control solutions

TERACOM



Water Leak Detector with Digital Output
TSF400-0

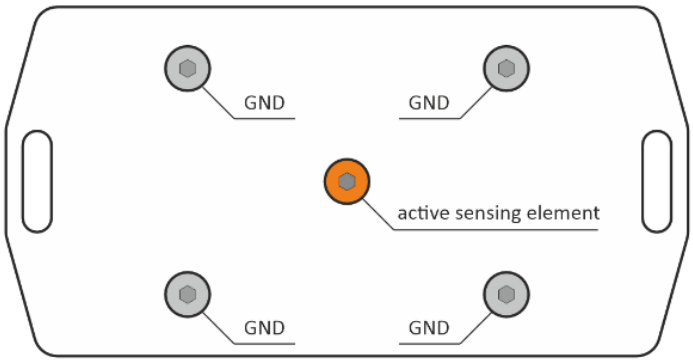
USER MANUAL

1. Short description

The TSF400-0 is a waterproof water-leak detector designed for early detection of unwanted water presence in technical and industrial environments.
It is suitable for installation on floors, in drainage trays, or inside equipment enclosures where water ingress must be detected quickly and reliably.
The detector provides an N-channel open-drain digital output, allowing straightforward integration with PLCs, controllers, and building automation systems.
The device is capable of responding to very small amounts of water, including slight floor wetting or residual moisture, such as after cleaning.
The TSF400-0 is intended for continuous operation in applications where reliable water-leak detection is required to protect equipment and infrastructure.

2. Detection principle and electrode layout

The bottom surface of the TSF400-0 enclosure contains five electrodes used for water detection. The central electrode is the active sensing element, while the four surrounding electrodes are connected to ground.



When the device is placed on the floor, the electrodes come into contact with the surface. The presence of water forms a conductive path between the central electrode and any of the surrounding ground electrodes, which triggers the detector and changes the output state.
The electrode arrangement allows reliable detection of water from any direction around the device.

3. Features

- N-channel open-drain digital output
- Wide operating voltage range (4.5 to 26 VDC)
- LED indicator for device status
- Compact waterproof enclosure

4. Applications

- Data centers, server rooms, and telecom infrastructure
- UPS rooms and battery backup systems
- HVAC systems – drip trays, air-conditioning units, and condensate drainage lines
- Industrial control cabinets and electrical equipment enclosures
- Building Management Systems (BMS) and infrastructure monitoring
- Technical facilities and utility rooms requiring early water-leak detection

5. Specifications

- Physical characteristics

  Dimensions: 88 x 17 x 46 mm
  Weight: 115 g
- Environmental limits

  Operating temperature range: 0 to 50 °C / 32 to 122 °F
  Operating relative humidity range: 10 to 90 %RH (non-condensing)
  Storage temperature range: -20 to 60 °C
  Storage relative humidity range: 10 to 90 %RH (non-condensing)
  Ingress protection: IP65
- Power requirements

  Operating voltage range (including -15/+20% according to IEC 62368-1): 4.5 to 26 VDC
  Current consumption: 5 mA @ 12 VDC
- Output type

  N-channel open-drain, active-LOW
- Output states

  Water absent — output active (LOW)
  Water present — output inactive (OPEN)
- Output ratings

  Maximum output rating: 30 VDC / 100 mA
- Cable length

  3 meters

6. Cable wiring

Signal	Wire color	Description
OUT	White	N-channel open-drain output
GND	Black	Ground
VDD	Red	+ 4.5 to 26 VDC

7. LED indicator

The device status is indicated by a bi-color LED.
LED color:

- Green – normal operation (no water detected)
- Red – water detected (alarm state)
- LED off – no power supply

The LED indication directly reflects the output state of the detector.

8. Installation guidelines

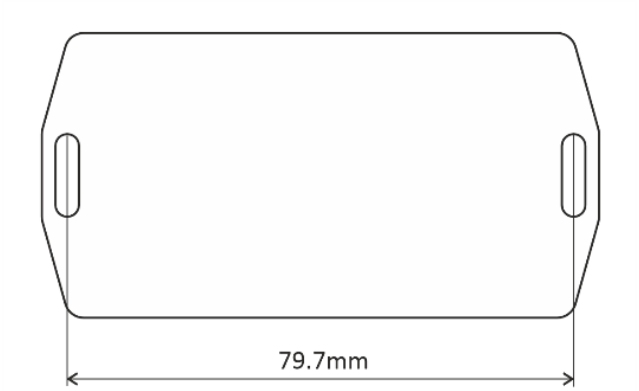
Installation recommendations

- Install the probe at the lowest point where water may accumulate (floor, tray edge, under piping).
- Avoid mounting in locations where the electrodes may remain permanently wet or become contaminated by conductive dust.
- Avoid installation in areas exposed to aggressive chemicals or cleaning agents that may affect the sensing electrodes.
- Detection of de-ionized water may be unreliable and should be verified during commissioning.

- Route the connection cable away from strong electromagnetic sources such as motors, inverters, or power cables.

Functional test
After installation, verify the alarm function using a wet sponge or cloth.

The detector enclosure includes slotted mounting holes that allow secure installation to the floor using suitable screws and wall plugs. The recommended screw diameter is 3 mm, with a center-to-center distance of 79.7 mm between the mounting slots.



9. Output connection guidelines

The OUT signal is an N-channel open-drain output that sinks current when active.
When integrating the detector into a control system, observe the following:

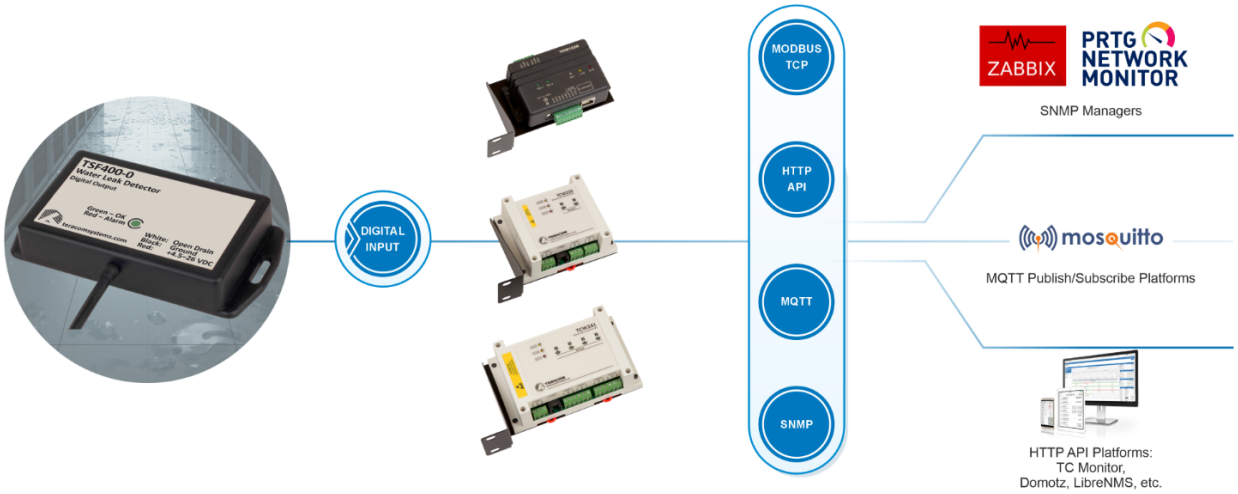
- Connect the OUT wire to a digital input of the controller or PLC.
- Use a pull-up resistor to VDD if the input does not provide one.
- Ensure the controller input and pull-up resistor comply with the maximum output rating (30 VDC / 100 mA).

In noisy industrial environments or when using long cables, shielded cable and proper grounding are recommended.

10. Application example

To help visualize proper detector deployment, the picture below illustrates a typical installation scenario. It shows how the TSF400-0 can be connected and arranged in a real application to ensure reliable leak detection and integration with a monitoring or control system.

This example is for illustration only. Always follow the specific requirements of your project.



11. Recycling

Please recycle all applicable materials in accordance with local regulations.



Do not dispose of the device as regular household waste.
Electronic components should be properly recycled to minimize environmental impact.

