ZENNER ZSUR Stealth Ultrasonic Residential Meters Installation Manual

ZSUR02

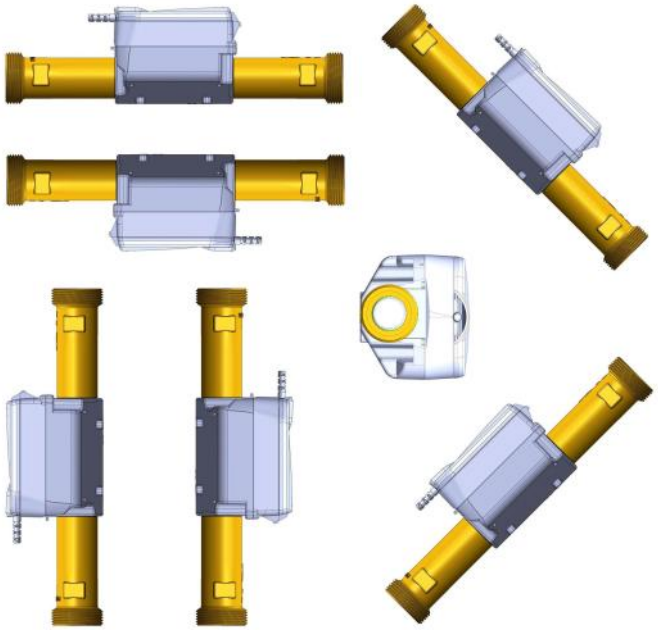
ZSUR07

Product Description
ZENNER ZSUR Ultrasonic Residential Water Meters are designed for cold water applications up to 122°F.

Intended purpose
- For the consumption measurement of drinking water up to 122°F.
- For the consumption measurement of non-potable water up to 122°F.

Comment
This installation manual is intended for qualified meter installers only. Basic installation steps are therefore not described. In order to ensure a proper flow measurement, the meter must be completely filled with water at all times.

Permissible installation positions



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Activating the Meter
Upon delivery, the display of the meter will arrive in "sleep mode". To activate the meter, simply fill the meter with water for ten seconds. This will move the meter into active reading mode. During the installation, all air must be ventilated from the meter and the meter must be completely filled with water in order for activation to be achieved.

Once the meter has been activated, an automatic display check takes place (segment test). The segment test is represented by three flashes of all segments on the display indicator and is repeated every 60 seconds during operation.

Readout options of the ZSUR meter via the NFC (Near Field Communication) Interface Cable
The following data can be directly read from the measuring instrument via the NFC interface, e.g. with NFC-capable smartphone:

- Meter ID (serial number)
- Current consumption value or total volume in the case of an overrun
- Up to 15 previous month's values
- Software version
- Alarms or error messages

The meter can be retrofitted with NDC modules, or ordered with a factory-fitted module.

Meter Installation
- To achieve optimal measurement results, (3) times the pipe diameter should be allowed on the inlet and (2) times the pipe diameter should be allowed on the outlet side of the meter. However, ZSUR Ultrasonic Residential Meters are designed to be installed without straight sections in front and after the meter and still meet AWWA accuracy standards.
- Clean and flush the service line thoroughly on the inlet side of the meter before installing.
- The pipe cross section should not be reduced directly in front of and behind the meter.
- Valves or other flow regulators should be installed, where possible, behind the meter.
- The meter should be installed, where possible, at the deepest point of the pipe installation insuring air is not entrapped within the meter and the meter body is always completely water filled.
- During installation, ensure the flow arrow indicator on the meter housing is pointed toward the customer's side of the service line. Install using new gaskets.
- To insure unrestricted flow of water through the meter, use the proper size and type of gaskets. Connections should only be sufficiently tight to seal; do not over-tighten. Flange gaskets must not extend into the pipe.
- If necessary, the meter should be protected by a strainer. This will keep foreign matter, such as stones or debris, from entering the meter and potentially cause damage.
- The meter is designed for use in a frost-proof location with ambient temperature not to exceed +130°F and with water temperatures not to exceed +122°F .
- To prevent damage during the installation process, ensure that the meter is slowly filled with water.

Display description

Segment test display

Consumption value

Flow direction display in forward flow direction

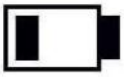
Flow direction display in return flow direction

4-digit flowrate display in Gpm, Cfpm or m^3

Alarm or error messages (are saved in the data logger and can be read out via the NFC interface)

External power supply: Symbol is activated once a communication module is connected via the NFC interface

Battery capacity display: Symbol is activated aprox. 180 days prior to fully discharged battery. The battery capacity is 12 to a maximum of 15 years (depending on the ambient conditions as well as use and configuration of a connected NDC module)



Data transfer display: Symbol is only activated for the connected NDC module

Consumption value Cubic Feet

- 5/8", 3/4" and 1", 9-digit display with 3 digits after the decimal place.
- 1-1/2" and 2", 9-digit display with 2 digits after the decimal place.
- Unit of consumption display: CF

Consumption value Cubic Meters

- 5/8", 3/4" and 1", 9-digit display with 4 digits after the decimal place.
- 1-1/2" and 2", 9-digit display with 3 digits after the decimal place.
- Unit of consumption display: m^3

Consumption value US Gallons

- 5/8", 3/4" and 1", 9-digit display with 2 digits after the decimal place.
- 1-1/2" and 2", 9-digit display with 1 digits after the decimal place.
- Unit of consumption display: Gal

Overrun event

In the event of an overrun, all leading zeros are displayed in the consumption display (display 00000.0000, 000000.000, 0000000.00 or 00000000.0). The actual consumption is fully recorded in the internal memory and can be retrieved via the NFC interface.

Caution

In the case of exceeding the max. overload flowrate (Q4m), the flowrate display is deactivated to protect the measuring instrument (set to zero). While the flowrate is exceeded, the consumption progress is not registered. The exceeded overload is stored a an "Alarm or error message" in the data logger with details of the date and length of exceedance.

Alarms and Error Messages

Error Code on Display	Description
SF01	Leakage
SF02	Installed backwards
SF03, Err7, Info Code, or Battery Symbol	Battery warning
SF04	Meter oversized
SF05 or 'FOR'	Meter undersized
SF06	Burst
SF07, 'DRY', or Info Code	Meter dry
SF08	Frost warning
SF09, or Info Code	Reverse flow
SF10	Meter blocked
tOR, or Info Code	Temperature out of range
FOR, or Info Code	Overload
ErrX, or Info Code	Device error
AIR, or Info Code	Air bubbles in the line

Display code	Meaning	Brief explanation and recommended check
SF01	Leakage	Continuous low flow did not return to zero for the configured detection period. This usually indicates a downstream leak. Check fixtures, irrigation, service lines, and customer-side plumbing for unintended flow.
SF02	Installed backwards	Reverse-flow volume exceeded forward-flow volume for enough significant hours to indicate that the meter or piping may be installed in the wrong direction. Verify the meter flow arrow and service-line direction.
SF03 / Err7 / battery symbol	Battery warning	The meter has detected low battery capacity or voltage. A warning means the meter may still operate, but service should be scheduled soon. Err7 means the battery is empty and the device is out of order, requiring immediate service or replacement.
SF04	Meter oversized	The meter has remained in very low flow ranges for an extended period. The installed meter may be larger than necessary. Review actual demand and consider a smaller meter.
SF05 / FOR	Meter undersized	The meter has operated at unusually high flow for the configured period, suggesting it may be too small for the application. Confirm peak demand and consider a larger meter. FOR can also independently mean flow is outside the valid measuring range.
SF06	Burst	Very high flow continued long enough to meet the burst-detection threshold. Inspect promptly for a broken pipe, open line, major leak, or other uncontrolled water use.
SF07 / drY	Meter dry	The ultrasonic system detected no water in the measuring tube for the configured period. Confirm that the line is pressurized, valves are open, and the meter is full. If the tube is known to be full and the message remains, an ultrasonic sensor problem may be present.
SF08	Frost warning	Water temperature remained near freezing for the configured period. Protect the meter and piping from freezing and inspect for exposure to cold conditions.
SF09	Reverse flow / backflow	Flow repeatedly or continuously occurred in the reverse direction. Check installation direction, backflow-prevention devices, pressure conditions, and piping for a condition forcing water backward through the meter.
SF10	No consumption / meter blocked	The meter detected no flow for a long period. The user guide calls this NoConsumption, formerly blockage. Confirm whether zero use is expected; otherwise check for closed valves, a blocked line, inactive service, or another condition preventing flow.
tOR	Temperature out of range	The measured water temperature is outside the meter's valid operating range. Verify water temperature and installation conditions. The warning normally clears when temperature returns to the valid range.
FOR	Flow out of range / overload	Instantaneous flow exceeds the meter's valid measuring range. Reduce flow if possible and verify that the meter is correctly sized. Continued overload can prevent reliable measurement.
ErrX	Device error	An internal device error is present; X identifies the specific error. Err5 indicates lost accumulated data, Err6 indicates an ultrasonic measurement/TDC error, and Err7 indicates an empty battery. These conditions generally require meter service or replacement.
AIR	Air bubbles in the line	Air bubbles are temporarily interrupting the ultrasonic signal. Vent or flush the line, keep the meter completely filled with water, and check for air entering the piping. The message normally clears after stable, bubble-free flow returns.

MODEL			ZSUR01	ZSUR02	ZSUR03	ZSUR07	ZSUR09	ZSUR12
SIZE			5/8 x 1/2	5/8 x 3/4	3/4" Short	1”	1-1/2” Flanged	2” Flanged
Nominal diameter	DN	Inches	5/8	5/8	3/4	1	1-1/2	2
Length	L	Inches	7 1/2	7 1/2	7 1/2	10 3/4	13	17
Height H1	H1	Inches	2 3/16	2 3/16	2 3/16	2 1/4	2 1/2	2 1/2
Height H	H	Inches	2 15/16	2 15/16	2 15/16	3 1/16	4 1/8	4 1/2
Width	B	Inches	3 9/16	3 9/16	3 9/16	4 1/4	5 1/2	6
Number of bolts per flange	—-	Pcs.	—-	—-	—-	—-	2	2
Bolt size	—-	Inches	—-	—-	—-	—-	5/8	5/8
Weight approx.	—-	Pounds	1.6	1.8	1.8	2.6	9	11