

Specification Document

Water leakage detection sensor cable

Non-Coloring Water Leakage Sensor

AD-S

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<<<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.

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1. Scope

This specification document covers the non-coloring water leakage sensor (AD-S sensor), which promptly detects any water leak.

2. Construction

Figs. 1 and 2 show the construction of AD-S sensor.

Electrode: Strand of tinned annealed copper wires each with a sectional area of 0.33 mm^2

Sheathing: Special plastic fabric with high water absorptivity and repellency

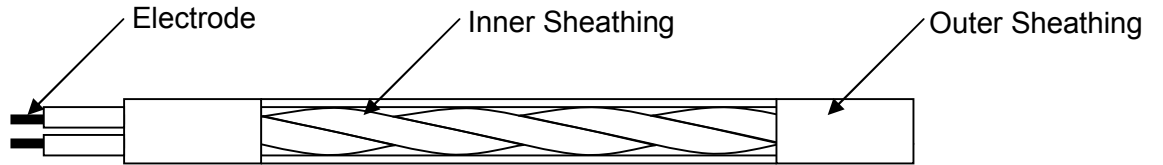


Fig.1 AD-S Sensor

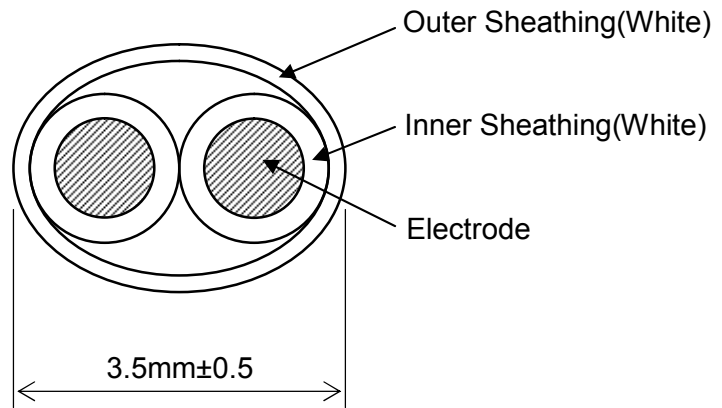


Fig.2 Cross Section of AD-S Sensor

3. Specifications

Table 1 gives the specifications of AD-S sensor.

Table 1 Specifications

Item	Specification
Electrode construction	Material: Strand of tinned annealed copper wires Composition: Copper wire 0.18 mm in diameter × 13 (0.33 mm ²)
Electrode resistance(DC)	Standard: 26.6 Ω/km (20°C)
Resistance between electrodes(AC)	50kΩmin.
Insulation performance	Insulation resistance between electrodes is 10 MΩ min. when measured with a 100 VDC Insulation Tester.
Sensitivity (Water absorptivity)	Resistance between electrodes is 5 kΩ max. when water absorption is 3.0 ml or less. (Tap water is allowed to drop at a rate of 0.05 ml/s directly on the sensor.)
Moisture resistance	Resistance between electrodes is 50 kΩ min. even in a highly humid environment but without dew condensation.
Reusability	After leakage detection, the sensor is reset and can be reused within 30 min if it is retained under normal conditions (i.e., not exposed to water). The sensor cannot be reused if it has absorbed water that contains conductive or water-repellent material.
Heat resistance	60°C max. for continuous operation
Radiation resistance	No performance deterioration (water absorptivity, moisture resistance, and mechanical properties) results after exposure to 50 Mrad ^(Note) .
Weight	10.5±1.0 g/m

(Note) Estimated quantity of radiation to which electric cables can be exposed
Over the period of 40 years, which is the designed service life of a typical nuclear power plant.