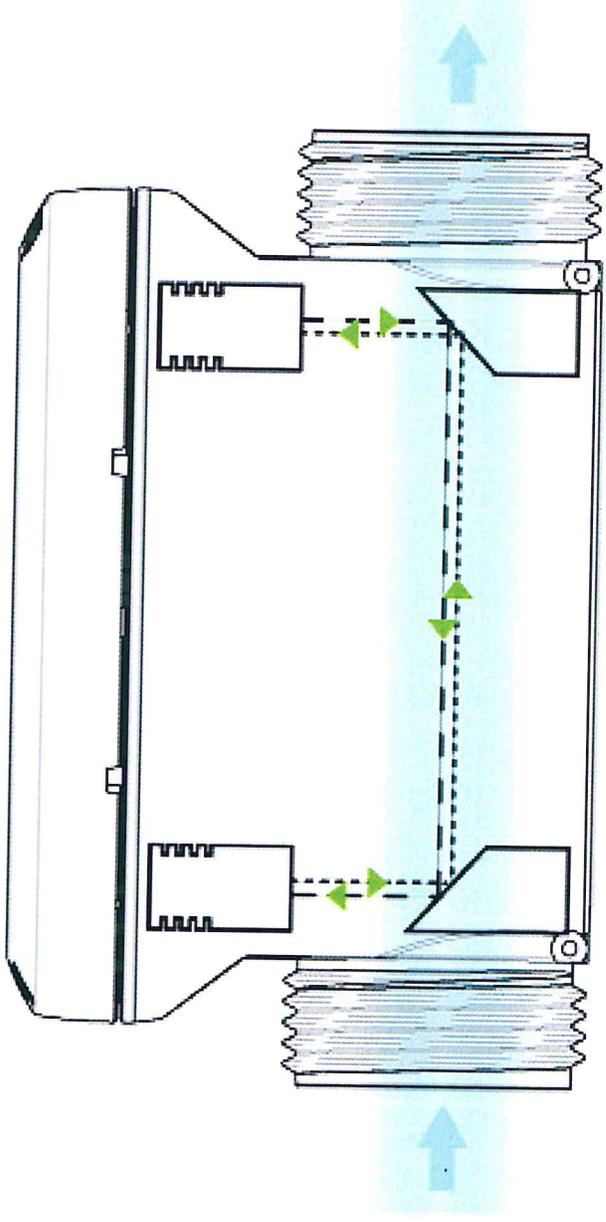
# Meter range



Type	Product Number	Description	Operating range GPM		
			Start	Min	Max
flowIQ 2100 (Composite)	02U-XX-C02-8UX	flowIQ 2100 25 GPM 5/8"x1/2" (3/4") x 7 1/2"	0.025	0.10	25
	02U-XX-C04-8UX	flowIQ 2100 25 GPM 5/8"x3/4"(1") x 7 1/2"	0.025	0.10	25
	02U-XX-C06-8UX	flowIQ 2100 32 GPM 3/4"(1") x 7 1/2"	0.025	0.10	32
	02U-XX-C06-8UX	flowIQ 2100 32 GPM 3/4"(1") x 9" (with 1 1/2" extender)	0.025	0.10	32
flowIQ 3101 (Stainless steel)	03U-XX-C02-8UX	flowIQ 3101 55 GPM 1"(1 1/4") x 10 3/4"	0.04	0.25	55
	03U-XX-C04-8UX	flowIQ 3101 120 GPM 1 1/2" T x 12 5/8"	0.06	0.4	120
	03U-XX-C06-8UX	flowIQ 3101 120 GPM 1 1/2" F x 13"	0.06	0.4	120
	03U-XX-C07-8UX	flowIQ 3101 160 GPM 2" T x 15 1/4"	0.1	0.5	160
	03U-XX-C08-8UX	flowIQ 3101 160 GPM 2" F x 17"	0.1	0.5	160

Ultrasonic principle

**kamstrup**

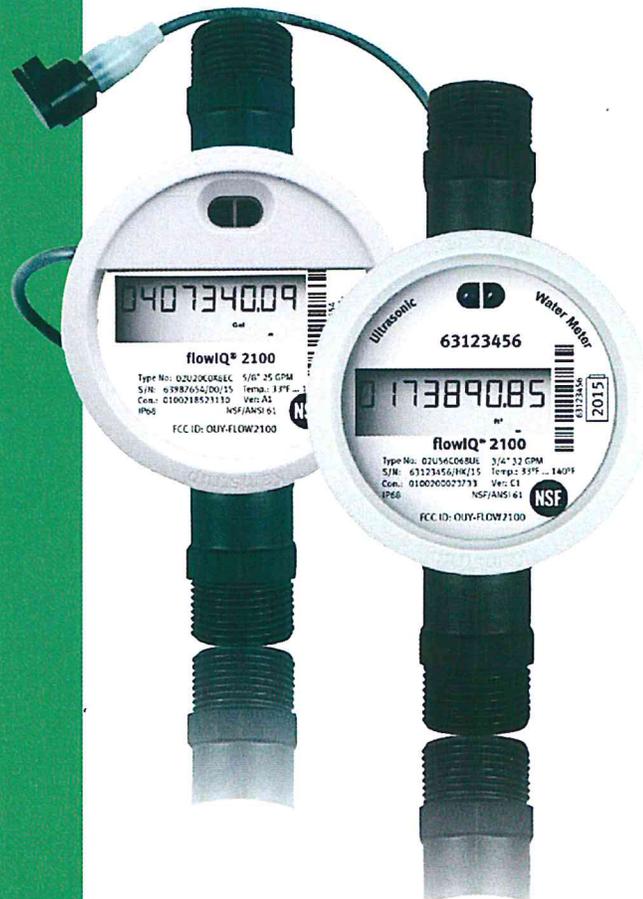


Two ultrasonic transducers send a sound signal in each direction through the water flow. On the basis of the speed difference between the two signals, the flow rate is calculated.

## Data Sheet

### flowIQ® 2100

- 2 Versions available:
  - Internal Radio (RF), or
  - Encoded Output (EO)
- Ultrasonic measurement
- Pinpoint accuracy
- 20 year longevity
- Dual temperature measurement
- IP68 Vacuum sealed construction
- Lead free and certified to NSF/ANSI 61



## Contents

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## Electronic ultrasonic cold water meter for measurement of cold water consumption in households, multi-unit buildings and industry.

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### Pinpoint accuracy

Ultrasonic flow measurement guarantees pinpoint accuracy and longevity. Ultrasonic flow measurement is based on the transit time method, and all measurements, references, readings, calculations and data communication are controlled by an advanced, specially designed electronic circuit. Thus, the meter includes no moving parts, which makes flowIQ® 2100 resistant to wear and impurities in the water.

### Construction

The meter is hermetically closed and vacuum-sealed to prevent humidity from reaching the electronics and avoid condensation between the glass and display. The meter is IP68 (submersible) type tested and suitable for installation in meter pits.

## Installation

flowIQ® 2100 is easy to install in all operating environments, horizontally as well as vertically, independent of piping and installation conditions. Consumption data can be read visually from the display, using an optical eye, and remotely read, either by 915MHz band RF signal, built into the meter, or alternatively by a 3-wire encoded interface.

## Specific features

flowIQ® 2100 measures the water and environment temperatures and it includes leak detection, securing that water loss is discovered quickly.

The unique combination of all the flowIQ® 2100 features reduces current operating costs to measure water usage and minimizes unexpected expenses in connection with possible leakage.

## Environmentally friendly

The meter has been approved according to Drinking Water Standards in multiple countries, and it is certified to NSF/ANSI 61. The meter housing and measuring part are made of the synthetic material polyphenylene sulfide (PPS), which is free from lead and other heavy metals. The environmental report, Carbon Footprint, documents the meter's high reusability and low environmental impact, including recycling of materials.

## General description

flowIQ® 2100 is a hermetically closed static water meter, intended for the measurement of cold water consumption. The water meter uses the ultrasonic principle and has been designed and constructed on the basis of Kamstrup's experience in the development and production of static ultrasonic meters, since 1991.

flowIQ® 2100 has been subjected to a comprehensive set of tests to ensure a long-term, accurate and reliable meter. This technology has many advantages, including no moving parts so the meter is unaffected by particles in the water and measures consistently throughout its lifetime. Furthermore, the meter has a start flow of only 0.025 GPM, which provides accurate measurement at low water flows.

flowIQ® 2100 is constructed as a vacuum chamber of molded composite material. Thus, the electronics are fully protected against penetration of water. Therefore, the electronics are fully protected against penetration of water, making the meter is suitable for mounting in meter pits or other environments subject to frequent flooding.

The volume is measured using bidirectional ultrasonic technique based on the transit time method, proven as a long-term and accurate measuring principle. Two ultrasonic transducers send sound signals against and with the flow. The ultrasonic signal traveling with the flow reaches the opposite transducer first. The time difference between the two signals can be converted into flow velocity and thereby the volumetric flow rate can be calculated.

The accumulated water consumption is displayed by flowIQ® 2100 in gallons or cubic feet with nine digits and up to three decimals, to clearly display usage data. The display has been specially designed to obtain long lifetime and sharp contrast in a wide temperature range.

In addition to volume reading, a number of information codes are displayed.

The meter also measures both water and ambient temperature continuously, storing minimum, mean and maximum temperatures daily.

All registers are saved daily in the meter memory for 460 days. Monthly data for the latest 36 months are also saved.

The meter is fitted with an optical eye, which makes it possible to read consumption data and information codes, stored in the meter's data logger. Using a USB or Bluetooth connection, the optical eye gives access to configure the meter.

The water meter is powered by an internal lithium battery.

The meter can and must only be opened by one of Kamstrup's authorized service centers by means of special tools. 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.

## Technical data

### Electrical data

Battery 3.65 VDC, 1 C cell lithium

### Mechanical data

Ambient temperature 35 °F...140 °F  
 Protection class IP68-rated (waterproof/submersible)  
 Fluid temperature 33 °F...140 °F  
 Storage temp. empty sensor -10 °F...140 °F  
 Maximum operating pressure 250 PSI (17 bar)

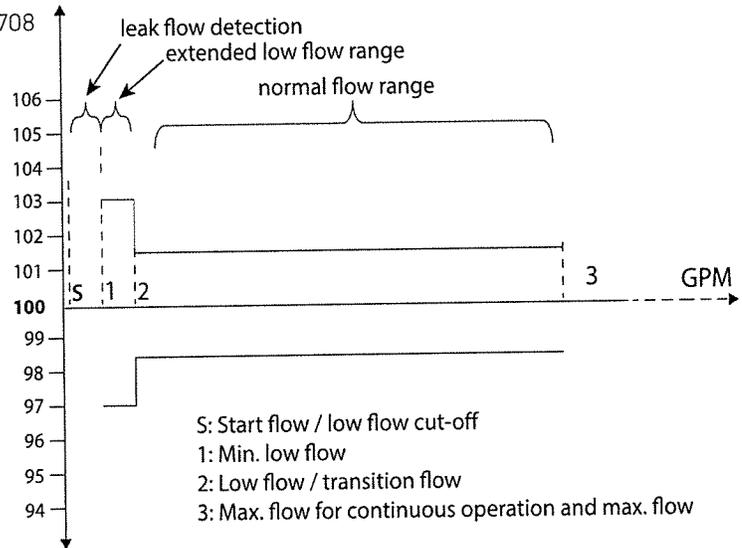
### Accuracy

MPE (maximum permissible error) According to AWWA C-708

Meter approved for 33 °F...85 °F:  
 ± 3 % in extended low flow range  
 ± 1.5 % in 'normal flow' range

### Approvals

Certified to NSF/ANSI 61  
 Complies to part 15 of the FCC rules



## Material

### Wetted parts

Meter housing and flow part Polyphenylene sulfide (PPS) with fiberglass reinforcement  
 Reflectors Stainless steel, 304L

## Meter sizes

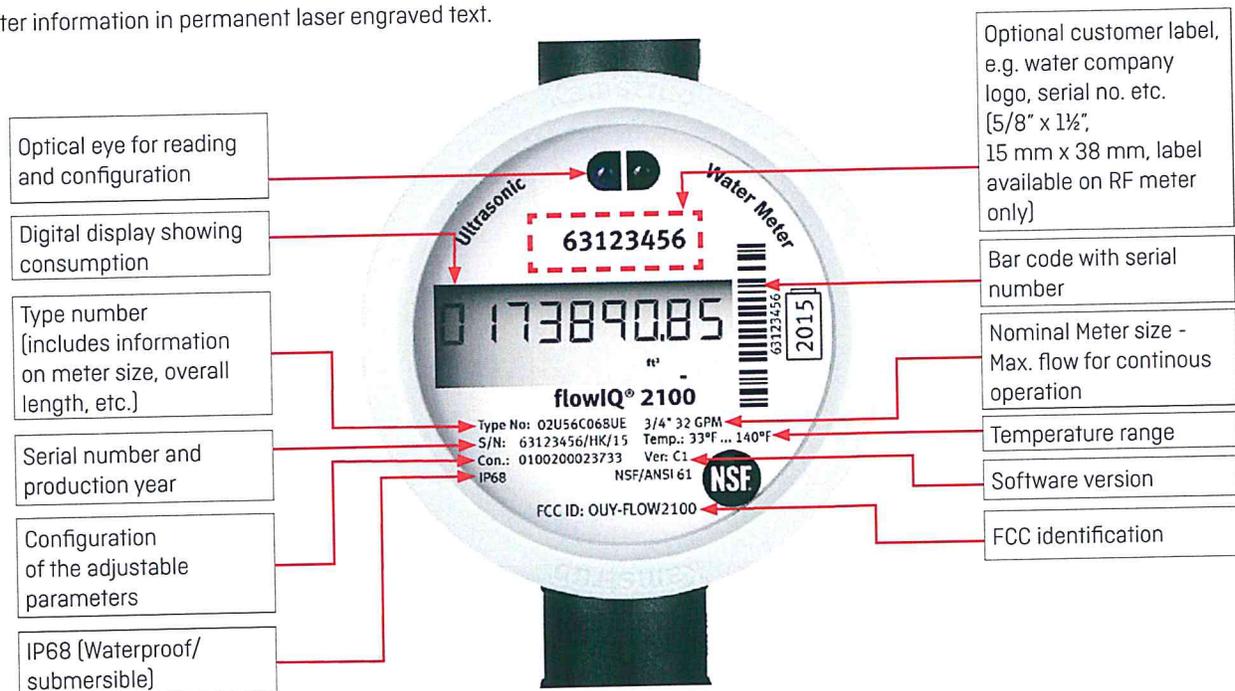
flowIQ® 2100 is available in three sizes:

Type number		Meter size	Max. flow for continuous operation	Start flow	Min. flow	Transition flow	Pressure loss at 15 GPM	Connection on meter	Lay Length
RF version	EO version								
02U-56-C02-8UX	02U-21-C02-8EX	¾"	25	0.025	0.10	0.15	4.1	¾" thread	7½"
02U-56-C04-8UX	02U-21-C04-8EX	¾" x ¾"	25	0.025	0.10	0.15	4.1	1" thread	7½"
02U-56-C06-8UX	02U-21-C06-8EX	¾"	32	0.025	0.10	0.15	3.0	1" thread	7½" or 9"

\* Note: 02U-56-C06-8XX includes a 1½" extension (installed by the customer) to fit 7½" [190 mm] or 9" [228 mm] lay lengths.

## Meter face details

Meter information in permanent laser engraved text.



## Measurement of temperatures

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### Temperature monitoring

flowIQ® 2100 measures water and ambient temperatures. The measurements can be used to monitor the installation and to give an indication of the temperature of the water when the water reaches the end user. Both temperatures are logged in the daily and monthly records.

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

On the first day of each month the minimum, maximum and average temperatures, recorded in the past month, are stored in the register. The register stores values from the last 36 months.

Temperature values are referred to in °F and can be read via the optical eye and send by the Wireless RF radio signal. Optional temperature combinations in the radio package are described in the section 'Optional data 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 maximum and minimum values are calculated based on a 2 minute average value. The average temperature is a time-weighted mean value.

### Water temperatures

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

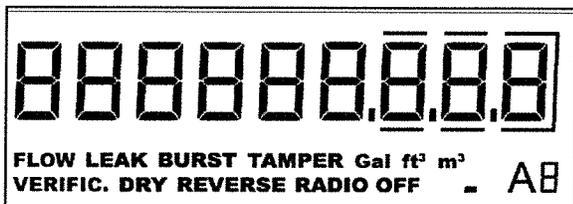
The maximum and minimum values are calculated every 2 minutes and is based on an average since the last calculation. Measurement of water temperature requires that the meter is filled with water. If there is no water within the meter a code will be saved, indicating DRY.

During periods of very low water consumption the water temperature approaches the ambient temperature. In periods where there is no water flow, a code is stored indicating that there is no consumption.

## Display and information codes

flowIQ® 2100 can be read from the large, easily readable, specially designed display. Nine large figures indicate number of gallons or cubic feet. The last three figures may indicate decimals.

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



Info code flashes in the display	Meaning
FLOW	The FLOW infocode is the digital equivalent of a spinning proving wheel featured on many mechanical meters. Indicates water flow through the meter. If there is no flow, the text will be off. This text does not blink.
LEAK	The water has not been stagnant in the meter during the last few days. This can be a sign of a leaky tap or toilet.
BURST	The water flow has exceeded a preprogrammed limit for a minimum of 30 minutes which is a sign of a burst pipe.
TAMPER	Attempt of fraud. The meter is no longer valid for billing.
Gal / ft3 / m3	Consumption is indicated in gallons, cubic feet or cubic meters
VERIFIC	Will always be off when the meter is in operation - text will be on during factory control and verification of the meter.
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 <sup>1</sup>	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.
Squared 'dot'	One small square flashing indicates that the meter is active.
A' followed by a number Change log	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. When the meter is toggled to visualize Encoded Output, the letter A and the following digit have different meanings:  A = Encoded Output changed from factory configuration, E = Encoded Output visualization mode

Information 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 is stagnant; '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 again is filled with water.

Note: 1) RADIO OFF will not display on Encoded Output meters.

## Data registers

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flowIQ® 2100 has an integrated data logger, in which the values of various data logs are saved.

The meter includes the following registers:

Data logging interval	Data log records	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

Therefore, it is always possible to read target volume and information codes for each of the latest 36 months as well as corresponding meter reading and possible information codes for each of the latest 460 days. The data logs can only be read via the meter's optical eye.

The monthly log is written on the first day of the subsequent month; the daily logger is written at midnight.

The following registers are logged:

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, V1	Value of max. flow during period	•	•
Date of min. flow, V1	Date stamp of min. flow during period	•	–
Min. flow V1	Value of min. flow during period	•	•
Min. temp. water	Water temperature – minimum	•	•
Max. temp. water	Water temperature – maximum	•	•
Med. temp. water	Volume weighted mean water temp.	•	•
Min. temp.	Meter temperature – minimum	•	•
Max. temp.	Meter temperature – maximum	•	•
Medium temp.	Meter temp. – time weighted average	•	•

Every time the information code changes, date and information codes are logged. Thus, it is possible to 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.

## 915MHz band RF – wireless radio communication

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### Standardized and open communication

915MHz band RF is an open standard, following EN13757-4 : 2010, which means that while the flowIQ® 2100 can be configured with or without encryption of the transmitted signal, encryption is required in the United States.

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

### State of the art meter reader

Kamstrup offers mobile meter reading via either the USB meter reader for wireless platforms or READy for use via android based smart phones and tablets.

## Encoded Output version

---

### General description

Encoded Output is compatible with a number of RF network systems. In addition to Type Number and Configuration Code, three additional items are required to specify Encoded Output version meters:

EO Order Code:	Letters A through Z, which specifies Data Packet and EO Digits
Connector Type:	Itron or Nicor, with 5' cable
Alarms included:	Default = ON, optional = OFF*

\*) Note. Kamstrup Alarm Protocol [KAP] is available and included by default with all Sensus data protocols; Neptune E-Coder includes [Neptune] alarms; Neptune ProRead does not support alarms.

### Cable

Length of cable is 5 feet – available with Nicor or Itron Connectors.

### Encoded Output packages

18 Encoded Output options are available, which transmit from 4 to 9 digits, via the following three protocols:

Sensus UI-1203	4 to 9 digits, with or without extended alarms, 16 total EO options
Neptune E-Coder	8 digits, with Neptune alarms, 1 EO option

## Encoded Output - visualization

### Visualization of Encoded Output configuration

Under normal operation, the 9-digit LCD will show the contents of the Volume V1 data register. Using a magnet, the Encoded Output Configuration can be briefly visualized, after which the LCD automatically reverts to display V1 Volume.

To indicate that additional alarms are included, the small "dot" is enabled.

Sample Register for 5/8" meter used in examples, typical configuration for residential meters.

### Example 2 - Option D, Sensus 6-digit, Extended Alarms: OFF

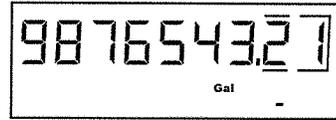
EO Resolution. Meters configured in:

USG - 6 most significant digits; 10s of US Gallons

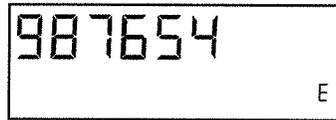
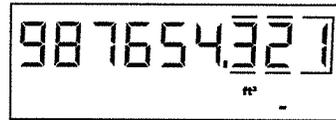
CuFt - 6 most significant digits; whole Cubic Feet

Order Option D, Sensus 6-digit, without Extended Alarms, factory EO configuration

#### Gallons



#### Cubic feet



### Example 4 - Neptune 8-digit (E-Coder); Extended Alarms: ON

EO Resolution. Meters configured in:

USG - 7 most significant integer digits + tenths of US Gallons

CuFt - 6 most significant integer digits + tenths and hundredths of Cubic Feet

Note: Neptune 8-digit (E-Coder) data package can be distinguished by the display of LEAK and BURST alarms. Sensus 8-digit data package contains all or none of the Alarms (see below).



### Example 5 - Option Z, Sensus 9-digit; Extended Alarms: ON

EO Resolution. Meters configured in:

USG - 7 most significant integer digits + tenths and hundredths of US Gallons

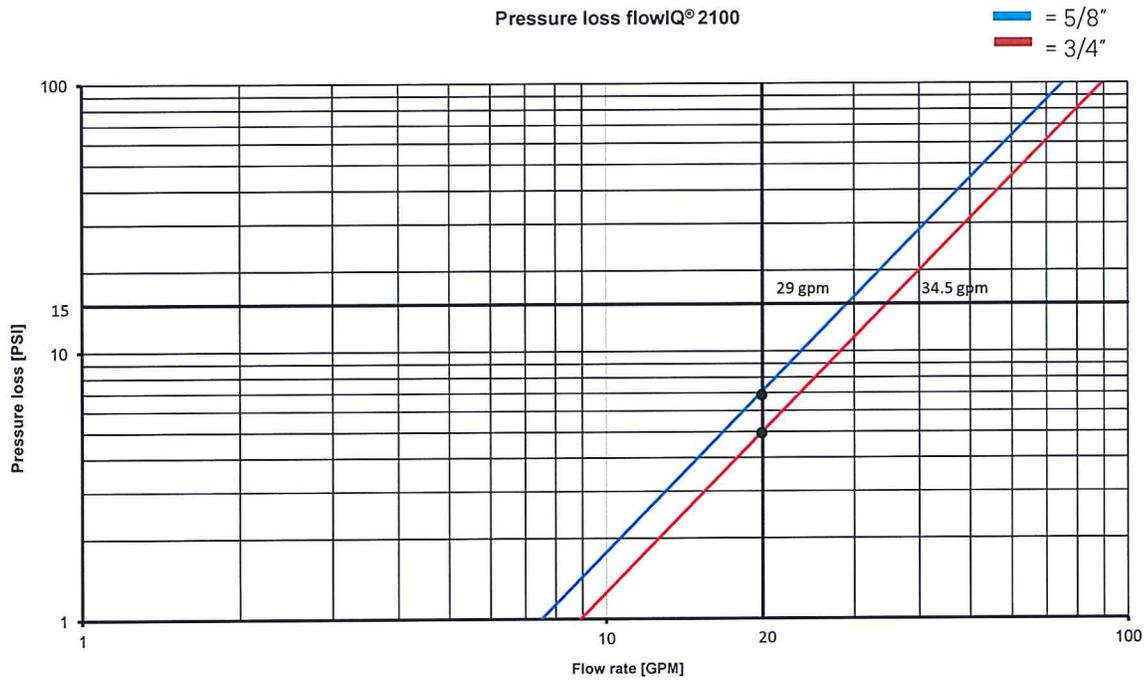
CuFt - 6 most significant integer digits + tenths and hundredths and thousandths of Cubic Feet



## Pressure loss

According to AWWA standards the maximum pressure loss must not exceed 15 PSI at 20 GPM.

The following graph shows pressure loss with respect to flow rate:



## Ordering details

Start your order by stating the type number of the selected model of flowIQ® 2100. The type number includes information on meter type - meter version (Radio or Encoded Output), size, lay length, service connection and time zone.

The features included in the Type Number cannot be changed once the meter has been produced.

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 final meter.

Refer to Encoded Output Specification for further ordering details, for the Encoded Output version meter.

2 mm EDPM rubber gaskets are included with all flowIQ® 2100 meters.

Accessories are enclosed separately to be mounted by the installer.

### Type number

**flowIQ® 2100**

Type 02U      C        8       

### Communication

915 MHz US	56
Encoded output	21

### Meter size

GPM	Connection	Length [inches/mm]	
25	¾" (DN15) meter - ¾" thread	7½ / 190	02
25	¾" x ¾" (DN20) meter - 1" thread	7½ / 190	04
32	¾" (DN20) meter - 1" thread	7½ / 190 or 9 / 228; includes 1-1/2" extension	06

### Meter type

Radio	U
Encoded output	E

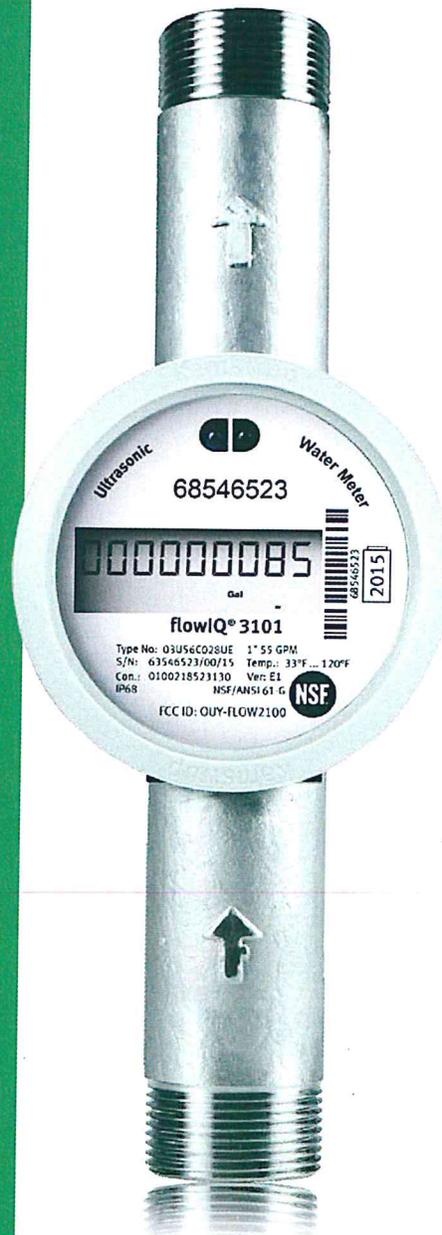
### Time zone

Eastern	E
Central	C
Mountain	M
Pacific	P

Data Sheet

## flowIQ® 3101

- 2 Versions available:
  - Internal Radio (RF), or
  - Encoded Output (EO)
- Ultrasonic measurement
- Pinpoint accuracy
- 20 year longevity
- Dual temperature measurement
- IP68 Vacuum sealed construction
- Lead free and certified to NSF/ANSI 61



## Contents

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## Electronic ultrasonic cold water meter for measurement of cold water consumption in households, multi-unit buildings and industry.

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### Pinpoint accuracy

Ultrasonic flow measurement guarantees pinpoint accuracy and longevity. Ultrasonic flow measurement is based on the transit time method, and all measurements, references, readings, calculations and data communication are controlled by an advanced, specially designed electronic circuit. Thus, the meter includes no moving parts, which makes flowIQ® 3101 resistant to wear and impurities in the water.

### Construction

The meter is hermetically closed and vacuum-sealed to prevent humidity from reaching the electronics and avoid condensation between the glass and display. The meter is IP68 (submersible) type tested and suitable for installation in meter pits.

### Installation

flowIQ® 3101 is easy to install in all operating environments, horizontally as well as vertically, independent of piping and installation conditions. Consumption data can be read visually from the display, using an optical eye, and remotely read, either by 915MHz band RF signal, built into the meter, or alternatively by a 3-wire encoded interface.

### Specific features

flowIQ® 3101 measures the water and environment temperatures and it includes leak detection, securing that water loss is discovered quickly.

The unique combination of all the flowIQ® 3101 features reduces current operating costs to measure water usage and minimizes unexpected expenses in connection with possible leakage.

### Environmentally friendly

The meter has been approved according to Drinking Water Standards in multiple countries, and it is certified to NSF/ANSI 61. The meter housing and measuring part are made of the synthetic material polyphenylene sulfide (PPS), which is free from lead and other heavy metals. The environmental report, Carbon Footprint, documents the meter's high reusability and low environmental impact, including recycling of materials.

### General description

flowIQ® 3101 is a hermetically closed static water meter, intended for the measurement of cold water consumption. The water meter uses the ultrasonic principle and has been designed and constructed on the basis of Kamstrup's experience in the development and production of static ultrasonic meters, since 1991.

flowIQ® 3101 has been subjected to a comprehensive set of tests to ensure a long-term, accurate and reliable meter. This technology has many advantages, including no moving parts so the meter is unaffected by particles in the water and measures consistently throughout its lifetime. Furthermore, the meter has a start flow of only 0.04 GPM, which provides accurate measurement at low water flows.

The meter housing is made of plastic material polyphenylene sulfide (PPS) and is mounted on a measuring part made of stainless steel. The meter can be installed vertically or horizontally and quickly mounted independent of existing piping and installation conditions.

The volume is measured using bidirectional ultrasonic technique based on the transit time method, proven as a long-term and accurate measuring principle. Two ultrasonic transducers send sound signals against and with the flow. The ultrasonic signal traveling with the flow reaches the opposite transducer first. The time difference between the two signals can be converted into flow velocity and thereby the volumetric flow rate can be calculated.

The accumulated water consumption is displayed by flowIQ® 3101 in gallons or cubic feet with nine digits and up to three decimals, to clearly display usage data. The display has been specially designed to obtain long lifetime and sharp contrast in a wide temperature range.

In addition to volume reading, a number of information codes are displayed.

The meter also measures both water and ambient temperature continuously, storing minimum, mean and maximum temperatures daily.

All registers are saved daily in the meter memory for 460 days. Monthly data for the latest 36 months are also saved.

The meter is fitted with an optical eye, which makes it possible to read consumption data and information codes, stored in the meter's data logger. Using a USB or Bluetooth connection, the optical eye gives access to configure the meter.

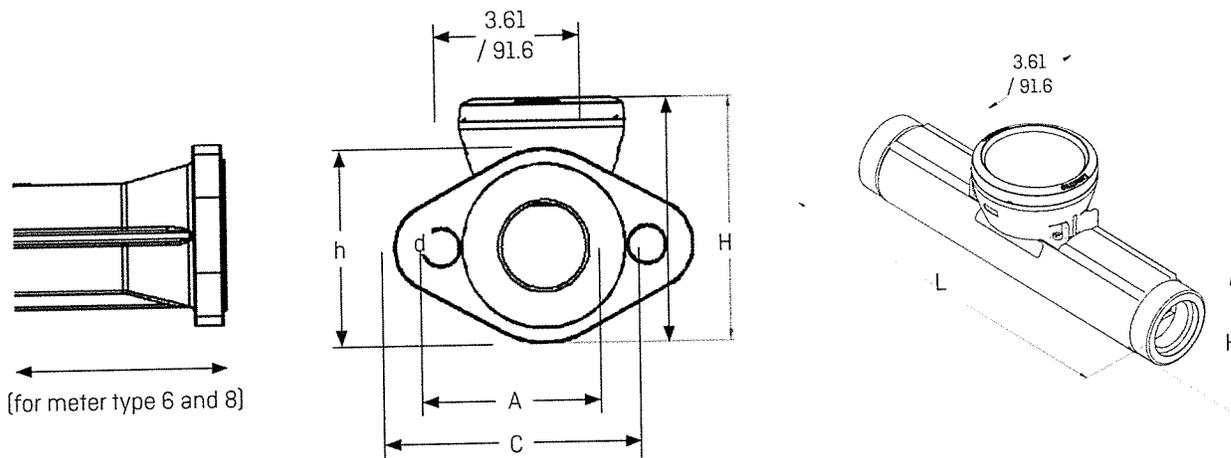
The water meter is powered by an internal lithium battery.

The meter can and must only be opened by one of Kamstrup's authorized service centers by means of special tools. 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.

## Meter sizes

flowIQ® 3101 is available in three sizes:

Type number <sup>1)</sup>	Meter size	Max. flow for continuous operation GPM (3)	Start flow GPM (5)	Min. flow GPM (1)	Transition flow GPM (2)	Pressure loss at max flow PSI	Connection on meter NPSM thread/ flange	Lay Length Inches / (mm)
03U-56-C02-8XX	1"	55	0.04	0.25	0.4	4.0	5/4" thread	10 3/4" / (273)
03U-56-C04-8XX	1 1/2"	120	0.06	0.4	1.2	8.0	1 1/2" thread	12 3/4" / (321)
03U-56-C06-8XX	1 1/2"	120	0.06	0.4	1.2	8.0	1 1/2" flange	13" / (330)
03U-56-C07-8XX	2"	160	0.1	0.5	1.5	2.0	2" thread	15 1/4" / (387)
03U-56-C08-8XX	2"	160	0.1	0.5	1.5	2.0	2" flange	17" / (432)



GPM	Connection	L	H	h	A	C	d	Weight approx. [Lbs]	Meter type
55	5/4" thread	10 3/4" / 273 mm	3.7" / 95	--	--	--	--	4.1	C02
120	- TBD -	12 3/4" / 321 mm	3.9" / 100	--	--	--	--	6.0	C04
120	1 1/2" flange	13" / 330 mm	4.3" / 122	3.6 / 92	4.0 / 102	5.7 / 146	0.79 / 20	13	C06
160	2" thread	15 1/4" / (387)	4.33" / 110	--	--	--	--	9.2	C07
160	2" flange	17" / 432mm	5.31" / 135 5.3 / 146	4.13" / 105	4.49" / 114	6.54 / 166	0.79 / 20	19	C08



## Data registers

flowIQ® 3101 has an integrated data logger, in which the values of various data logs are saved.

The meter includes the following registers:

Data logging interval	Data log records	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

Therefore, it is always possible to read target volume and information codes for each of the latest 36 months as well as corresponding meter reading and possible information codes for each of the latest 460 days. The data logs can only be read via the meter's optical eye.

The monthly log is written on the first day of the subsequent month; the daily logger is written at midnight.

The following registers are logged:

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, V1	Value of max. flow during period	.	.
Date of min. flow, V1	Date stamp of min. flow during period	.	-
Min. flow V1	Value of min. flow during period	.	.
Min. temp.	Meter temperature - minimum	.	.
Max. temp.	Meter temperature - maximum	.	.
Medium temp.	Meter temp. - time weighted average	.	.

Every time the information code changes, date and information codes are logged. Thus, it is possible to 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.

## Radio packet options

### Optional RF output

flowIQ® 3101 communicates via a high-power antenna and integrated 915MHz band RF, which gives access to easy and fast wireless reading of the meter.

The integrated 915MHz band RF transmits a data package every 16 seconds. In order to obtain long battery lifetime, the data package has been compressed and includes only the most important meter readings.

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

Following values can be send via the Wireless RF radio signal:

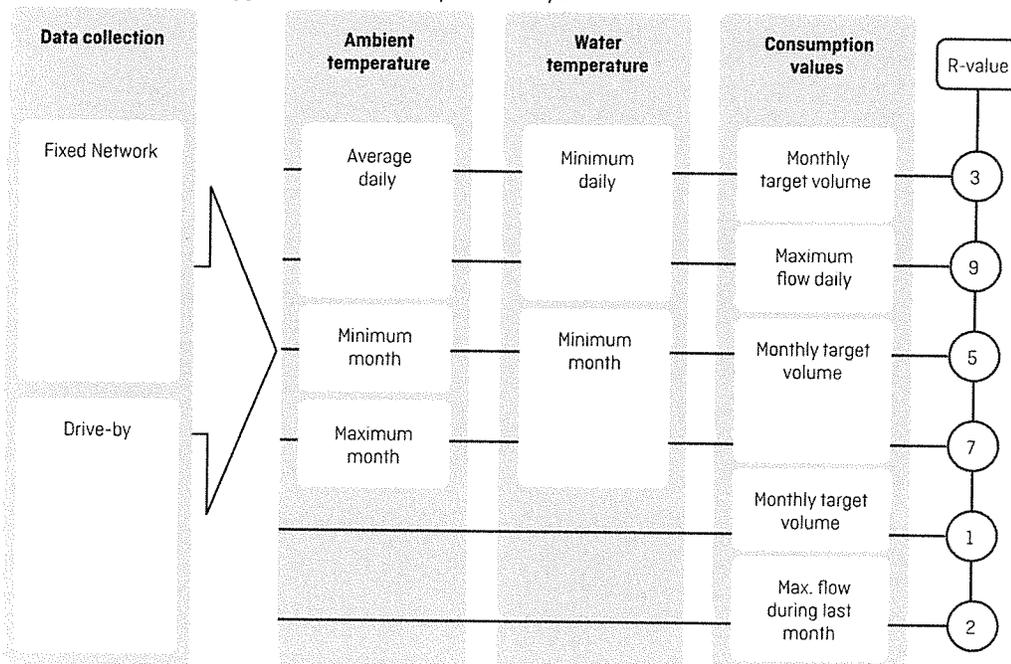
- Target Volume - e.g., meter read from the first day of the month
- Maximum flow - daily
- Maximum flow - monthly
- Selected values of ambient temperature.

### Optional registers in data logger

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.

In addition the RF package will contain actions and historical events from the infologger from within the past 30 days.

In addition the RF package will contain actions and historical events from the infologger from within the past 30 days.



## 915MHz band RF – wireless radio communication

---

### Standardized and open communication

915MHz band RF is an open standard, following EN13757-4 : 2010, which means that while the flowIQ® 3101 can be configured with or without encryption of the transmitted signal, encryption is required in the United States.

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

### State of the art meter reader

Kamstrup offers mobile meter reading via either the USB meter reader for wireless platforms or READy for use via android based smart phones and tablets.

## Encoded Output version

---

### General description

Encoded Output is compatible with a number of RF network systems. In addition to Type Number and Configuration Code, three additional items are required to specify Encoded Output version meters:

EO Order Code:	Letters A through Z, which specifies Data Packet and EO Digits
Connector Type:	Itron or Nicor, with 5' cable
Alarms included:	Default = ON, optional = OFF*

\*) Note. Kamstrup Alarm Protocol [KAP] is available and included by default with all Sensus data protocols; Neptune E-Coder includes [Neptune] alarms; Neptune ProRead does not support alarms.

### Cable

Nicor or Itron Connectors with 5 feet cable.

22 AWG solid core flying lead in lengths of 5', 15' and 25' available Q1 2016.

### Encoded Output packages

18 Encoded Output options are available, which transmit from 4 to 9 digits, via the following three protocols:

Sensus UI-1203	4 to 9 digits, with or without extended alarms, 16 total EO options
Neptune E-Coder	8 digits, with Neptune alarms, 1 EO option

## Encoded Output - visualization

### Visualization of Encoded Output configuration

Under normal operation, the 9-digit LCD will show the contents of the Volume V1 data register. Using a magnet, the Encoded Output Configuration can be briefly visualized, after which the LCD automatically reverts to display V1 Volume.

To indicate that additional alarms are included, the small "dot" is enabled.

Sample Register for 5/8" meter used in examples, typical configuration for residential meters.

#### Example 2 - Option D, Sensus 6-digit, Extended Alarms: OFF

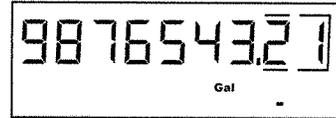
EO Resolution. Meters configured in:

USG - 6 most significant digits; 10s of US Gallons

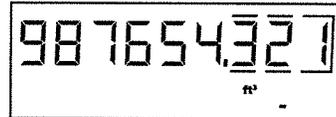
CuFt - 6 most significant digits; whole Cubic Feet

Order Option D, Sensus 6-digit, without Extended Alarms, factory EO configuration

#### Gallons



#### Cubic feet



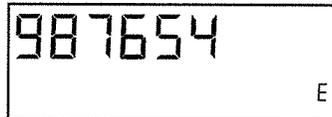
#### Example 4 - Neptune 8-digit (E-Coder); Extended Alarms: ON

EO Resolution. Meters configured in:

USG - 7 most significant integer digits + tenths of US Gallons

CuFt - 6 most significant integer digits + tenths and hundredths of Cubic Feet

Note: Neptune 8-digit (E-Coder) data package can be distinguished by the display of LEAK and BURST alarms. Sensus 8-digit data package contains all or none of the Alarms (see below).



#### Example 5 - Option Z, Sensus 9-digit; Extended Alarms: ON

EO Resolution. Meters configured in:

USG - 7 most significant integer digits + tenths and hundredths of US Gallons

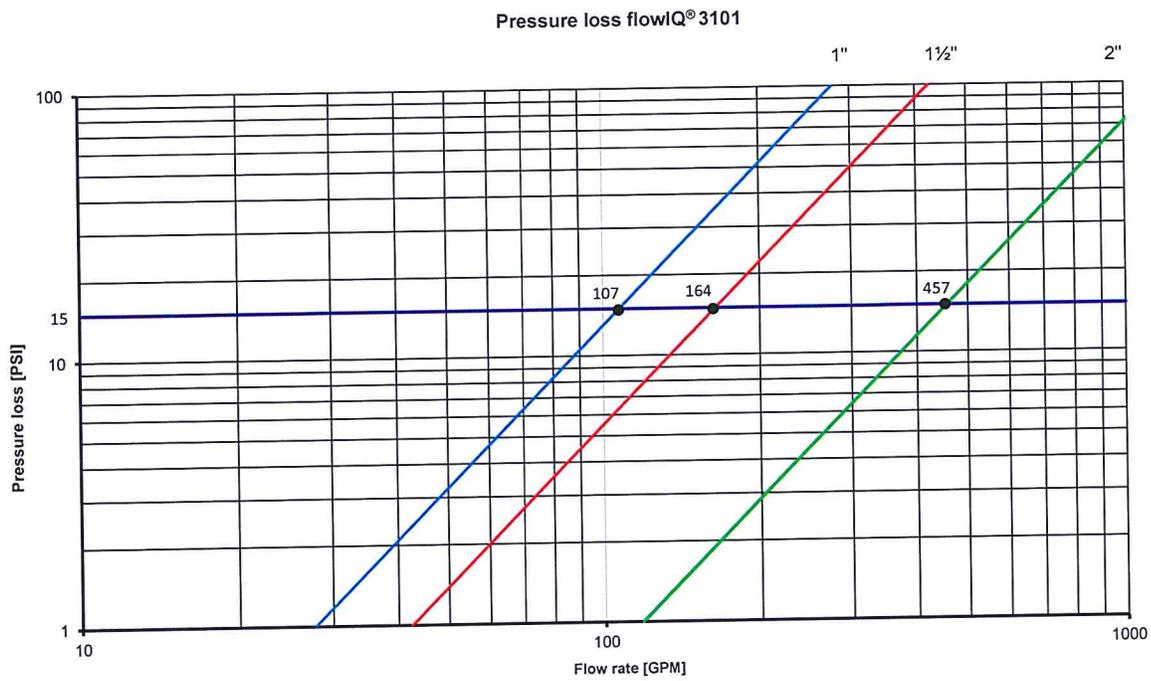
CuFt - 6 most significant integer digits + tenths and hundredths and thousandths of Cubic Feet



## Pressure loss

According to AWWA standards the maximum pressure loss must not exceed 15 PSI at 20 GPM.

The following graph shows pressure loss with respect to flow rate:



flowIQ® 3101

## Accessories

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See Accessories for Water Meters: 5810-1270.

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Think forward

