

To: _____

Specification Document

Multi-circuit Water Leakage Detector AD-AS-5DRM

Date:()

<Manufacturer >

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

System Division		
Approved by:	Checked by:	Prepared by:

<<<Important Safety Precautions>>>



Warning

Erroneous operation of this water leakage detector not complying with the warning labels or the following warnings may not only lead to possible fatality or serious injury, but also fire, electric shock or failure.



Warnings!



Strictly Prohibited!

- Never modify or disassemble the detector.
- The unqualified persons are forbidden to carry out the installation and the internal inspection and spot check.
- After the detector is installed, do not leave the cover open, except for the periodic inspection and maintenance.
- Do not touch any internal component with wet hands.
- When performing maintenance on the product, avoid using organic solvent. Use dry cotton wastes for gentle wiping.



Checkpoints!

- Check its rated voltage and its supply voltage before the detector installation.
- The installation and electric connection of the detector are carried out according to this instruction manual.
- The maintenance and periodical inspection are carried out according to this instruction manual.
- When the control output contacts are used, please check the rated loads of these contacts in the operating instruction manual.



Do not install the detector in the following locations!

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

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1. Scope of application

This document applies to the Multi-circuit Water Leakage Location Detector (AD-AS-5DM), which has been developed in order to protect computer rooms, important facilities and warehouses, and valuable information, etc. from damage resulting from unpredictable water leakage.

2. Overview of the Detector

2-1. Overview of Detector

Table 1 Structure of the Unit

Item	Designation	Number of units
CPU unit	AD-AS-CPU	1
Monitor unit	AD-AS-DISP	1

2-2. Structure of the water leakage detecting system

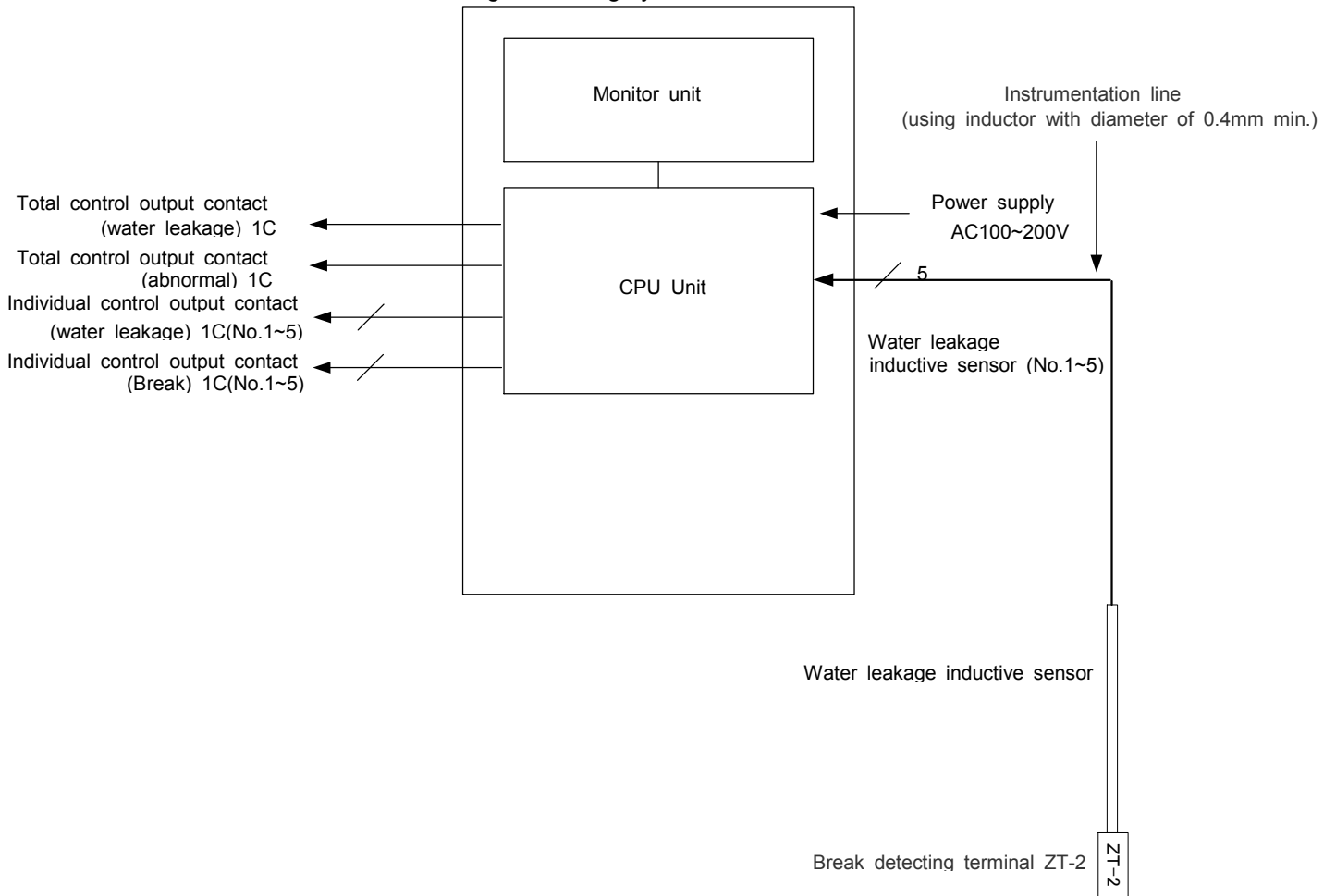


Figure 1 Structural Diagram of AD-AS-5DRM

3. Specifications

3-1. Ratings

For the ratings, refer to Table 2.

Table 2 Ratings

Item	Specifications
Rated voltage	AC100-200V (for 50Hz/60Hz)
Range of supply voltage variation	Rated voltage $\pm 10\%$
Power consumption	20VA max.
Control output contacts	*Check Subsection 3-3 Control Output Contact Specifications.
Applied voltage of sensor	AC5.5V (max.)
Working ambient temperature	-10°C to 50°C (no icing)
Working ambient humidity	35%RH to 85%RH (no condensation)

3-2 Performance

For the performance, refer to Table 3.

Table 3 Performance

Item	Specifications
Number of sensor circuits	5 circuits
Water leakage detection precision	5k Ω $\pm 10\%$ (0.5 k Ω set with an interval of 2~9k Ω \pm)
Precision in recovery from water leakage	(detection accuracy+2k Ω) $\pm 10\%$
Disconnection detection precision	30k Ω $\pm 10\%$
Surface panel operation switch function	For the buzzer alarm stop use.
	For the indicator testing use (all clear)
Surface operation panel LED indication	Power supply display red: 1 (lighting up)
	Water leakage indication red: 5 digits (lighting up)
	Break indication red: 5 digits (lighting up)
	Display during buzzer stop red: 1 digit (Lighting up)
Alarm buzzer	Maximum sound pressure: 70dB / 30 cm (Catalogue value by manufacturer), adjustable
Control output contact	Contact configuration Total contacts (For specifications, refer to Section 3-3). Water leakage: 1c Abnormality (water leakage or break): 1c Individual contact Water leakage: 1c \times 5 contacts Break: 1c \times 5 contacts
Withstand voltage	AC1500V (50/60Hz) / 1 minute (between power supply terminal and the body shell)
Insulation resistance	Above 10 k Ω (DC500V Megger) / 1 minute (between power supply terminal and the body shell)
Noiseproofng property	$\pm 1000V$ pulse width: 1 μ SEC (noise simulator) /1 minute (between each phase and the grounding terminal)
Outside dimension	(W) 300 x (H) 330 x (D) 100 (unit: mm) (see Attached Drawing 1) * Excluding the raised parts of hinges and handles.
Weight and color	Approx. 5.3kg, gray (5Y7/1 semi-gloss)

3-3 Control output contact specifications

For control output contacts, refer to Table 4.

Table 4 Control Output Contact Specifications

Item	Resistance load	Inductive load
Rated load	AC125V 0.4A	AC125V 0.2A
	DC 30V 2.0A	DC 30V 1.0A
Minimum applied load	DC10mV 10 μ A (reference value)	

(Relay contacts: G6E-134P-US Catalogue Values by OMRON Corporation)

4. Operation Chart

4-1 Standard Operation Chart

(* No failure-safe and alarm continuation setting)

For the operation chart, refer to Figure 2.

Power switch	OFF	ON			
Power Indicator LED	Light off	Light up			
Indicator light test switch	OFF			ON	OFF
Water Leakage Detection Action	OFF	ON	OFF		
Water leakage indicator LED	Light off	Light up	Light off	Light up	Light off
Break Detection Action	OFF			ON	OFF
Break Indicator LED	Light off			Light up	Light off
Buzzer alarm stop switch	OFF	ON	OFF	ON	OFF
Buzzer stop indicator LED	Light off	Light up	Light off	Light up	Light off
Buzzer sounding	OFF	ON	OFF	ON	OFF
Total control output contacts (Water Leakage: COM-NO)	ON	OFF	ON		
Total control output contacts (Abnormality: COM-NO)	ON	OFF	ON	OFF	ON
Individual control output contact (Water Leakage: COM-NO)	ON	OFF	ON		
Individual control output contact (Break: COM-NO)	ON			OFF	ON

Figure 2 Operation Chart 1

Buzzer operation

Press the buzzer stop switch and the buzzer stops.

But in case of any alarm at the same circuit or other circuit, the buzzer sounds again.

If the buzzer is required not to fully sound, No.8 for SW2 of the CUP unit is set ON.

Failure Safe Function

If the failure-safe function is active, the action of output contact is in inverted running.

4-2. Operation Chart When Alarm Hold Setting is Activated

(When the water leakage, break indication, total control output contacts and individual control output contract are in alarm hold setting)

For the operation chart, refer to Figure 3.

Power switch	OFF	ON	[ON bar]		
Power Indicator LED	Light off	Light up	[Light up bar]		
Indicator Light Test Switch (Alarm Cancel Switch)	OFF				ON [ON bar] OFF [OFF bar]
Water Leakage Detection Action	OFF	ON	[ON bar]	OFF	
Water leakage indicator LED	Light off	Light up	[Light up bar]		Flashing for 2 times [Flashing bar] Light off [Light off bar]
Break Detection Action	OFF			ON	OFF
Break Indicator LED	Light off			Light up	Flashing for 2 times [Flashing bar] Light off [Light off bar]
Buzzer alarm stop switch	OFF		ON [ON bar] OFF [OFF bar]		
Buzzer stop indicator LED	Light off		Light up [Light up bar]	Light off [Light off bar]	Light up [Light up bar] Light off [Light off bar] Flashing for 2 times [Flashing bar] Light off [Light off bar]
Buzzer sounding	OFF		ON [ON bar] OFF [OFF bar]	ON [ON bar] OFF [OFF bar]	ON for 2 times [ON for 2 times bar] OFF [OFF bar]
Total control output contacts (Water Leakage: COM-NO)	ON	OFF	[OFF bar]		ON
Total control output contacts (Abnormality: COM-NO)	ON	OFF	[OFF bar]		ON
Individual control output contact (Water Leakage: COM-NO)	ON	OFF	[OFF bar]		ON
Individual control output contact (Break: COM-NO)	ON			OFF	ON

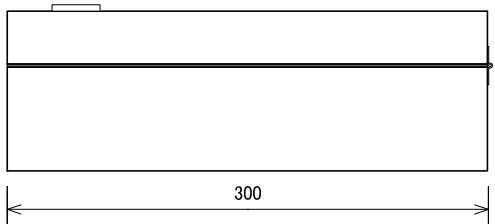
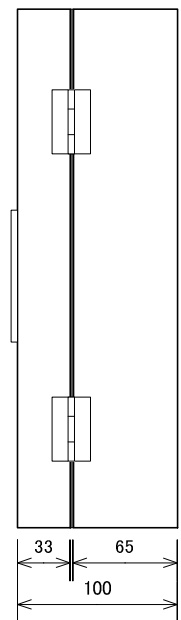
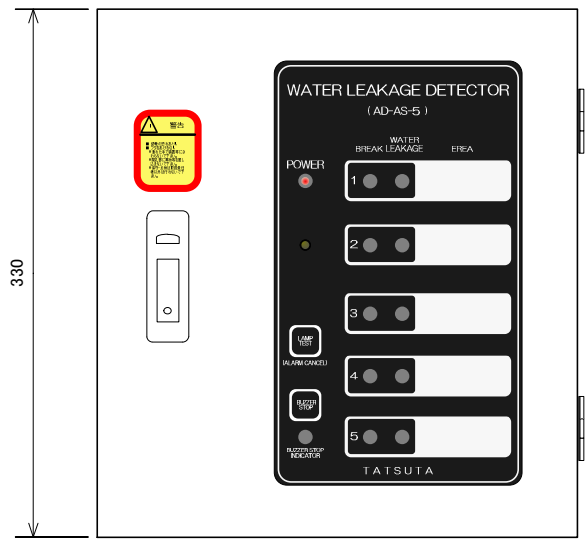
Figure 3 Operation Chart 2

When the alarm hold setting is activated, the alarm status is maintained until the indicator test switch (alarm cancel switch) is pressed.

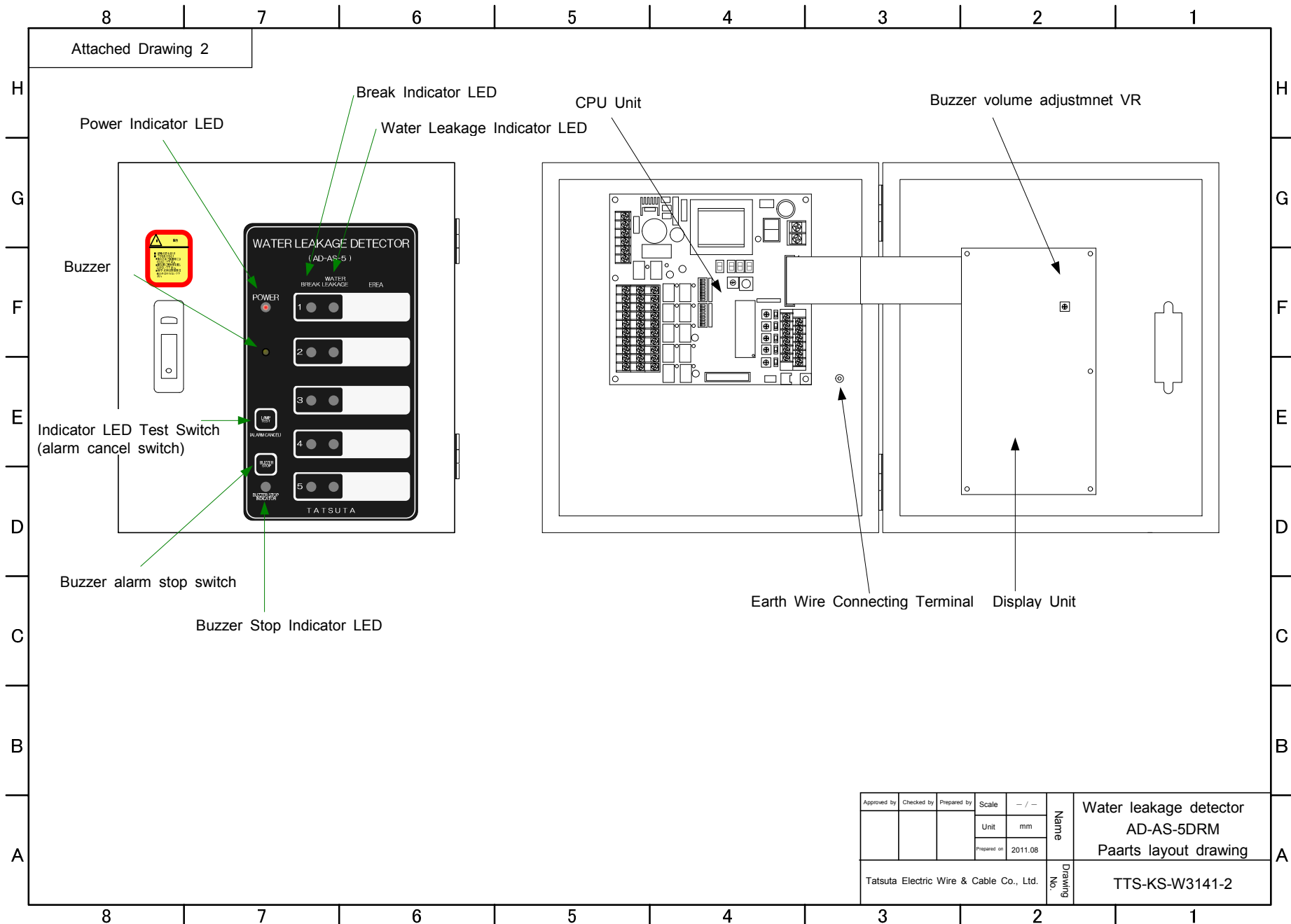
Electric power failure or power-off returns the contact operation status to that when the power source is shut off.

* 1、2、3 If the alarm hold setting is not activated, refer to “Figure 2 Operation Chart-1”.

Attached Drawing 1



Approved by	Checked by	Prepared by	Scale	— / —	Name	Water Leakage Detector AD-AS-5DRM Outside Dimensions
			Unit	mm		
			Prepared on	2011.08		
Tatsuta Electric Wire & Cable Co., Ltd.					Drawing No.	TTS-KS-W3140-2



Attached Drawing 2

Power Indicator LED

Break Indicator LED

CPU Unit

Buzzer volume adjustmnet VR

Water Leakage Indicator LED

Buzzer

Indicator LED Test Switch
(alarm cancel switch)

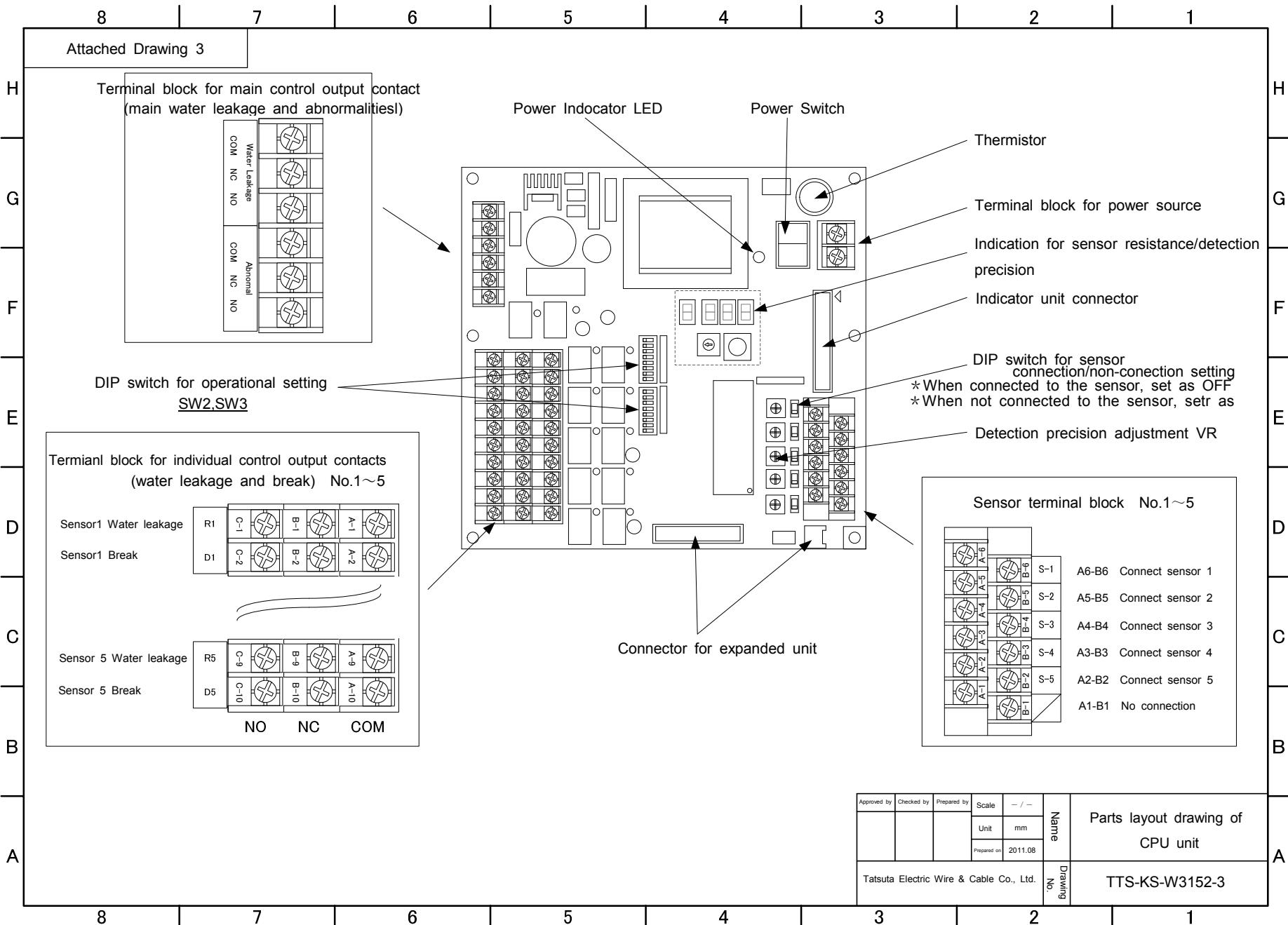
Buzzer alarm stop switch

Buzzer Stop Indicator LED

Earth Wire Connecting Terminal

Display Unit

Approved by	Checked by	Prepared by	Scale	- / -	Name Water leakage detector AD-AS-5DRM Paarts layout drawing	
			Unit	mm		
			Prepared on	2011.08		
Tatsuta Electric Wire & Cable Co., Ltd.					Drawing No.	TTS-KS-W3141-2

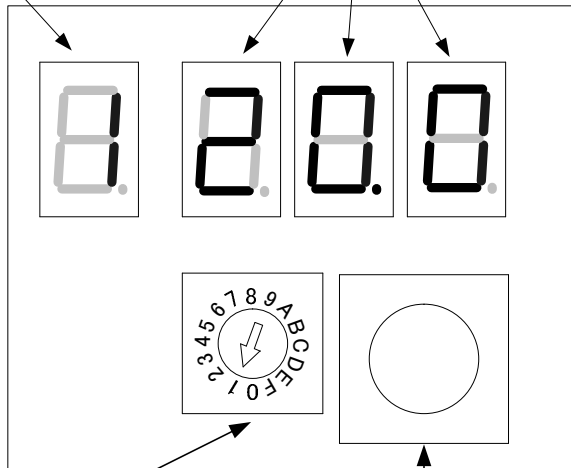


Approved by	Checked by	Prepared by	Scale	- / -	Name	Parts layout drawing of CPU unit
			Unit	mm		
			Prepared on	2011.08		
Tatsuta Electric Wire & Cable Co., Ltd.					Drawing No.	TTS-KS-W3152-3

Attached Drawing 4

Circuit Serial Number Indicator LED

*1. Indicator LED for resistance /detection precision

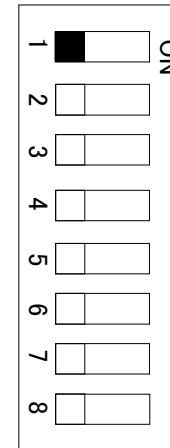


Circuit selection switch
(1~5 : 1~5 Circuit)

Having been set "0" when dispatched from the factory Circuit No. Indicator LED and Indicator LED for resistance/ detection precision light out

*2. Test switch

SW2



*1. Indicate that the circuit selection switch has selected the circuit information.
SW2 No. 1 of DIP is set
ON ⇒ indicate detection precision
OFF ⇒ indicate sensor resistance
Example: Sensor resistance for Circuit 1 is displayed as 20.0kΩ.

*2. Check the operation of individual control output contacts concerning Indicator Unit LED corresponding to the circuit selected through circuit selection switch.

Under this condition, when pressing the test switch, break indicator LED, water leakage indicator LED, individual control output contact (water leakage and break) and main control output contact (water leakage and abnormality) for the No. 1 circuit are activated.

Approved by	Checked by	Prepared by	Scale	- / -	Name
			Unit	mm	
			Prepared on	2011.08	
Tatsuta Electric Wire & Cable Co., Ltd.					Drawing No.

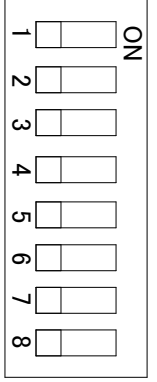
Resistance/
detection precision
Operation Instructions

TTS-KS-W3143-2

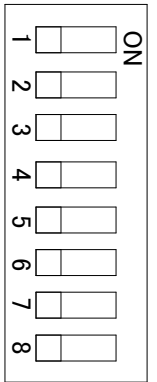
8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

Attached Drawing 5

SW2



SW3



No.	Factory setting	Operation
1	OFF	Switchover of resistance /detection precision OFF : Indicate sensor resistance ON : Indicate detection prec
2	OFF	Main relay alarm holding OFF : Not activated ON : Activated
3	OFF	Individual relay alarm holding OFF : Not activated ON : Activated
4	OFF	Indicator LED alarm holding OFF : Not activated ON : Activated
5	OFF	Fail-safe performance (main relav) *Relav operation under the condition that the sensor is normal OFF : Not activated ON : Activated
6	OFF	Fail-safe performance (individual relav) *Relav operation under the condition that the sensor is normal OFF : Not activated ON : Activated
7	OFF	Operation switchover for abnormal contactcs ON : Abnormal contact operation only in the case of break
8	OFF	OFF : Abnormal contact operation when water leakage or break happens Buzzer setting

OFF : Activated ON : Not activated

*If SW2 is changed, changing setting of switches allows operations such as indication and relay.
Inadvertent setting change may result in unintended operations, so care should be taken.

*SW3 is the factory setting, do not change.
(For AD-AS-5DRM, please set OFF)

H
G
F
E
D
C
B
A

H
G
F
E
D
C
B
A

8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

Approved by	Checked by	Prepared by	Scale	- / -	Name	Operation switchover DIP Switc Instruction AD-AS-5DRM
			Unit	mm		
			Prepared on	2011.08		
Tatsuta Electric Wire &Cable Co., Ltd.					Drawing No.	TTS-KS-W3144-3