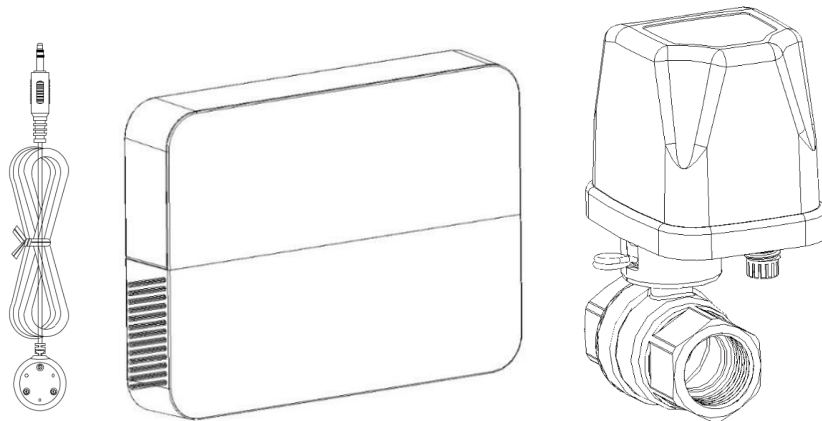


# OPAL

## User Manual

### LEAK STOP SYSTEM



#### Dear Customer

Thank you for choosing our product. Please read this manual carefully before installation and operation. It is intended for professionals responsible for installation and maintenance. If you encounter any issues with the product, please contact your local customer service representative.

*Note: Product specifications may change without prior notice.*

## 1. System composition

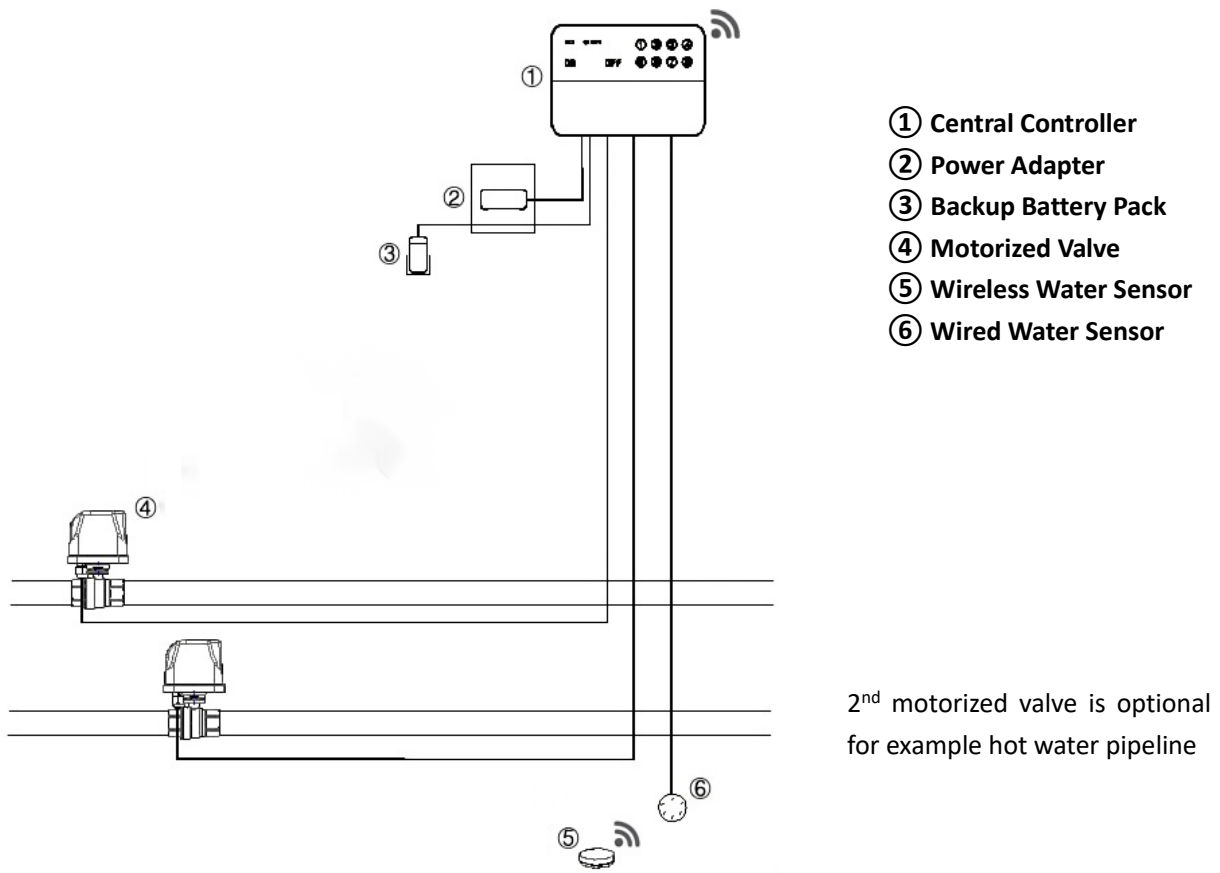


Figure 1

### Notes:

- Up to 8 wireless sensors per controller
- Up to 4 wired sensors per controller (Up to 32 wired sensors by wire splitter connection)
- Supports 2 motorized valves per controller (Up to 4 motorized valves by wire splitter connection)
- Each wireless sensor can pair with only one controller
- Each smart gateway can connect to only one controller (Gateway is an optional device for Wifi connection, not included in this package)

## 2. Application Fields

Common household leaks may arise from toilets, faucets, washing machines, or external sources such as roof leaks or upstairs plumbing. Even minor leaks can cause major damage if unnoticed.

Leak Stop System provides 24/7 automated protection for your home.

### 3. Technical features

- RF wireless communication for wireless sensor
- Wireless sensor powered by CR2477 battery (battery life: up to 10 years)
- Manual valve control available by convenient disassembly and assembly of electric actuator
- CE certified; RoHS compliant
- Central controller & valve powered by DC12V
- Backup battery for emergency power up to 3 weeks
- Low battery alarm
- Brass full-bore ball valve 3/4"
- Operating temperature: 0–95 °C (water)
- Action time: <15 seconds
- Protection levels:
  - Controller: IP44
  - Wireless Sensor: IPX5
  - Wired Sensor: IP66

### 4. Product size

#### 4.1. Central controller:

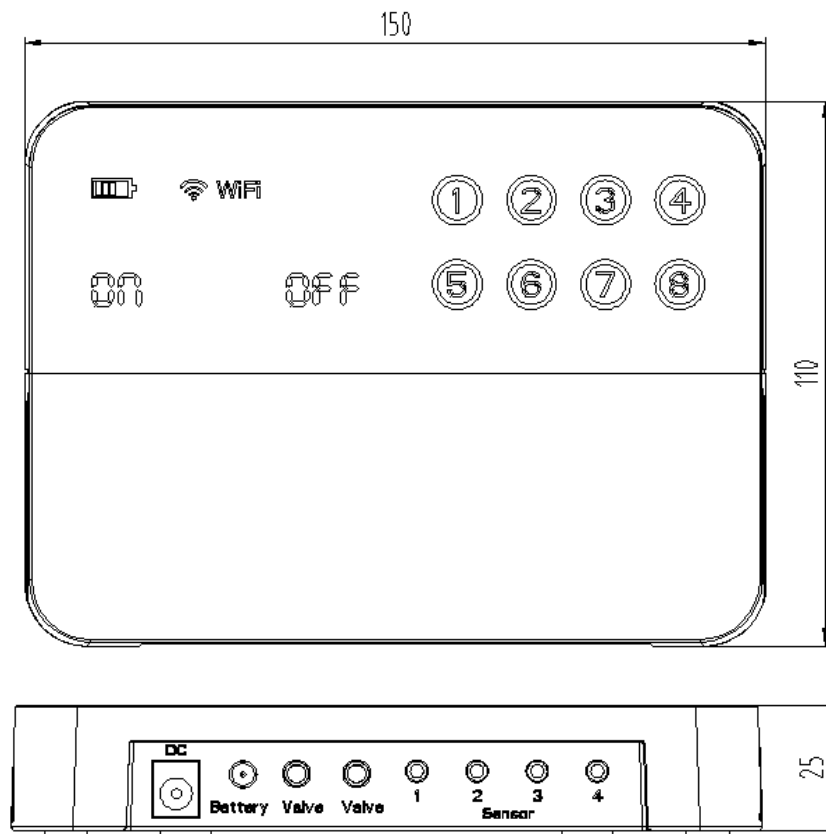


Figure 2

**4.2. Wireless water sensor:**

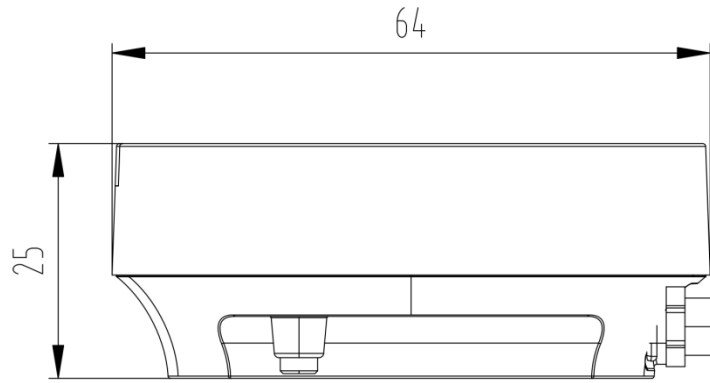


Figure 3

**4.3. Wired water sensor**

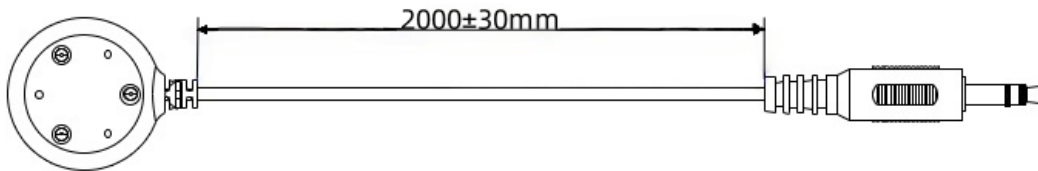


Figure 4

**4.4. Motorized valve:**

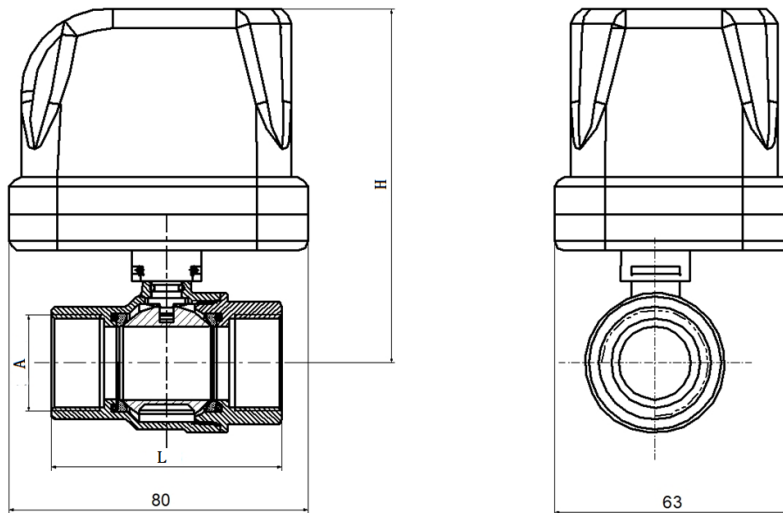


Figure 5

No.	Size	A	L(mm)	H(mm)
1	DN15	G1/2"	58.3	98
2	DN20	G3/4"	63.6	102
3	DN25	G1"	73.1	107

Table 1

## 5. Installation Guideline:

The central controller must be installed indoors, within 1.5 meters of an AC power outlet. It must remain continuously powered; otherwise, the system will not operate correctly.

The motorized valve should be installed on a dry, frost-protected indoor main water supply line. It is typically placed after the water meter and shut-off valve, but before the water filter. The valve can be installed in either a horizontal or vertical position.

### Important:

- **⚠ Shut off the water supply before installation**
- **Do not install this product in a fire protection system.**

### 5.1. Installation of central controller:

Use the provided cardboard template to mark the mounting location. Drill two Ø4 mm holes at the marked positions and insert the screws.

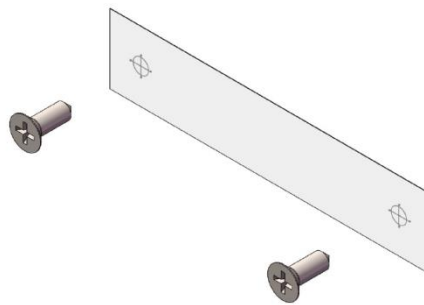


Figure 6

- 1) Mount the central controller onto the screws and ensure it is securely fixed in place to complete the installation.

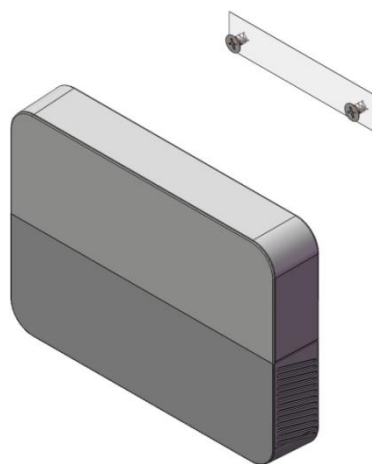


Figure 7

## 5.2. Installation of backup battery pack:

- 1) Drill a  $\varnothing 4$  mm hole at the designated installation location nearby central control and insert the screw.
- 2) Mount the battery tray onto the screw and ensure it is securely fixed.

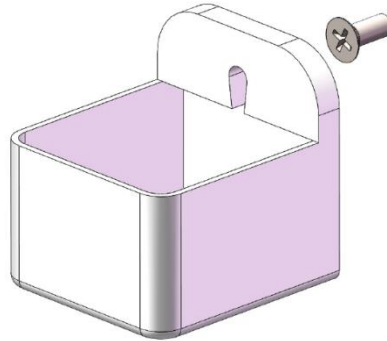


Figure 8

- 3) Insert four AA batteries into the backup battery pack, ensuring correct polarity alignment. Place the backup battery pack onto the tray to complete the installation.

## 5.3. Installation of motorized valve:

- 1) Rotate the actuator locking spring 90 degrees, then remove the actuator from the ball valve.
- 2) Install the valve body onto the main water supply pipeline, ensuring it is properly aligned and securely connected.

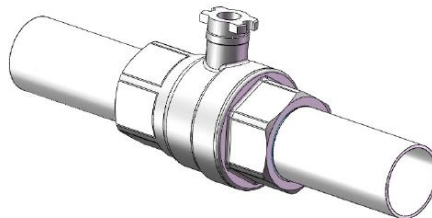


Figure 9

- 3) Move the actuator spring to the 90 ° position; Install the actuator onto the valve body.
- 4) Rotate the retaining ring 90° to lock it in place. Ensure that the actuator and valve body are securely connected to complete the installation.

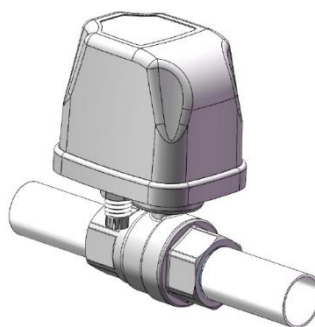


Figure 10

#### 5.4. Central controller wiring:

- 1) Connect the motorized valve to the "Valve" port.
- 2) Connect the backup battery to the "Battery" port.
- 3) Plug the power adapter into the "DC" port.
- 4) Connect the wired water sensor to the "Sensor" port.

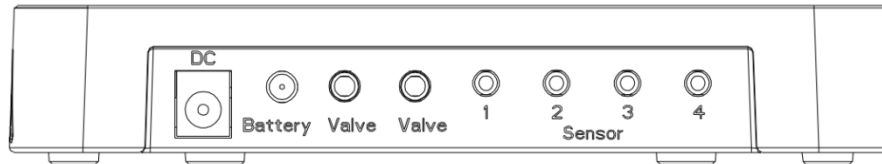


Figure 11

- 5) Plug in the power adapter. The "OFF" red light will remain on.
- 6) Press the "ON/OFF" button to synchronize the status of the central controller with the motorized valve.

**Note:** ⚠ Always connect the backup battery before plugging in the power adapter.

#### 5.5. Installation of wireless water sensor:

- 1) Insert the CR2477 battery into the water sensor (refer to Figure 12). The sensor will automatically pair and connect with the central controller.

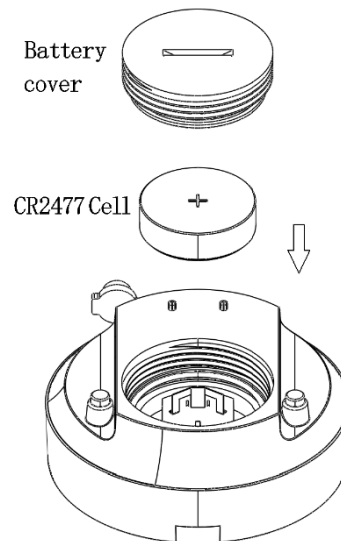


Figure 12

- 2) The red indicator on the wireless water sensor will flash once and then turn off, while the corresponding digital light on the central controller will remain on.
- 3) Position the sensor in the desired monitoring flat floor. Ensure that the contact pin side of the sensor is facing downward and placed directly on the floor.
- 4) The wireless water sensor is now ready for operation.

**Note:** If the wireless water sensor does not pair automatically, please follow the pairing procedure described in section 6.1.1.

## 5.6. Installation of Wired Water Sensor

### Method A

- 1) Insert the Wired Water Sensor into the Central controller (refer to Figure 13)

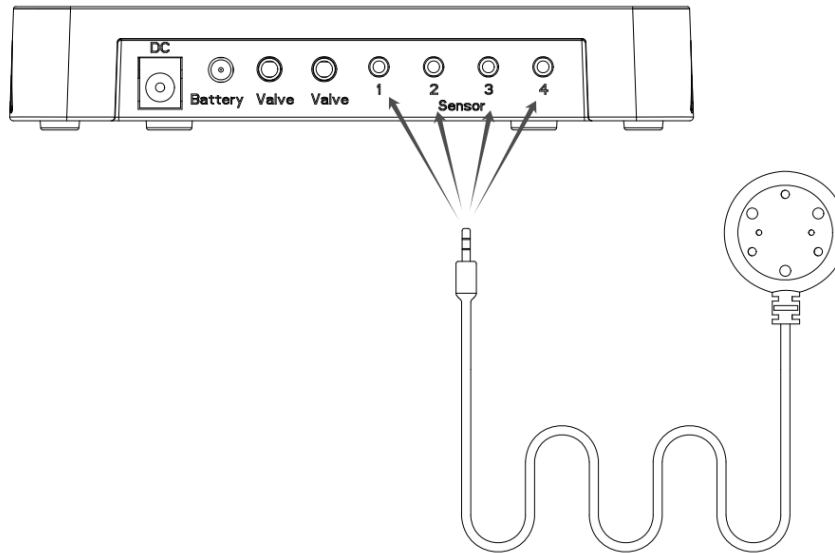


Figure 13

- 2) Position the sensor in the desired monitoring flat floor
- 3) The wired sensor is now ready for operation.

Remark: The wire length can be extended to 50 meters using an extension cord (not included in the package).

### Method B

- 1) Insert the wired sensor into the wireless sensor (refer to Figure 14)

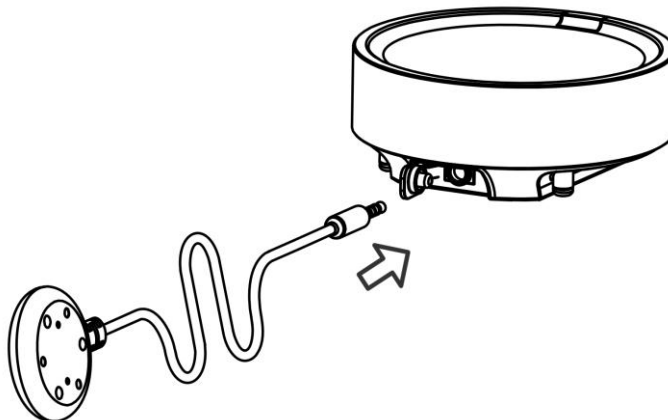


Figure 14

- 2) Position the sensor in the desired monitoring flat floor

- 3) The wired sensor is now ready for operation. Its signal is relayed to the central controller through the wireless water sensor.

## 6. Instructions for use

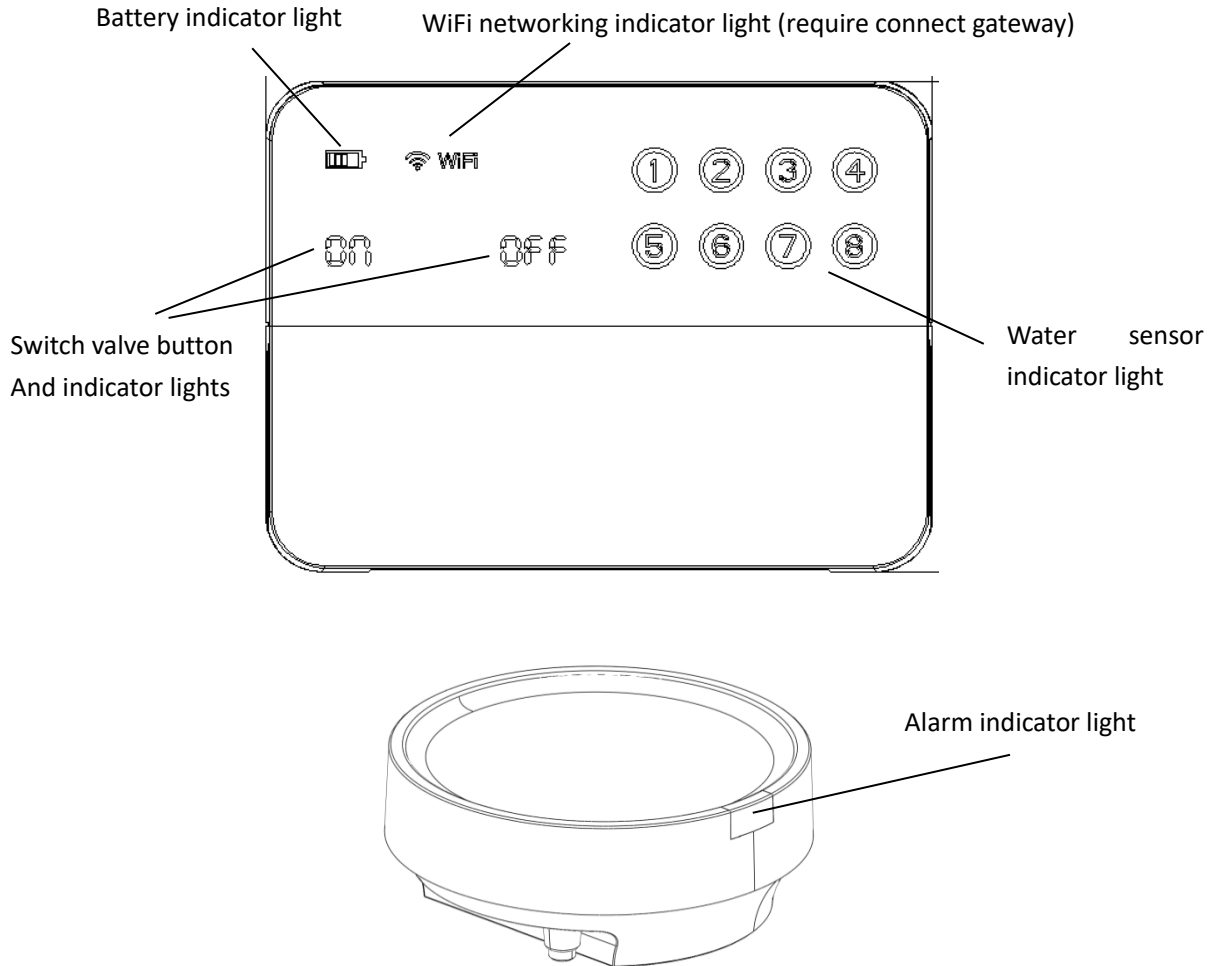


Figure 13

### 6.1. Wireless sensor pairing

#### 6.1.1. Pairing of central controller and wireless sensor:

- 1) With the central controller powered on, press and hold the "OFF" button for 3 seconds. Digital light 1 will remain on while the others turn off. Release the "OFF" button to enter pairing mode.
- 2) Briefly press the "OFF" button to select the desired digital light, then press the "ON" button to confirm. The selected digital light will start flashing.
- 3) Insert the CR20477 battery into the wireless water sensor to be paired (refer to Figure 12). The sensor's indicator light will flash twice and then turn off. After two beeps, the corresponding digital light on the central controller will remain on, confirming successful pairing.

#### 6.1.2. Unpairing the Central Controller from a Wireless Water Sensor:

- 1) With the central controller powered on, press and hold the "OFF" button for 3 seconds. Digital light 1 will remain on while the others turn off. Release the "OFF" button to enter pairing mode.
- 2) Briefly press the "OFF" button to select the digital light corresponding to the sensor you wish to unpair, then press the "ON" button to confirm. The selected digital light will start flashing.
- 3) Wait a few seconds until the digital light turns off, indicating the sensor has been successfully unpaired.

#### **6.2. Manual operation:**

- 1) Press the "ON" button on the central controller. The motorized valve will begin to open, and the green "ON" indicator will flash. Once the valve is fully open, the green light will remain steadily on.
- 2) Press the "OFF" button on the central controller. The motorized valve will begin to close, and the red "OFF" indicator will flash. Once the valve is fully closed, the red light will remain steadily on.

#### **6.3. Automatic valve maintenance:**

To prevent the buildup of debris that may affect valve performance during long-term use, the system includes an automatic maintenance function.

- Default cycle: The valve will automatically open and close once every 30 days from the last time power was connected.
- This helps ensure smooth operation and prolongs the life of the valve.

#### **6.4. Leakage alarm:**

The water sensor activates an alarm when sensing contacts are submerged, indicating water leakage on the floor.

- 1) The corresponding digital indicator on the central controller flashes rapidly, and the buzzer sounds like an alarm. For wireless sensor, the indicator light on the wireless water sensor starts flashing.
- 2) If sensing contacts are submerged in the water for over 20 seconds, the motorized valve will automatically close. The "OFF" indicator on the central controller will flash until the valve is fully closed, then remain steadily red. The buzzer continues to sound, and the sensor's indicator light keeps flashing. (If sensing contacts are not submerged within 20 seconds, the alarm will automatically be disabled).
- 3) After 3 minutes, the wireless sensor's indicator light turns off, the controller's digital indicator continues flashing, and the buzzer alarm stops.
- 4) After resolving the water leakage, clean the sensor, press the "ON" button to reopen the motorized valve, clear the alarm, and return the system to normal operation.

**Note: During the alarm period, you can manually silence the buzzer by pressing the "OFF" button.**

#### **6.5. Low battery alarm:**

- 6.5.1. Low Battery Alarm for wireless sensor. When the battery voltage of the wireless water sensor drops to

≤ 2.2V, a low battery alarm is triggered:

- 1) The red indicator on the sensor flashes 10 times every 3 hours.
- 2) The corresponding digital light on the central controller flashes slowly and continuously.
- 3) The buzzer sounds 10 beeps every 3 hours.

Once the battery is replaced with a new one, the low battery alarm will be automatically cleared.

6.5.2. Low Battery Alarm for Backup Battery. When the system is running on backup battery due to a main power outage, and the backup battery voltage drops below 4V, a low battery alarm is triggered:

- 1) The battery indicator light on the central controller flashes slowly, and the buzzer sounds 10 times every 3 hours.
- 2) Disconnect the power adapter first, then remove the backup battery.
- 3) After inserting a new battery, reconnect the backup battery first to clear the alarm, then plug in the power adapter.

**Note: Be sure to follow the steps carefully and maintain the correct sequence—always connect the backup battery first, then plug in the power adapter.**

## 6.6. Network disconnection alarm:

If the wireless water sensor loses connection with the central controller, a network disconnection alarm will be triggered:

- 1) The corresponding digital light on the central controller turns off.
- 2) The buzzer sounds 10 beeps every 3 hours.
- 3) Once the connection is restored, the alarm will automatically clear.

## 6.7. Factory reset:

6.7.1. Resetting the Central Controller:

- 1) **Disconnect both the main power supply and the backup battery.**
- 2) Press and hold the OFF button. While holding it, reconnect the power supply. After a short beep, all indicator lights will illuminate.
- 3) Release the OFF button. A second beep will sound, and all indicator lights except the OFF light will turn off, indicating that the factory reset was successful.

△ **Notice:** After a factory reset, all wireless sensor and gateway connections must be reconfigured.

## 7. Common troubleshooting

Problem	Troubleshooting	Handle
The central controller emits a rapid alarm sound: "Didi Didi Didi"	The corresponding water sensor light flashes rapidly, and the	Please quickly inspect the leakage point and immediately turn off the motorized valve if necessary

	corresponding location may be leaking water	Refer to 6.4
	The wireless water sensor indicator light is always on	The product may have malfunctioned, please contact customer service for confirmation.
The central controller emits a gentle buzzing sound: 'Drip drip drip'	The wireless water indicator light flashes slowly	The water sensor has a low battery, please replace the battery in a timely manner. Refer to 6.5.1
	The wireless sensor indicator light is off	The communication network between the water sensor and the central controller is poor. Please re-pairing. Refer to 6.1.1
	The wireless sensor indicator light is always on	The product may have malfunctioned, please contact customer service for confirmation.
	Power light flashing	The backup battery is low. Please replace it promptly to ensure uninterrupted system operation. Refer to 6.5.2
The wireless sensor light flashes rapidly and the motorized valve is closed	Check for water leakage or electrical current leakage at the corresponding location.	After resolving the water leakage, press the "ON" button to reopen the motorized valve. For detailed instructions, refer to section 6.4.
All lights on the central controller turn off	Check the power supply, power outage or plug drop	Restore power supply again
	If the power supply is normal	The product may have malfunctioned, please contact customer service for confirmation.

Table 2