

# ***Sample Specification***

## **Water Meters: 5/8" – 2" Ultrasonic Solid State Meters**

### ***Scope:***

This Specification covers Solid State Meter (SSM) bronze body, cold-water, ultrasonic meters compatible with open architecture radio equipment in 5/8" – 2" sizes and the materials employed in their fabrication. These meters shall offer a lead free alternative that encourages conservation, recycling, water purity and green life styles.

### ***AWWA Standards:***

- All Meters shall meet or exceed the latest version of the American Water Works Association Standard C715 for Cold Water Meters – Electromagnetic and Ultrasonic Type, For Revenue Applications requirements for accuracy and pressure loss.
- All Meters shall meet or exceed the American Water Works Association Standard C707 for Encoder-Type Remote-Registration systems for Cold Water Meters when equipped with an open architecture radio MIU or similar device.

### ***NSF-61 Standards:***

- All Meters shall comply with the latest EPA law and NSF-61 requirements governing potable water meters.

### ***State No Lead and Low Lead Initiatives Standards:***

- All Meters shall comply with the latest state no lead initiatives due to their unique design, which incorporates suitable materials for all wetted surfaces in the meter.

### ***Main Case:***

- Main case shall be composed of low lead copper alloy.
- Main case shall incorporate copper male threads to prevent crossed or stripped threads during installation when utilizing existing bronze couplings on 3/4" – 1" sizes.
- Main case shall incorporate 2 bolt flanges to facilitate easy installation when utilizing 2 bolt oval flange kits with gaskets on 1.5" and 2" sizes.

- ¾” through 1” meters shall be provided with gaskets.
- Meters shall be pressure tested to ensure against leakage to a maximum 200 psi operating pressure.
- Meter case must and processor must be of a single unit design that discourages tampering.
- The meter case must display a raised indication of compliance with NSF-61.
- All processor housing sections must be sealed with a visible tamper indicator.
- The meter serial number shall be stamped on the processor housing and lid of the meter.
- The direction of flow shall be stamped on the processor surround and lid of the meter.
- Meter main case lengths must comply with comparable standard laying lengths for positive displacement meters in the same configuration as the solid state meters.

### ***Measuring Chamber:***

- Measuring chamber shall contain no moving parts.
- There shall be no customer serviceable components inside the meter or processor.
- O-ring seals shall be used throughout the measuring chamber to provide a more robust design. The use of glues and adhesives is not permitted.
- Measuring chamber shall maintain accuracy over the life of the meter and not suffer degradation due to mechanical wear.
- Measuring chambers shall be made of a suitable engineered polymer as described in AWWA C-715.
- Method of measurement shall be ultrasonic time transit measurement. Electromagnetic measurement is not permitted.
- Reflectors shall be made of stainless steel.
- Transducers shall resist corrosion and ensure reliable signal levels.
- The design of the tube shall channel water across the reflectors providing a cleaning effect that contributes to better operation and long term meter accuracy, improving utility revenues.

### ***Headloss:***

- Meters shall not exceed 2 PSI pressure loss at 15 GPM operating capacity for the 5/8” and ¾” sizes and 1.5 psi for the 1” size at 25 GPM operating capacity. 1.5” and 2” pressure loss shall not exceed 3.5 psi at 70 GPM and 110 GPM respectively.

### ***Accuracy:***

- Meters shall be 100% factory tested for accuracy and have the factory test results provided with each meter.
- Meter accuracy shall be +/- 1.5% in the normal operating flow range and -5% to +1.5% in the low flow range.
- The meter shall be accurate +/- 1.5% in the normal flow range of the meter up to 85 degrees F water temperature.
- Meters shall comply with the AWWA C715 new meter accuracy requirements from minimum flow to maximum flow for a period of 10 years from the date of shipment and offer a pro-rated warranty for years 11 through 20. See warranty document for specifics.

### ***Strainers:***

- All ¾" – 1" meters shall be provided with strainer screens installed in the meter.
- Strainers shall be rigid, fit snugly, be easy to remove.

### ***Electronic Display Register:***

- The processor shall be powered by a single A cell lithium battery that is permanently sealed to eliminate moisture intrusion.
- The display shall provide for standard visual registration at the meter of 0.1 gallons or 0.01 cubic feet.
- The display shall provide a series of icons that indicate various meter states.
- The numerals on the number wheels of the register shall not be less than 1/4" in height and should be legible at a 45-degree angle.
- Processors shall incorporate a low flow indicator.
- Processors shall incorporate a direction of flow indicator.
- Processors shall offer the option of registration in 0.1 gallons or 0.01 cubic feet.
- The processor shall incorporate an IR sensor that permits additional fields to be viewed on the processor.
- The IR sensor shall permit the download of additional data with the use of an IR Reader and software installed on a computer and to place the meter in test mode for additional granularity.
- The processor shall be secured to the meter main case by a tamper resistant method protecting against unauthorized removal of the processor from the meter body.
- The processor and meter shall be a single unit to prevent the removal from the body of the meter.

- The processor shall provide a true absolute encoder output that provides direct electronic transfer of meter reading information to any number of AMR/AMI device options.
- The encoder register shall send data in ASCII format (American Standard code for Information Interchange) to the interrogation device.
- The encoder register shall transmit the complete 8 digit serial number and complete 8 digit meter reading.
- An 8-digit register identification number that has been factory set and never duplicated shall be sent to the reading device.
- For all installations, the processor shall be permanently factory sealed with an epoxy coating of all terminal connections. Meter requiring field sealing of the wire connection will not be allowed.
- All wiring for radio MIU's shall be installed and potted by the manufacturer.
- Acceptable wiring configurations shall include 5' flying lead wire, 18" Nicor connectors, and 5' Itron cable connects. No other options are permitted.
- In line waterproof connections are required during installation for pit set encoder registers with Radio MIU's to facilitate installation and field investigations.