

Water Leakage Detector

AD-AS-1AM

Instruction Manual

We thank you for using our Model AD-AS-1AM Water Leakage Detector.
Be sure to read the following instructions before installing, adjusting and using the detector.

Cautions in installing and handling the detector

- Use the detector in a working environment with a temperature range between -10°C, and 50°C and a humidity range between 35%RH and 85%RH.
- Avoid using the detector near sources of vibration, harmful gas, or strong electromagnetic induction.
- For connection to the power supply, avoid using receptacles (sockets); use fixed wiring connection.
- Use our products for sensors and break detection terminals (excepting AD-LS sensors and ZT-L2 products).
- Be sure to affix the insulating sheet to the terminal block, fix the outer cover and check detector operation.
- Smoke or abnormal sound occurrence with the power indication LED turned off indicates detector failure. Switch off the main power breaker, stop using the detector and contact us.

Maintenance and inspection

- Check at least once every six months to confirm that detector is operating normally. At the same time, check to see that screws on different parts of the detector are tightened properly.
- Be careful of water-repellant substances, such as oil, adhering to sensor surface and interior; this may interfere with correct detector operation.
- If a sensor is stained with dirty water, replace it with a new one.

Guarantee

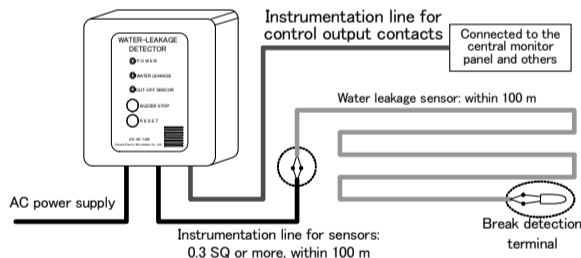
This detector is delivered to customers after strict quality control and inspection. Should it fail under normal usage, we will repair it free of charge or replace it during the warranty period (within one year of delivery).
* Detector failure due to natural disaster, fire, unauthorized repair, dropping or damage after purchase is not covered by the warranty.
Ask place of purchase for the guarantee document.
When asking for the guarantee document, provide detector serial number (indicated on label on right-side face of the right-side terminal block).

If you have any questions about handling the detector, contact:

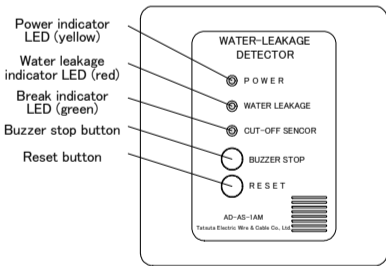
Handling Method

Typical Configuration of Water Leakage Detection System

* Using vinyl tape or similar material, insulate the connections of water leakage sensor break detection terminals and instrumentation wires (it is recommended that they be housed in a box.), and fix them at a location above the floor to keep them from getting wet.



Operating the Detector and Checking Detector Operations



Checking power-on

Power-on causes the power indicator LED (yellow) to light.

Checking water leakage detection function

① Checking water leakage detection test function:

Pressing buzzer stop and reset buttons simultaneously for three seconds or more causes output of simulated water leakage alarms (water leakage indicator LED flashing output, buzzer sounding output, and water leakage alarm contact output).

② Checking water leakage detection function with water:

By allowing tap water to drip on the sensor, you can check how well the sensor detects water leakage. Wipe off water with dry cloth after check to restore sensor to operational state for water leakage detection.

Checking of the break detection function

① Checking break detection test function:

You can check break detection function without removing break detection terminal or sensor. Pressing buzzer stop and reset buttons simultaneously for three seconds or more causes output of simulated water leakage alarm; pressing both of them for three seconds after this causes output of simulated break alarms (break indicator LED (green) flashing output; buzzer sounding output; break alarm contact output).

Note: Break alarm is also output when the break detection function is "not activated."

② Checking actual break detection function:

Remove outer cover, insulating sheet and the terminals connected to sensor (I) on the terminal block to check actual break detection function.
After checking, reattach terminals, insulating sheet and outer cover.

Buzzer stop button

If this button is pushed while buzzer is sounding, buzzer stops sounding until next alarm.

Reset button

① If reset button is pushed while the alarm is being held with alarm hold setting activated, alarm output is reset.

② If reset button is pushed with alarm hold setting not activated or under normal conditions, lamp test can be performed.

All LEDs are lit and buzzer is sounds (with monotonous tone). Under this condition, control output contacts do not operate.

<<<Important safety instructions>>>

Erroneous operation of this water leakage detector not complying with the warning labels or the following warnings may lead to fatal accident, serious injury, electric shock, fire, or detector failure.

Warnings

Strict Prohibitions

- Never modify or disassemble the detector.
 - Observe ratings of power supply voltage and contact capacity.
 - Allow only persons responsible for handling this product to perform installation work on it or to adjust or inspect it with the outer cover opened.
 - After the detector is installed, do not leave it with the cover open, except for inspection and maintenance purposes.
 - Do not touch any internal component with wet hands.
 - When performing maintenance on the product, avoid using organic solvent. Use dry wiping rags or a small amount of diluted neutral detergent.
- Note: Be careful not to allow detergent solution to remain on the sensor.

Checkpoints

- Check detector supply voltage and rated voltage before installing.
- When installing and electrically connecting the detector, follow the instructions in the instruction manual.
- When inspecting and maintaining the detector, follow the instructions in the instruction manual.
- When using control output contacts, check the contact rated load in the instruction manual.

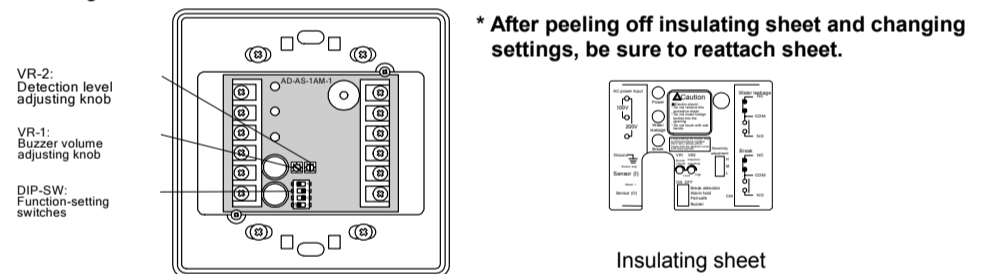
Do not install the detector in the following locations!

- Locations easily accessible to the general public
- Locations close to sources of vibration, organic gas or strong electromagnetic induction.
- Locations with much waste and dust
- Locations where there is possibility of water leakage and temperature and humidity are high

Detector Specification

Rated voltage	AC 100 V to 240 V (common to 50 Hz/60 Hz); voltage fluctuation: within ±10%	
Sensor interelectrode voltage	Break detection terminal not provided: AC 2.8 V or less Break detection terminal provided: AC 1.5 V or less	
Interelectrode short-circuit current	AC 0.13 mA or less	
Power consumption	3 VA or less	
Working ambient temperature and humidity	-10°C to 50°C (no icing); 35%RH to 85%RH (no condensation)	
Outside dimensions, weight and color	W120 × H124 × D55 mm; 300 g ± 20 g; ivory white	
Number of sensor circuits	One	
Water leakage detection and recovery levels	Factory default setting: Break detection function "activated" Detection level: 5.0 kΩ ¹ /recovery level: 6.7 kΩ ± 20% *1: Combined resistance of 6.7 kΩ for an isolated sensor and 20 kΩ for a break detection terminal (ZT-2) * Sensor with break detection terminal or break detection terminal (ZT-1) must be connected.	
Alarm output	Buzzer; water leakage indicator LED (red) flashing; break indicator LED (green) flashing; water leakage alarm contacts (no voltage, 1c); break alarm contacts (no voltage, 1c)	
		Resistive load
	Rated load	Inductive load
	AC 250 V, 6.0 A DC 24 V 6.0 A	AC 250 V 3.0 A DC 24 V 3.0 A
Relay contacts: FTR-LYCA005 according to catalog of Fujitsu Component Limited		

Detector Setting Method



Dip switch (DIP-SW) setting

To select dip switch (DIP-SW) positions, use a thin flat-blade screwdriver to move tiny sliders.

Setting item	Description	Factory default setting	
Break detection setting	Break detection setting activated/not activated	Break detection setting activated	DIP-SW-4 ON
Alarm hold setting	Alarm hold setting activated/not activated	Alarm hold setting not activated	DIP-SW-3 OFF
Fail-safe setting	Fail-safe output activated/not activated	Fail-safe output not activated	DIP-SW-2 OFF
Buzzer sound setting	Buzzer sound setting activated/not activated	Buzzer sound setting activated	DIP-SW-1 ON

* "Alarm hold" denotes function of holding alarm until reset button is pressed.

* "Fail-safe setting" denotes setting to reverse contact logic so that system can judge detector power supply OFF state to be an abnormality. This setting reverses action of N.O. (Normally Open) contacts and N.C. (Normally Close) contacts. Under this setting, power-on causes contacts to operate.

Knob adjustment

Use a thin flat-blade screwdriver to adjust VR-1 and VR-2.

Setting item	Adjustment range	Factory default setting	
Buzzer volume adjustment	Buzzer volume between "low" and "high"	Buzzer volume "high"	VR-1 Clockwise to maximum
Detection level adjustment	2k-5k-14 kΩ ±20%	5.0 kΩ ±20%	VR-2 Middle position

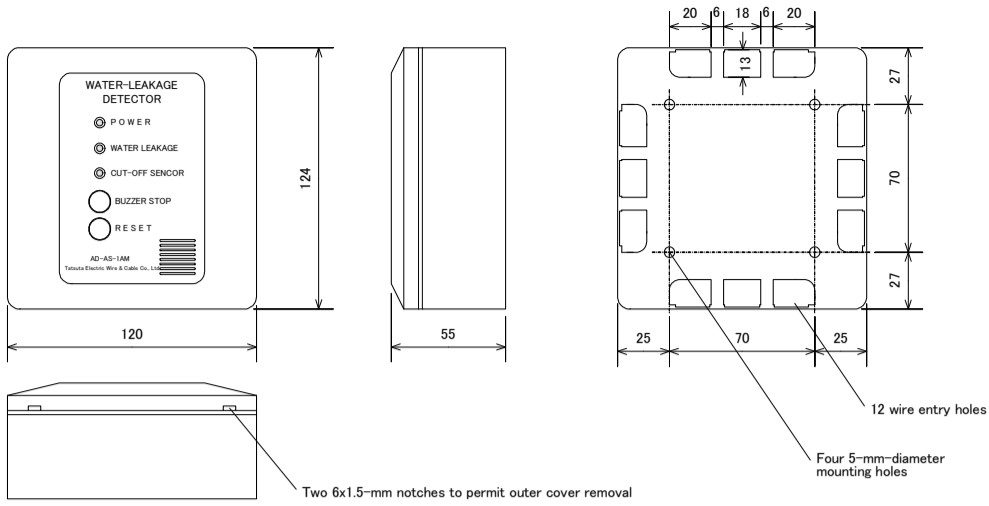
* Factory default setting is value at which water leakage sensor¹ can properly detect the presence of common city water.

*1: Line sensors (AD-S, AD-RS, AD-HS, and FR-AD): within 100 m; point sensor (AD-PA)

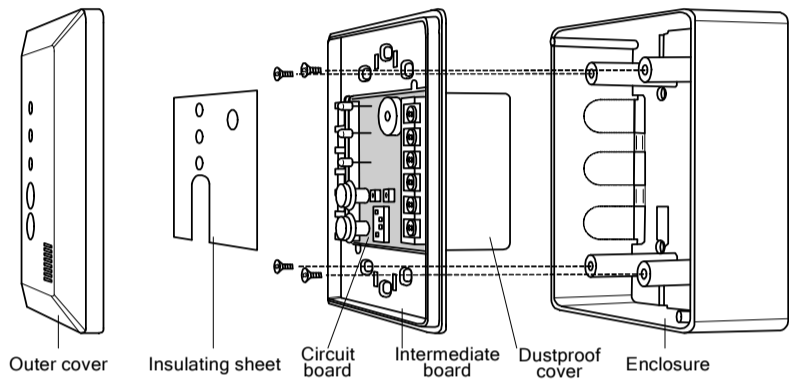
Our suggestions: When detecting a low conductivity liquid or using a low-sensitivity water leakage sensor (such as AD-FH), raise detection level; conversely, when detecting a high conductivity liquid or installing detector in a high-temperature, high-humidity environment, lower detection level.

Water leakage detection/recovery level ±20%	With break detection setting "activated": (Factory default setting)		With break detection setting "not activated"	
	Detection level	Recovery level	Detection level	Recovery level
Adjuster at the minimum setting	2.0 kΩ	2.8 kΩ	2.2 kΩ	3.3 kΩ
	3.0 kΩ	4.2 kΩ	3.5 kΩ	5.3 kΩ
	4.0 kΩ	5.5 kΩ	5.0 kΩ	7.5 kΩ
Adjuster at middle setting (Factory default setting)	5.0 kΩ	6.7 kΩ	6.7 kΩ	10.1 kΩ
	6.0 kΩ	7.8 kΩ	8.6 kΩ	12.9 kΩ
	7.0 kΩ	9.0 kΩ	10.8 kΩ	16.2 kΩ
	8.0 kΩ	10.0 kΩ	13.3 kΩ	20.0 kΩ
Adjuster at maximum setting	9.0 kΩ	11.0 kΩ	16.4 kΩ	24.6 kΩ
	14.0 kΩ	15.6 kΩ	46.7 kΩ	70.0 kΩ

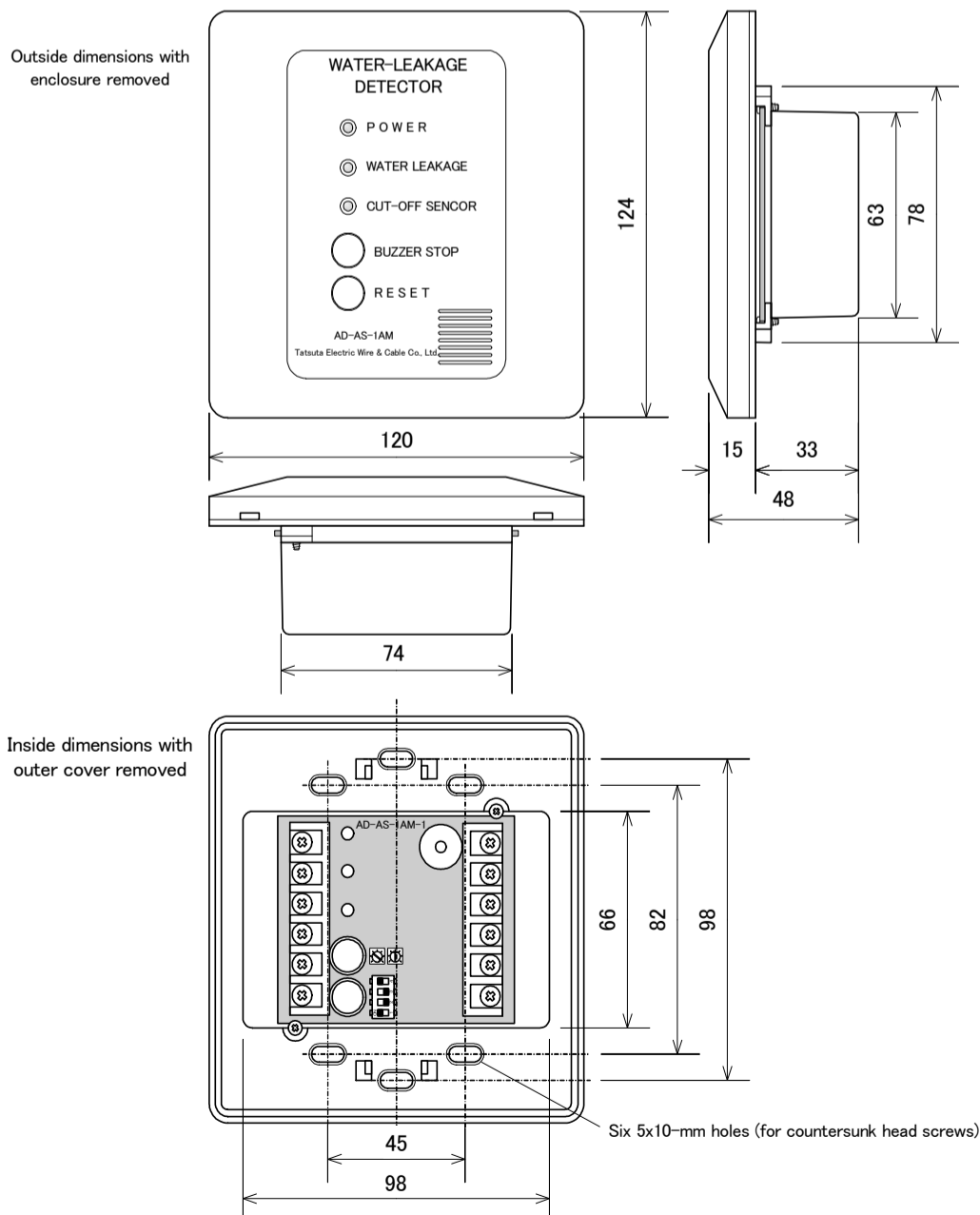
■ Detector Dimensions



■ Schematic Diagram of Detector



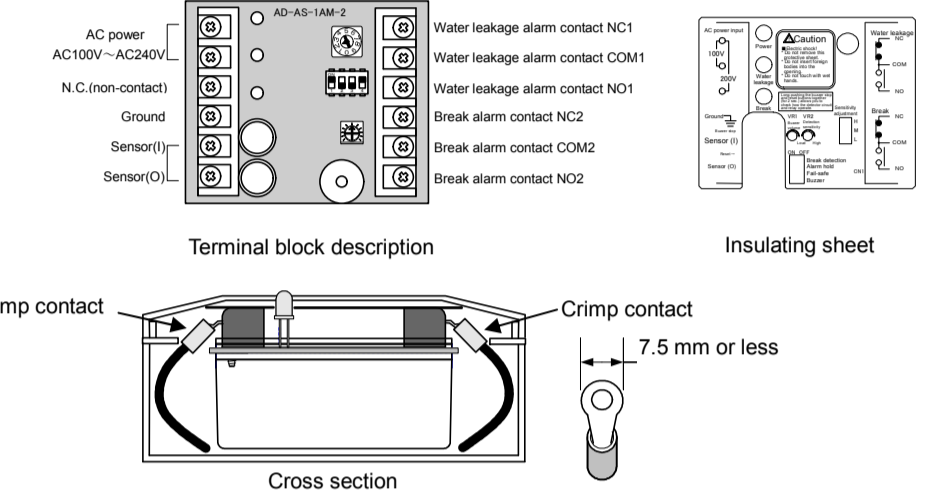
■ Outside Dimensions of Wall-embedded Type



■ Detector Installation Method

* Make sure that the main power breaker is turned OFF and that alarm contact signal lines are open. Follow the procedure below to check detector installation, setting (adjustment) and operations.

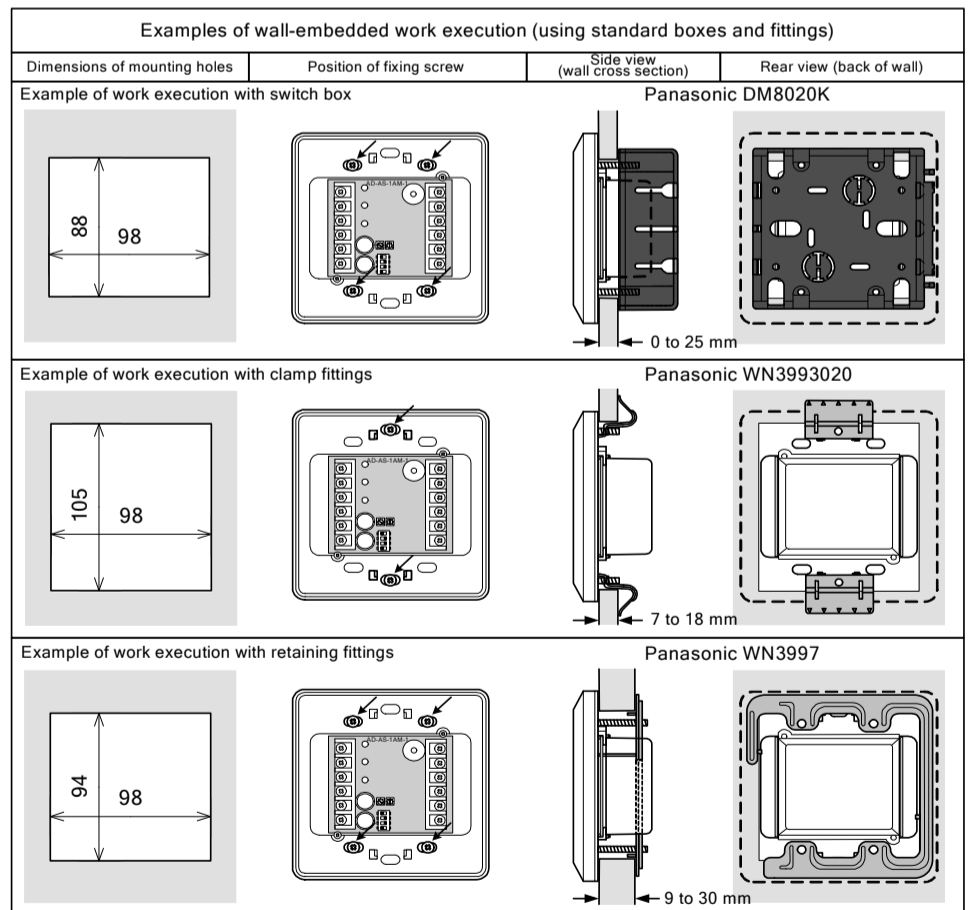
- (1) Installing detecting box
 - ① Remove the outer cover. Using a flat-blade driver or similar tool, open the notches below the outer cover and remove it.
 - ② Remove the intermediate board. Loosen four M4 flat-head screws and remove the intermediate board (with circuit board) from the enclosure.
- * To install a detector in the wall-embedded scheme, refer to: Method of Installing the Wall-embedded Type.
 - ③ Work on the enclosure. Decide wire insertion points and work on the enclosure for inserting wires as need arises.
 - ④ Install the enclosure. Using the mounting holes (four 5-mm-diameter holes) on the back of the enclosure, fix it in place.
- (2) Wiring the power supply, sensor, and alarm contact signal lines.
 - ① Insert wires into the enclosure. Using the back of the wall, wire protectors, or conduits, insert wires into the enclosure.
 - ② Attach crimp contacts to wires. By aligning the intermediate board (with circuit board) on the enclosure, adjust wire lengths.
 - Note 1: Use crimp contacts 7.5 mm or less in diameter for use with an M3 or M4 screw.
 - Note 2: Use crimp pliers matching the crimp contacts and wire size used.
 - ③ Connect wires to the circuit board. Make secure connections according to the "terminal description" as shown below, using a flat-blade screwdriver.
 - To improve noiseproof properties and resistance to static electricity, be sure to make grounding connections.



- (3) Setting (adjustment) and checking
 - ① Checking settings: To change a setting, follow the instructions under: Detector Setting Method.
 - ② Checking of operations: To check operations at time of installation, refer to: Method of Operating Detector and Checking Detector Operations.
- (4) Completion of installation
 - ① Attaching the insulating sheet: Align the line on the insulating sheet to the terminal block and attach the sheet.
 - ② Fitting outer cover: After making sure that LEDs are not bent, attach outer cover.
 - ③ Checking operations after installation: When postponing the operation test due to power supply condition or other situations, remove the outer cover and follow the instructions under: Method of Operating Detector and Checking Detector Operations for Testing.

■ Method of Installing Wall-embedded Type

This detector can be installed in a wall-embedded finish after removal from enclosure. Refer to illustrations below to install detector using standard switch box, clamp fittings and retaining fittings.



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