saya
Smart Water Management

SAYA SMART WATER MANAGEMENT

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1 BriefIntroduction

*ThankyouforpurchasingtheSAYAWATER MANAGEMENTSYTEM.**Saya'sTechnologySAVESMONEYPROTECTS PROPERTY, and FOSTERS PEACE OF MIND by providing real time control of water systems, to MONITOR FLOW and PREVENT DAMAGE CAUSED BYLEAKS.***

Let's connect your life!!

Package Contains:

- SAYA Ultrasonic Smart meter with remote shut-offvalve
- Smart WirelessGateway
- Options: Pressure sensor, Temperature sensor, Floodsensor

2 SAYA SolutionHighlights

The SAYA system comes packaged with water detecting flood sensors, a smart ultrasonic flow meter with remote shut-off valve and a wireless gateway that can send analytics data to a mobile device or a dashboard.

The key features are

- Smart water Management and Consumptiontracking
- Scan for anomalies, pinpoint leaks and failures, send instant actionable alerts and shutoff the mainline.
- Temperature sensor for freezeprotection
- Detailed daily, weekly, monthly and yearly consumptionreports
- Pressure sensor to detect pipe burst or sudden loss of pressure due toleak.
- Analytics and Riskmanagement

2.1 SAYA Meter Features

- TheSAYASmartmeterisatechnologicallyadvancedsolutionwithintegratedtemperaturesensor,pressuresensor and ultrasonic flowsensor.
- The meter uses ultrasonic sensing to measure the water flowing through the pipe with high degree of precision.It also measures the pressure and temperature of the water. The meter sends this data to a Gateway for processing.
- The SAYA Ultrasonic smart meter integrates measurement, display, valve control and LORA wireless communication for longrange.
- The meter adopts micro-power technology to achieve accurate measurement with a minimum flow of $0.01m^3/h$

- Saya meter can support multi-angle installation and minimize the pipe pressureloss.

3 Technical Details

3.1 Basic technicaldetails

Parameter	Performance
Diameter (mm)	1 inch
Q3/Q1	R250
Pressure Loss	Δp40
Measured Medium	water or homogeneous liquid * **Pipes must be full with measured medium.**
Accuracy	Class 2 (Class B)
Maximum Working Pressure	232 PSI
Work Environment	5℃～+55℃, ≤100% RH
Temperature Grade	T50
Sensitivity of Upstream Flow Field	U10
Sensitivity of Downstream Flow Field	D5
Climatic and Mechanical Environmental Grades	B
EMC Grade	E1
Keypad	magnetic induction key
LCD	LCD 8 digits + prompt
Menu Contents	instantaneous flow(m^3/h), cumulative flow(gallons), screen detection, meter address, cumulative working time(h), date(yy-mm-dd), software version
Display Range	cumulative flow: $0m^3$ ~ $+99999.999m^3$
Communication	
	Wireless Interface: modulation mode: LoRa frequency: 910MHZ-920MHZ transmission distance≧3000m based on CJ/T 188 self-defined protocol

Power Supply	1. External 5V powersupply 2. One ER26500 battery is used as the backup power supply, DC3.6V (for flow measurement only)
Power Consumption	＜0.2mW
Waterproof Rate	IP68
Storage Temperature	-25℃~ +55℃
Cable Length	1.0m
Installation Position	inflow pipe

Table 3-1 Technical Details

3.2 Flow Parameters

Diameter	**Permanent Q_3 （m^3/h）**	**Transitional Q_2 （m^3/h）**	**Minimum Q_1 （m^3/h）**	**Overload Q_4 （m^3/h）**
1 inch	6.3	0.04	0.025	7.875

Table 3-2 Flow Parameters

4 OverallDimensions

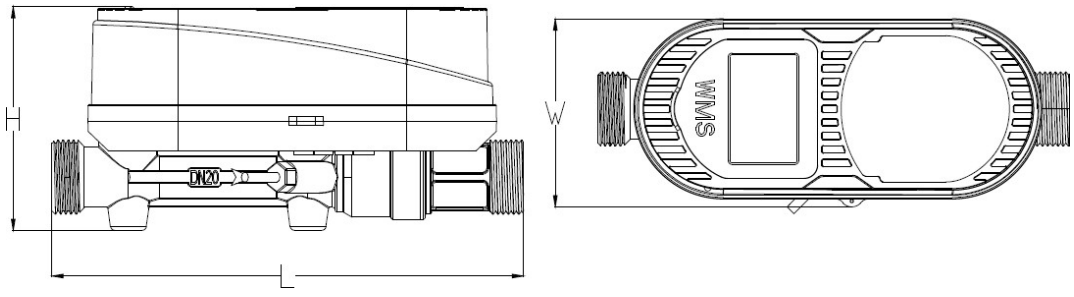

Figure 4-1 Overall Dimensions

Diameter(mm)	**Thread**	**L (mm)**	**W (mm)**	**H (mm)**
1 inch	G1¼B	220	83.5	103

Table 4-1 Overall Dimensions

5 OperationInstructions

All relevant information for the customer will be available on the mobile app and dashboard

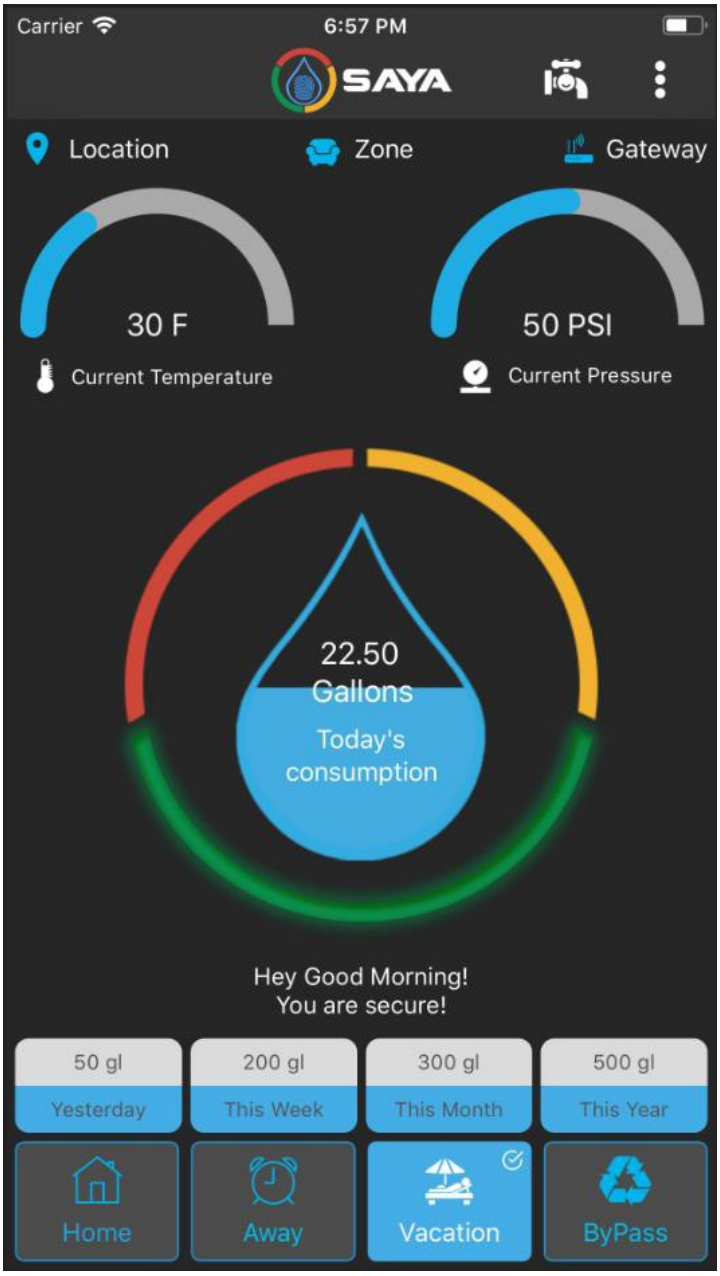

Figure 5-1 Mobile App and Dashboard

6 Installation andConnection

6.1 Installation and ConnectionRequirements

- ☐ Install the meter in strict accordance with the requirements. Strictly forbidden to self-removemeter.
- ☐ Before installing the water meter, remove dirt and other rubbish in pipeline to avoid malfunction of watermeter.
- ☐ Leave enough space for meter and connectorsinstallation.

☐ To ensure the measurement accuracy, the reserved length space is the following. In the front of meter, the length space is over 10 times of diameter. Behind meter, the length space is over 5 times of diameter. Avoid the interference from elbow pipe, tee, cone pipeandpump.Ifthereisareduceddiameterpipeinstalledbeforemeter,thereservedlengthspacewillbeover15timesofdiameter; if a 90° elbow, the length must be 20 times of diameter; if a half-opening valve, the space is over 50 times ofdiameter.

*D=diameter L_F= the length in the front of meter L_B=the length behind meter	
Special Case	**Reserved Pipe Length**
usual (normal installation)	L_F> 10D
	L_B> 5D
a reduced diameter pipe in the front of meter	L_F> 15D
a 90° elbow in the front of meter	L_F> 20D
a half-opening valve in the front of meter	L_F> 50D

Table 6-1 Special Cases and Reserved Pipe Length

- ☐ Avoid damage to the water meter caused by impact or vibration of the meter installation environment, and avoid damage caused by excessive stress from pipes and fittings. If necessary, please install the water meter on the base orbracket.
- ☐ Prevent extreme water temperature, extreme temperature, and external environment corrosion to water meterdamage.
- ☐ Avoid cavitation, surge and waterhammer.

6.2 MeterInstallation

- ➢ The installed pipe must be filled with water. Install the meter on a vertical pipe in which the liquid flows upwards or diagonally upwards.Ifnot,selectahorizontalpipe.TrytoAVOIDinstallingthemeterinaverticalpipewiththeliquidflowingdownwardsor diagonallydownwards.
- ➢ AVOID installing meter at the highest point of pipeline to prevent the air bubbles accumulated and interfere withmeasurement.

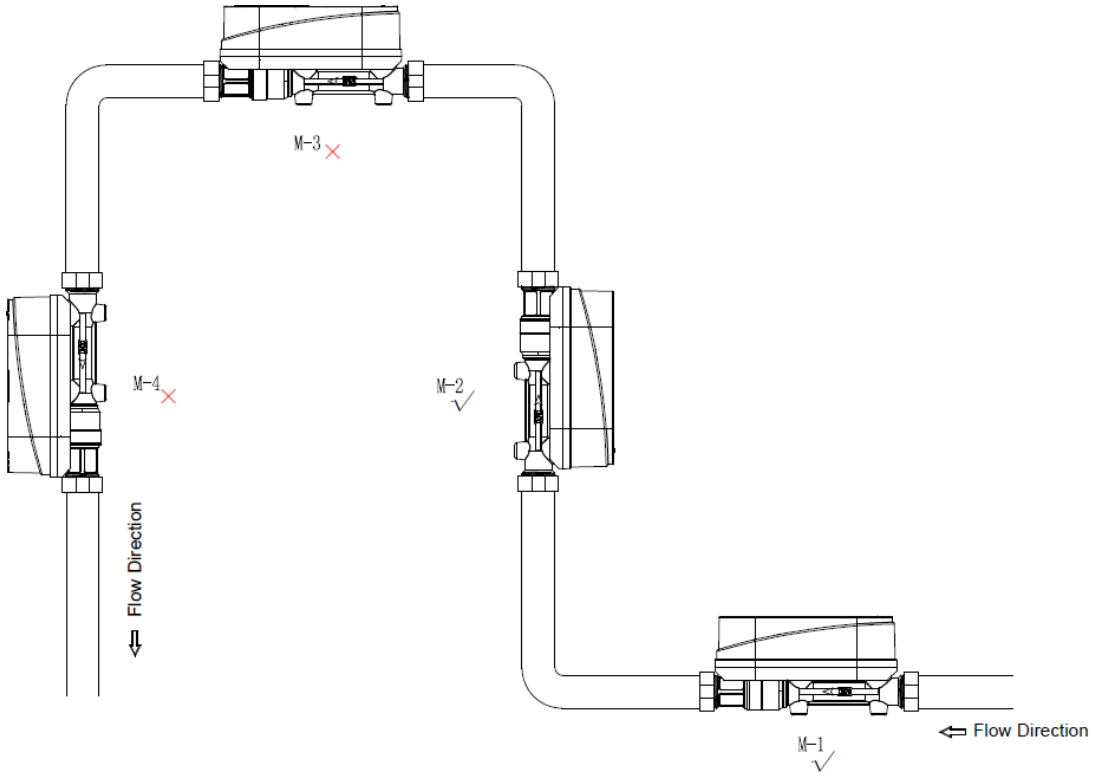

Figure 6-1 Installation Method

- Reserve a space at the water pipe for meterinstallation.

Figure 6-2 Meter Installation (1)

- Concentrically align meter with pipe. Use a wrench to connect the pipe blade to meter thread and tightenit.

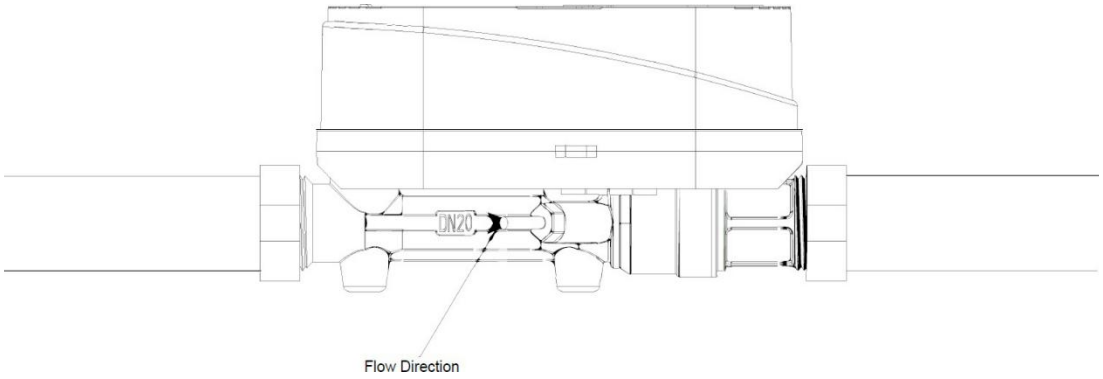

Figure 6-3 Meter Installation (2)

7 Calibration

It conforms to *NCWM and AWWA Cold Water Meter Calibration Regulations*.
NTEP CC: 19-018
NSF 61
FCC

8 Troubleshooting

No.	Malfunction	Description	Solution	Notes
1	Low Voltage	LCDdisplays	Please change a new battery.	
2	Reverse Flow	LCD displays a negative number	Install meter in right direction.	Please send meter back to factory if this problem can’tbe solved in this way.
3	Install Meter Downstream	(1) abnormaldata (2) datajump disorderly	Install meter according to instructions.	
	Insufficient Reserved Place in the Front of/Behind the Meter			
	Great Bend in the Front of/Behind the Meter			
	The Pipe Diameter Changes Greatly in the Front of/Behind the Meter			
4		LCD displays flow but without temperature		Do not dismantle without permission. Please return meter to factory for settlement.

Table 8-1 Troubleshooting

9 PartsList

No.	Item	Unit	Quantity	Notes
1	Water Meter	piece	1	
2	Product Manual	piece	1	
3	CERTIFICATION & Warranty Card	piece	1	
4	Sealing Ring	piece	2	
5	Connector Screw	piece	2	optional
6	Connector Nut	piece	2	optional

Table 9-1 Parts List

10 Transportation andStorage

- Keep meter in originalpackage
- Store in non-corrosive, 5 ° C - 40 ° Cenvironment.
- Keep the stacking height LESS THAN 5cartons.

11 Disclaimer

- This meter conforms to Class E1 (for residential, commercial, light industrial environment) and Class B (installedindoors).
- This manual does not contain any clear or implied warranties. iConnectZone d/b/a SAYA holds all rights to make adjustments and amendments on this manual. Manual is based on actualproducts.
- Iconnectzone d/b/a SAYA can accept NO liability resulting from the improper use or installation of thisproduct.
- iConnectzone Inc d/b/a SAYA can accept NO liability if the sealing lead is destroyed orincomplete.
- iConnectzone Inc d/b/a SAYA can accept NO liability except meter malfunction and related liability (including but not limited to the liability of metering disputes caused by water metermalfunction).

FCC STATEMENT :

This device complies with Part 15 of the FCC Rules. Operation is subject to the followingtwo conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that maycause undesired operation.
Warning: Changes or modifications not expressly approved by the party responsible forcompliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class Bdigital device, pursuant to Part 15 of the FCC Rules. These limits are designed to providereasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installedand used in accordance with the instructions, may cause harmful interference to radiocommunications. However, there is no guarantee that interference will not occur in aparticular installation. If this equipment does cause harmful interference to radio ortelevision reception, which can be determined by turning the equipment off and on, theuser 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.

FCC Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body