Sonata Allegro

User Manual

Model: SONATA3-AL

FCC ID: NTASONATA3

IC: 4732A-SONATA3

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1. Introduction

The Sonata is an ultrasonic water meter designed for accurate measurement of potable water for residential applications. The Sonata's unique design delivers precise flow measurement without any moving parts − for long life, sustained accuracy and exceptional performance. Sonata is a maintenance free device for up to 20 years of operation.

2. General Information

- Read the instructions below before installing the meter.
- To prevent injury or damage, do not install, operate or maintain the meter without following the instructions in this guide.
- Store the meter in a cool, dry place.
- Follow all warnings and instructions marked on the product.

3. Permissible Operating Conditions

AWWA Standard	Most recent revision of ANSI/AWWA Standard C700 and C708
NSF/ANSI Standard	NSF/ANSI 372, NSF/ANSI 61, & Safe Drinking Water Act (SDWA)
Max. Working Pressure	175 PSI
Liquid Temperature	32.1° to 122°F (0.1° to 50°C)
Ambient Temperature	-13° to 131°F (-25° to 55°C)
Environmental Protection	IP68

4. Package Contents

The following items are included in the package:

- Sonata Ultrasonic Water Meter (up to 12 depending on purchased quantity)
- Condensed Installation Manual

5. Accessories – Optional

- EDPM gaskets
- Non Return Valve
- Strainer
- Output extension cable, for specific installations.

6. Unpacking and handling

- Carefully unpack the meter and inspect all contents for shipping damage before attempting to install. If any indication of physical damage is found, immediately contact the responsible transportation service and your local Master Meter representative.
- Do not carry the Sonata by its lid.
- Avoid hard blows, jolts or impact to the meter.

7. Transceiver Information

CAUTION

The User and the Installer should be aware that changes and modifications to the equipment not expressly approved by Master Meter could void warranty and the user's authority to operate the equipment.

Professionally trained personnel should install the equipment.

The Sonata is equipped with an internal antenna/transmitter and 1) must be installed at a minimum separation distance of at least 20 cm from all persons, and 2) must not be co-located or operating in conjunction with any other antenna or transmitter.

RF Radio Characteristics

Parameter	Value	Unit
Operating Frequency:	450-470, License band	MHz
Network Topology	Star	
Modulation	4GFSK	
Maximum Transmitter output power	+34	dBm
Bandwidth	6.25	KHz
Data Rate	4.8kbps	
Receiver sensitivity, typical	-115dBm@4.8kbps	dBm
Antenna Type	Built in Antenna	

Standards Compliance

Region	Category	Standard
United States Canada	EMC/Radio	47CFR FCC Part 90 and Part 15 subpart B Class B RSS-119 and ICES-003 Class B

8. FCC and Industry Canada Statements

ATTENTION

FCC and Industry Canada Class B Digital Device Notice

The digital circuit of this device has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

CAN ICES-3 (B)/NMB-3(B)

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

Industry Canada interference Notice

This device complies with Industry Canada licence-exempt RSS standard(s).

Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage;

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC interference Notice

This device complies with part 90 of the FCC rules.

Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

FCC and Industry Canada Radiation Hazard Warning

WARNING! *To comply with FCC and IC RF exposure compliance requirements, the device should be located at a distance of at least 20 cm from all persons during normal operation. The antennas used for this product must not be co-located or operated in conjunction with any other antenna or transmitter.*

Le dispositif doit être placé à une distance d'au moins 20 cm à partir de toutes les personnes au cours de son fonctionnement normal. Les antennes utilisées pour ce produit ne doivent pas être situés ou exploités conjointement avec une autre antenne ou transmetteur.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS-102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

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9. Installation Requirements

1. The Sonata cannot be installed over 15 meters above ground level.
2. Ensure that the connecting pipes are aligned (Figure 1).
3. Check for the proper distance between the pipe unions to avoid mechanical stress. (Figure 2)
4. The meter may be installed in any orientation. (Figure 3) There are no straight pipe requirements on the Sonata.
5. Always use new gaskets and ensure that the coupling nut surfaces are clean.

Figure 1

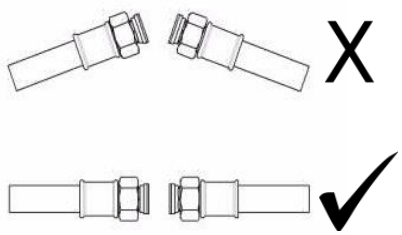
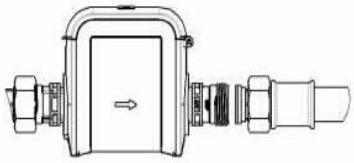


Figure 2



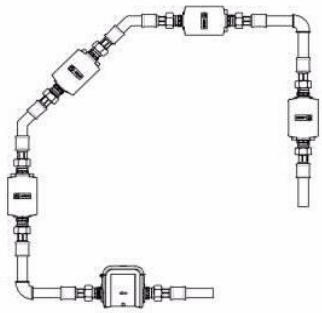
Installation Notes

- Do not install the meter on the suction side of a pipe.
- Avoid exposing the meter to excessive vibration.
- Support of the pipeline on both sides of the meter is recommended.

10. Installing the Sonata

1. Unpack the Sonata. Install/assemble accessories, is supplied, and as needed.
2. Note the proper flow direction as indicated on the meter. The Sonata is a bi-directional flow meter and will also measure reverse flow.
3. Install new gaskets in the coupling nut.
4. Place the meter in position and carefully tighten the coupling nuts by hand. Make sure each coupling nut is smoothly screwed onto the meter threads. Use a wrench to tighten the coupling nuts to a minimum torque setting of 10 lb-ft up to a maximum of 35 lb-ft. (Figure 4)
5. Once installed, open the upstream valve to allow water to fill the meter and piping.
6. Open a downstream valve to flush all air out of the pipeline.
7. Close the downstream valve and verify that there are no leaks at the coupling nuts.

Figure 3



11. Disposal

This product contains Lithium Thionyl Chloride batteries. Local and national regulations for proper battery disposal should be followed.

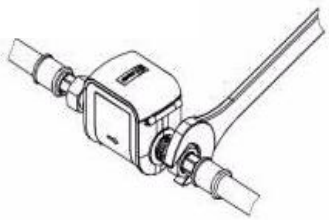



Figure 4