TS-KS-W1019-0

To: _____

Specification Document

Single-circuit Water Leakage Detector
AD–AS–1AM
(RoHS-directive-compatible)

Date : ( )

<Manufacturer >
System Equipment Division
Electronic Materials & System Equipment Group
TATSUTA Electric Wire & Cable Co., Ltd.

System Equipment Division		
Approved by:	Checked by:	Prepared by:

<<<Important safety instructions>>>

⚠ Warning

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.

☐ 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.

☐ Observe ratings of power supply voltage and contact capacity.
* Application of AC 200 V to the AC 100 V terminal will destroy the detector.

☐ 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.

⚠ 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

Table of contents

1. Scope

This specification document is applicable to the single-circuit-use water-leakage detector, model AD–AS–1AM(RoHS-directive-compatible), developed to protect computer rooms, important facilities, warehouses, valuable documents, and similar objects from unforeseeable water leakage.

2. Overview of the detector

2–1 Internal Configuration of Detector

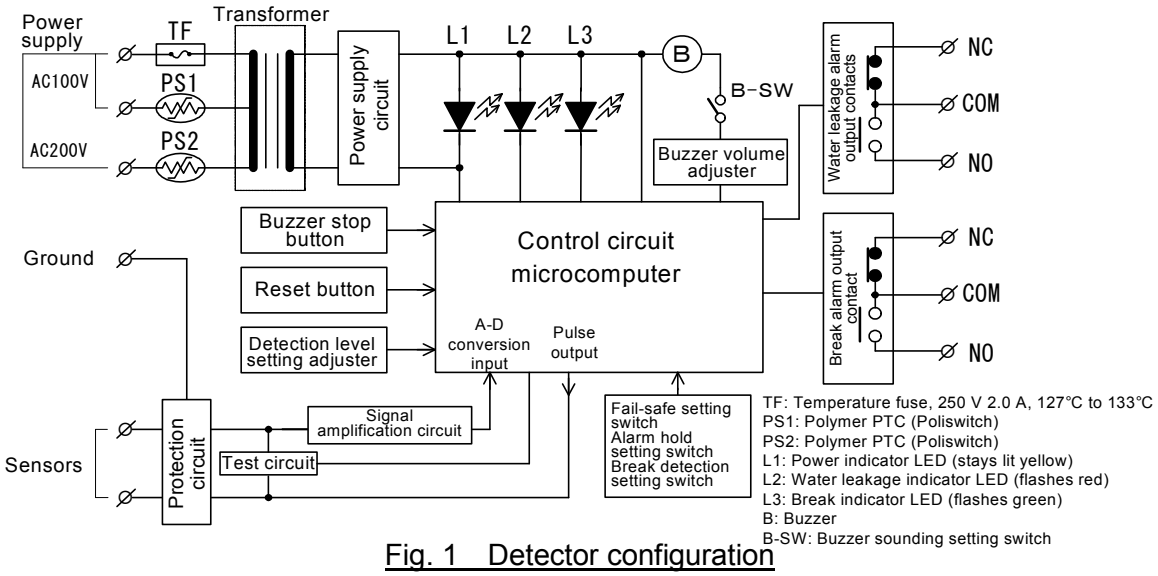


Fig. 1　Detector configuration

2-2 Typical configuration of detecting system

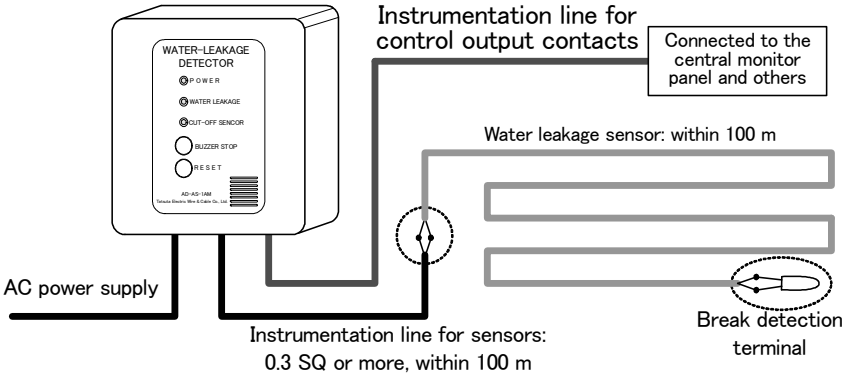


Fig.2　Typical detecting system configuration

* Make a secure connection from the water leakage sensor to the instrumentation line and to the break detection terminal; insulate connections with vinyl tape or similar material.
It is recommended that the connections and the break detection terminal be housed in a joint box to be installed in a location safe from submersion in water.

3. Specifications

3-1. Ratings

See Table 1 for the ratings.

Table 1　Ratings

Item	Specification
Rated voltage	AC 100 V/200 V (common to 50 Hz and 60 Hz)
Supply voltage fluctuation	±10% of the rated voltage
Power consumption	3 VA or less
Control output contact	Check Subsection 3-3, Control Output Contact Specifications.
Sensor applied voltage	AC 2.8 V or less
Working ambient temperature	-10˚C to 50˚C (no icing)
Working ambient humidity	35%RH to 85%RH (no condensation)

3-2. Performance

See Table 2 for the performance.

Table 2　Performance

Items	Specification			
Number of sensor circuits	One			
Water leakage detection/recovery level ±20%	**With the break detection setting "activated": (Factory default setting)**		With the break detection setting "not activated"	
Adjuster position	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 the 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
↕	9.0 kΩ	11.0 kΩ	16.4 kΩ	24.6 kΩ
Adjuster at the maximum setting	14.0 kΩ	15.6 kΩ	46.7 kΩ	70.0 kΩ
* The factory default setting is the value at which our water leakage sensor*1 can properly detect the presence of common city water. *1: Line sensors (AD, AD-R, AD-H, and FR-AD): within 100 m; point sensor (AD-PA) * Our suggestions: When seeking to detect a low conductivity liquid or when using a low-sensitivity water leakage sensor (such as AD-F), raise the detection level; conversely, when seeking to detect a high conductivity liquid or when installing the detector in a high-temperature, high-humidity environment, lower the detection level.				
Break judgment level	30 kΩ ±20% or more		Break recovery level	25 kΩ ±20% or less

Function of the outer cover operating button	Function	**Buzzer stop button**	**Reset button**	Action
	① Buzzer stop	○	—	Pressing this button when the alarm is on stops the buzzer temporarily. * A new alarm causes the buzzer to sound again.
	② Alarm hold cancel	—	○	This button cancels the alarm contact output and buzzer when alarm is being held as a result of activation of the alarm hold setting.
	③ Lamp test	—	○	Pressing this button causes all indicator lamps to light and the buzzer to sound when the alarm hold setting is not activated and under normal condition.
	④ Water leakage/ break simulation test	○	○	Pressing this button for three seconds or longer outputs the alarm for a simulated water leakage detection state; three seconds later, the alarm for a simulated break is output.

Outer cover LED indication	Power indicator lamp, yellow: One (stays lit) Water leakage indicator lamp, red: One (flashes) Break indicator lamp, green: One (flashes)
Alarm buzzer	Water leakage: sound varies in frequency between 4 kHz and 2 kHz (repeated howling); break: sound alternates between 4 kHz and 2 kHz (repeated pee-poh sound)

Function setting and adjustment
With the outer cover open, the following settings can be input using the internal switches and knobs:

Setting/adjustment item	Setting/adjustment range	**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 sounding setting	Buzzer sounding activated/not activated	**Buzzer sounding activated**	**DIP-SW-1**	**ON**
Buzzer volume adjustment	Buzzer volume "low" to "high"	**Buzzer volume "high"**	**VR-1**	**Clockwise to maximum**
Detection level adjustment	±20% of 2 kΩ, 5 kΩ, and 14 kΩ	**5.0 kΩ ± 20%**	**VR-2**	**Middle position**

Control output contacts	Contact configuration	◇ Control output contacts (See Subsection 3-3 under 3.Specifications.) Water leakage: 1c; break: 1c
Withstand voltage	Between all power supply terminals bundled and main body enclosure: AC 1,500 V (50/60 Hz) for 1 min. Between all power supply terminals bundled and all control output contact terminals bundled: AC 1,500 V (50/60 Hz) for 1 min.	
Insulation resistance	Between all power supply terminals bundled and main body enclosure: 10 MΩ or more (with a DC 500 V megger) Between all power supply terminals bundled and all control output contact terminals bundled: 10 MΩ or more (with a DC 500 V megger)	
Noiseproof property	Power supply noise: ±1,000 V with a pulse width of 1 μsec. (with noise simulator) (between each phase and the ground) Static charge: ±10 kV applied through a series combination of a 150-pF capacitor and a 330-Ω resistor, with results of no breakdown and no malfunction (Contact discharge to sensor terminals)	
Outside dimensions	W120 x H124 x D55 (in mm; see Attached Drawing 1.)	
Weight, enclosure material and color	300 g ± 20 g; ABS; ivory white	

3-3. Control Output Contact Specifications

Refer to Table 3 for control output contacts.

Table 3　Control output contact specifications

Item	Resistive load	Inductive load
Rated load	AC250 V 6.0 A DC24 V 6.0 A	AC250 V 3.0 A DC24 V 3.0 A

(Relay contacts: FTR-LYCA005 according to a catalog of Fujitsu Component Limited)

4. Operation Chart

Refer to Fig. 3 for the operation chart.

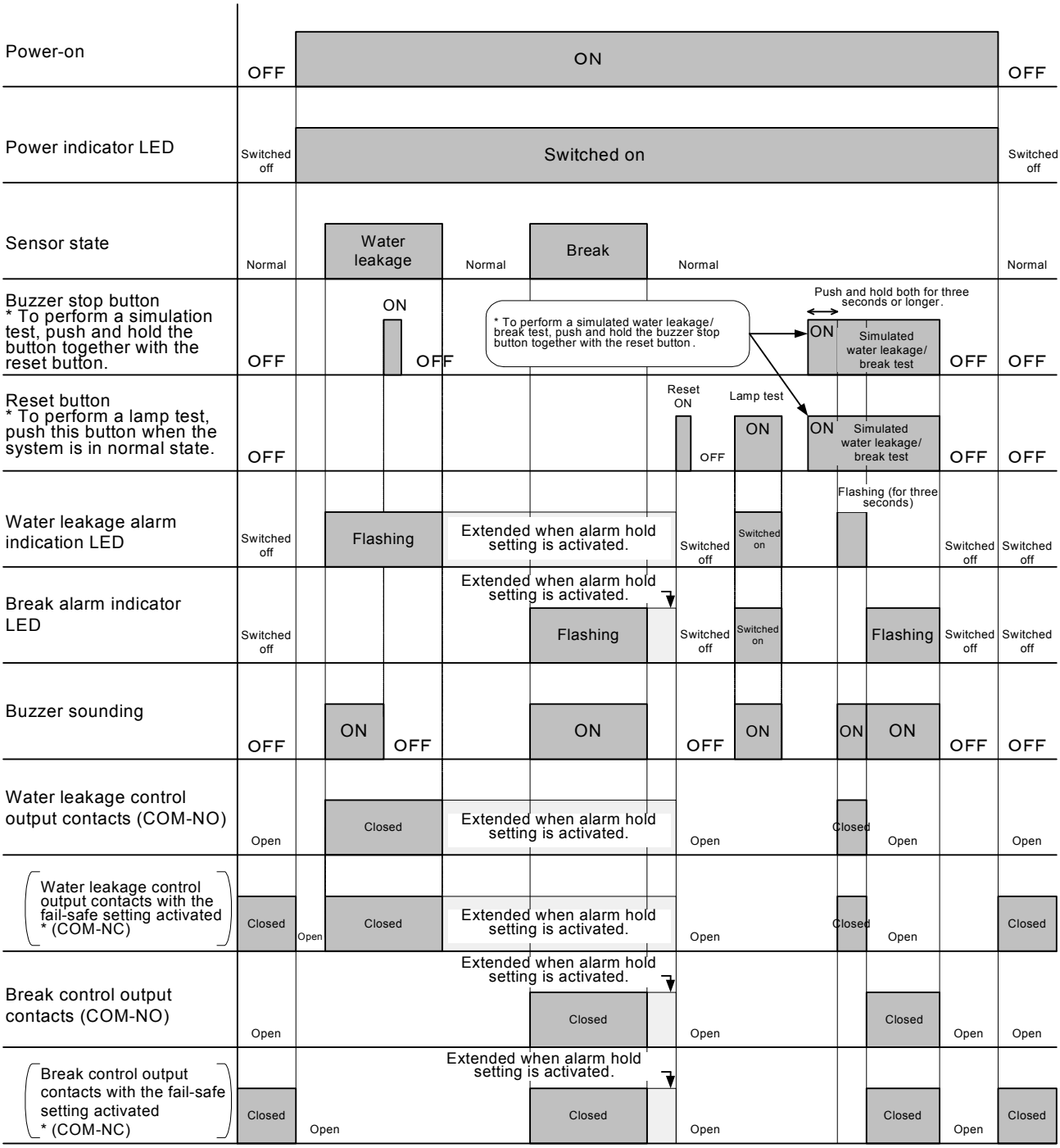
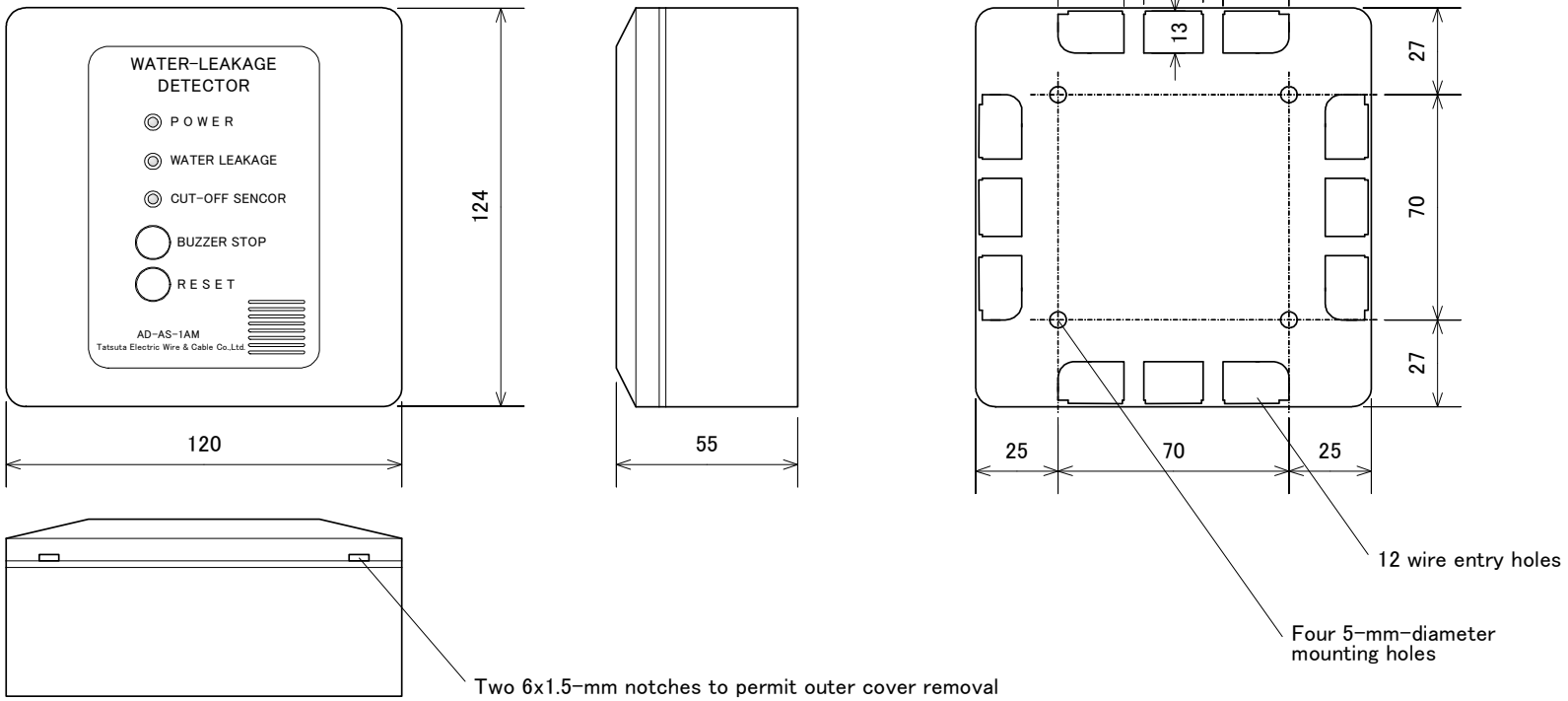


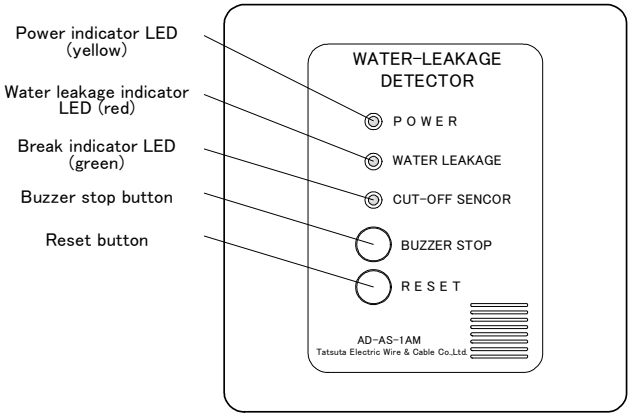
Fig. 3　Operation Chart

Attached Drawing 1

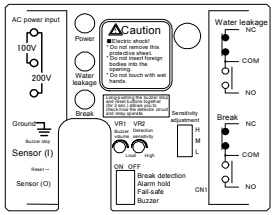


Approved by	Checked by	Drawn by	Scale	−/−	Desig-nation	Outside Dimension of Water Leakage Detector (AD-AS-1AM)
			Unit	mm		
			Drawn on	September 14, 2009		
TATSUTA Electric Wire & Cable Co., Ltd.					Drawing Number	TTS－KS－W3062－0

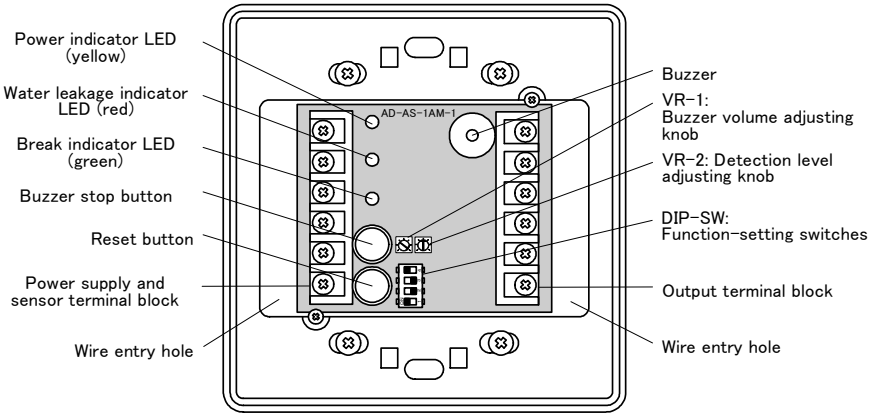
Attached Drawing 2



Outer cover (front view)

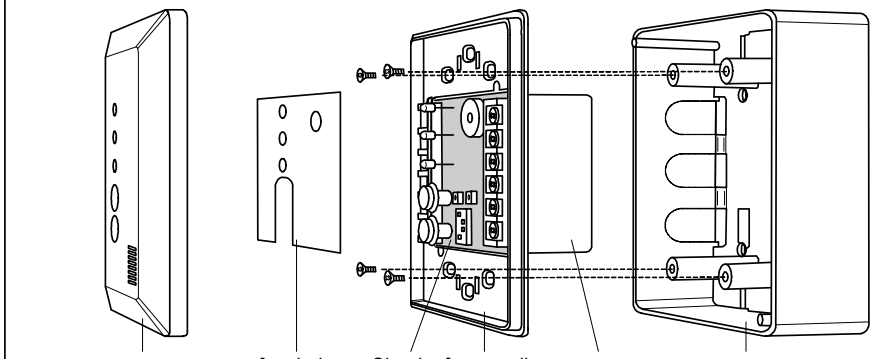


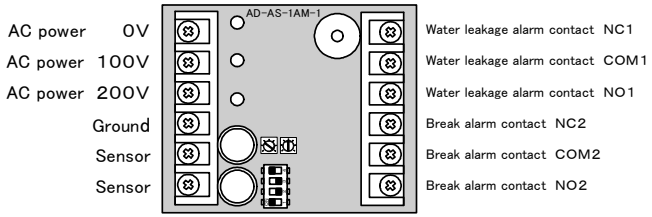
Insulating sheet



Internal layout

Detector construction



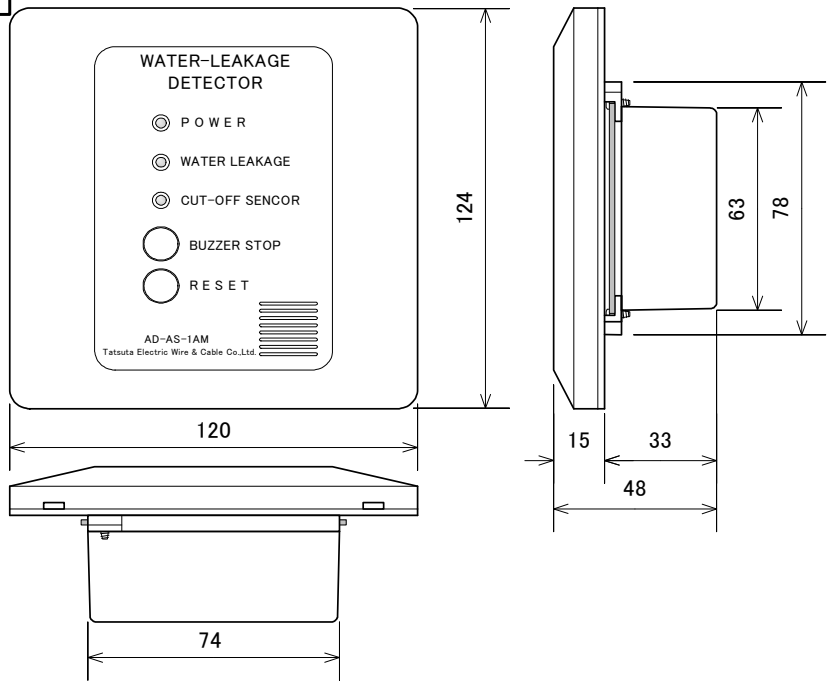


Terminal block description

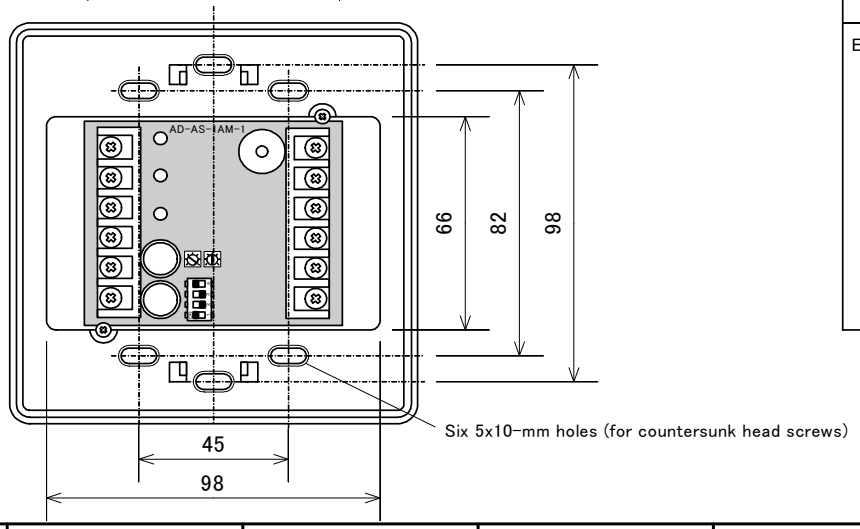
Approved by	Checked by	Drawn by	Scale	−/−	Desig-nation	Parts layout of Water Leakage Detector (AD-AS-1AM)
			Unit	mm		
			Drawn on	September 14, 2009		
TATSUTA Electric Wire & Cable Co., LTD					Drawing Number	TTS−KS−W3063−0

Attached Drawing 3

Outside dimensions with enclosure removed



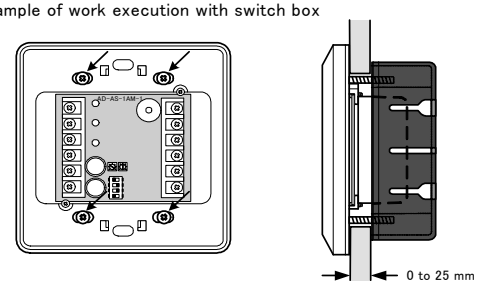
Inside dimensions with outer cover removed



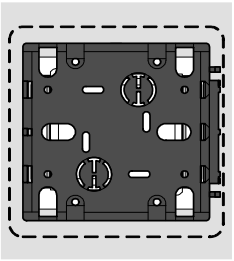
Examples of wall-embedded work execution (using standard boxes and fittings)

Position of fixing screw	Side view (wall cross section)	Rear view (back of wall)

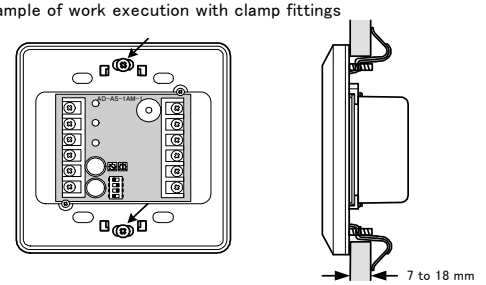
Example of work execution with switch box



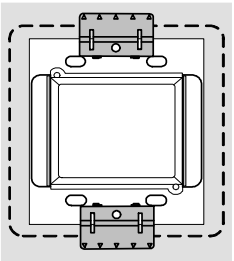
Panasonic DM8020K



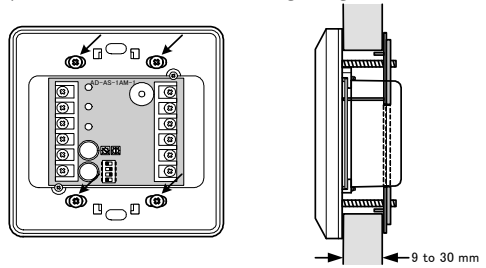
Example of work execution with clamp fittings



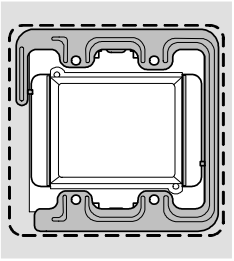
Panasonic WN3993020



Example of work execution with retaining fittings



Panasonic WN3997



Approved by	Checked by	Drawn by	Scale	−/−	Designation	Dimensional drawing for wall-embedded type detector of Water Leakage Detector (AD-AS-1AM)
			Unit	mm		
			Drawn on	September 14, 2009		
TATSUTA Electric Wire & Cable Co., LTD					Drawing Number	TTS－KS－W3064－0