

To: \_\_\_\_\_

## Specification Document

### Heat-resisting Type Water Leakage Sensor FR-AD

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**

Improper handling of the sensor in non-compliance to any of the following warning precautions or instructions given on a WARNING label can result in death, serious injury, fire, electric shock, and/or sensor failure.

#### Warning Precautions

##### Strictly Prohibited !

- Never use the sensor as electric cable.

##### Confirm !

- The sensor length must not exceed 100 m per circuit.
- Handle the sensor carefully; it will not work if soiled or damaged.
- Take precautions to ensure the sensor does not become wet.
- Before use, be sure to read the precautions on the rear of the sensor case.

##### Caution on Installation !

- Do not install the sensor directly on any surface where dew can form.
- Attach the sensor as tightly as possible to the mounting surface. Any unavoidable gap such as on an uneven floor or the like horizontal surface must not exceed 2 mm, and on a pillar, beam or the like vertical surface the gap must not exceed 1 mm.
- To minimize the influence of external electromagnetic induction, the sensor comprises two electrodes twisted in a braid form. However, avoid installing the sensor over a long distance in parallel with a power cable or other electromagnetic induction sources.
- Where the sensor intersects a power cable of 300 V or higher service voltage, surround the sensor completely with an insulating protective barrier, such as plastic molding.
- Install the sensor so that it can be easily replaced. After detection of water leakage, the sensor is reset when the water has evaporated. However, if the sensor absorbs water that contains conductive or water-repellent material, it possibly cannot be reset and needs to be replaced.
- To prevent electrical corrosion of the sensor, be sure to connect it to an alternate-current water leakage detector.
- Do not allow wax or other oil-based material on the sensor; water is repelled from the surface and may not be detected.

## Table of contents

	Page
1. Scope .....	1
2. Construction .....	1
3. Specifications .....	2

## 1. Scope of application

The specification document is applicable for the heat-resisting type water leakage sensor (FR-AD sensor). It can be used to quickly detect the water leakage.

## 2. Construction

The construction of the FR-AD sensor is shown in Figure 1 and Figure 2.

Electrode: 0.75mm<sup>2</sup> tin annealed copper wire

Inner sheathing: glass fibre

Outer sheathing: fire resistance (aramid fiber)

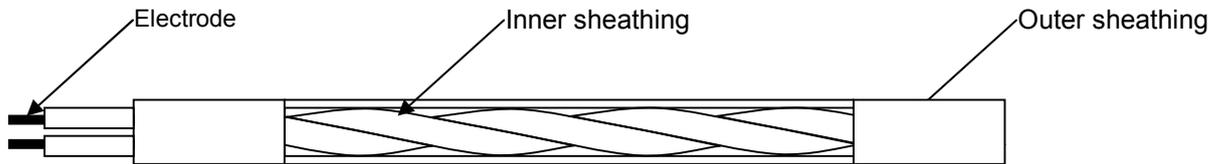


Figure 1: Schematic Diagram of FR-AD Sensor

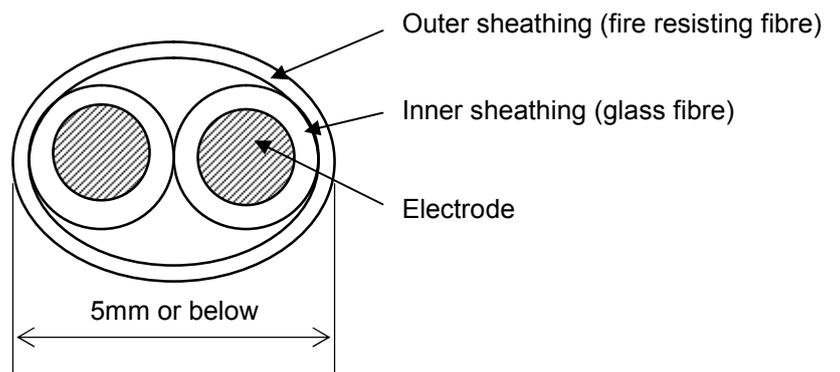


Figure 2: Cross-section Diagram of FR-AD Sensor

### 3. Specifications

The specifications of FR-AD sensor are shown in Table 1.

Table 1

Item	Specifications
Construction	Material: tin annealed copper stranded wire Composition: Copper wire 0.18mm in diameter × 30 (0.75mm <sup>2</sup> )
Detection characteristic	When the amount of water is 3.0ml or below, the electric resistance between electrodes is 5kΩ (AC) or below. <ul style="list-style-type: none"> <li>• Water dropping amount: directly drop to the sensor (0.05ml/s)</li> <li>• Measuring ambient temperature: 24℃ humidity: 60%RH</li> <li>• Electric conductivity water temperature: 24℃, 200μS/cm[5.0kΩ·cm]</li> <li>• Testing equipment: Water leakage detector AD-AS-10DRM manufactured by our company.</li> </ul> <input type="checkbox"/> The electric resistance between electrodes and the amount of water during the sensor action are dependent on the sensor laying status, environment and water quality.
Resetting characteristic	After the water leakage detection, the resetting could be conducted through the natural drying or moisture removal; however, if there is conductive or waterproof substance in the leaking water, the resetting cannot be used any longer.
Resistance between electrodes (AC)	50kΩ min.
Humidity resistance	In the high humidity condition, the resistance between electrodes is 50kΩ or above /100m provided that there is no moisture condensation.
Heat resistance	120□ at maximum for continuous operating.
Fire resistance	The limiting oxygen index (L · O · I value) is 30 at minimum because of self-quenching.
Weight	Approx. 20g/m