



# Cold Water/Solid State Meters

SIZES: 3" – 12"

## GENERAL

All cold water meters (solid state meters 3" - 12") furnished shall be produced in a manufacturing facility whose QMS is ISO 9001 certified and meets or exceeds the accuracy requirements specified in the "Standard Specifications for Cold Water Meters" C715 latest revision issued by AWWA.

## LEAD FREE LEGISLATION

The utility requires that all solid state water meters submitted in this proposal be compliant with NSF/ANSI 61, which exceeds the requirements of NSF/ANSI 372 and became effective January 2014.

- The utility wishes to ensure the safety of its drinking water.
- The utility wishes to safeguard its investment in metering infrastructure.
- Meters shall be made of "lead free" alloy as defined by NSF/ANSI 61 and NSF/ANSI 372.

## TYPE

Only meters featuring ultrasonic solid state metrology will be accepted because of enhanced low flow accuracy performance and extended accuracy over meter life.

## MEASUREMENT TECHNOLOGY

The measurement technology shall be based on ultrasonic sensing featuring no moving parts.

## MAINCASE

- The meter maincase shall be cast from NSF/ANSI 61 certified lead free bronze alloy containing a minimum of 85% copper. Maincases such as coated steel that are susceptible to corrosion over time are not acceptable. Maincases that do not accommodate inline piping stresses, such as stainless steel or coated steel are not acceptable.
- The serial number should be displayed in a permanent location on the meter maincase and register.
- Meter markings shall indicate size, model, direction of flow, and NSF 61 certification.
- All lead free maincases shall have a lifetime warranty and be free from manufacturing defects in workmanship and material.
- All maincase bolts shall be 316 non-magnetic stainless steel to prevent corrosion.

## ELECTRONIC ENCLOSURE

The solid state meter electronic enclosure shall be constructed of a durable engineered composite designed to last the life of the meter. The meter register shall provide a fully potted wire connection for use with AMR/AMI devices.

## ENVIRONMENTAL

The solid state meter must feature fully potted electronics and battery, meet IP-68 standard, and be suitable for submersion in flooded pits.

The meter shall operate at a water temperature range of +33°F to + 122°F (+0.5°C to +50°C) and meet AWWA C715 accuracy specifications for water temperatures from 33° F to 122° F (0.5° to 50° C).

The meter shall operate at an ambient temperature range of +14°F to +149°F (-10°C to +65°C) and with a storage temperature of -40°F to +158°F (-40°C to +70°C).



## SIZE, LENGTH, AND INSTALLATION

The meter size and length shall meet AWWA Standard C715 (latest revision).

The meter shall be of common lay lengths to easily retrofit to existing installed turbine and compound meters. It is required that 3" meters shall be available in 12" and 17" lay lengths, 4" meters shall be available in 14" and 20" lay lengths, and 6" meters shall be available in 18" and 24" lay lengths. The 8", 10", and 12" shall be available in 20", 26", and 19.7" lay lengths, respectively.

The meter shall support replacing the electronic measurement assembly without having to recalibrate the meter or remove the meter from service.

Solid state meters shall not require a strainer for accurate operation.

## REGISTRATION

- The register shall provide at least a 9-digit visual registration at the meter to facilitate testing.
- The register shall provide an 8-digit meter reading for transmission through the RF AMR/AMI endpoint.
- The register shall employ a visual LCD leak detection indicator as well as provide remote leak detection through an ASCII format to the RF AMR/AMI endpoint.
- The register shall provide and display reverse flow detection on the LCD and communicated as ASCII format data to the RF AMR/AMI endpoint.
- Reverse flow detection shall be calculated based on 15-minute interval consumption.
- The register shall provide an indication of days of zero consumption, communicated as ASCII format data to the RF AMR/AMI endpoint.
- The register should accumulate and register consumption whether or not it is connected to a receptacle or RF AMR/AMI endpoint.
- The register shall provide empty pipe detection that is visibly displayed on the meter's LCD register.
- The register shall display flow rate information (interleaved with the current meter reading).
- The register shall subtract reverse flow from the total registration.
- The register shall provide and display low battery detection on the LCD and communicated as ASCII format data to the RF AMR/AMI endpoint.
- The meter endpoint shall provide a minimum of 96 days of downloadable consumption data.

## PERFORMANCE

Meter manufacturers' solid state meters shall exceed AWWA Standard C715 accuracy and warrant their published accuracy levels for the life of their meters. Each meter shipment must be accompanied by factory test data showing the accuracy of the meter as tested at their facility.

The meter(s) shall have an Extended Low Flow measured at 100% +/- 3% which exceeds AWWA Standard C715 extended low flow accuracy requirements.



Meter Size	Extended Low Flow @ 100% Accuracy (U.S. gpm, $\pm 3\%$ )	Normal Operating Range @ 100% Accuracy (U.S. gpm $\pm 1.5\%$ )	Safe Maximum Operating Capacity (U.S. gpm)	
			Normal Operation (Non-Fire Service)	Fire Service
3"	0.50	0.75 to 500	500	420
4"	0.75	1.5 to 1250	1250	1100
6"	1.0	2.0 to 2000	2000	1800
8"	4	6.0 to 4000	4000	4000
10"	6	10.0 to 6500	6500	6500
12"	8	12.0 to 8000	8000	6500

### MANUFACTURER

Solid state meters shall be assembled and tested within the United States. Manufacturers may be required to provide proof of where and what percentage of the meter is manufactured in the United States

### SYSTEMS GUARANTEE

All solid state meters shall be guaranteed compatible with Neptune R900<sup>®</sup> systems without special programming of the meter.

### TECHNOLOGY REQUIREMENT

The solid state meter technology provided must be ultrasonic-based technology featuring continuous measurement (greater or equal to 4 times per second) to ensure desired accuracy at low-end flow and during typical variable flow conditions.

Acceptable meters shall be Neptune Commercial and Industrial MACH 10<sup>®</sup> or approved equal.



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