

WLS_RK – Wetting leaves sensor (Rev.0 270326)



Description

WLS_RK is a sensor that measures the wetting of leaves by faithfully reproducing their thermodynamic properties. The wetting percentage of the leaves is a fundamental piece of information in the agro-meteorological field as it allows to determine the presence of condensation on the leaves and consequently to establish the most appropriate phyto-sanitary treatment to prevent any diseases of the plants.

WLS_RK has a detection surface that allow simulating the wetting conditions above the leaf.

The sensor surface is treated to resist the atmospheric agents and chemicals present in the pesticides, to guarantee a long life of the sensor itself. The electronics are protected inside the watertight sensor body made of plastic material suitable for operating even in environments with high condensation. WLS_RK is available with analogue voltage output with connection cable integrated with the sensor body (standard length 5m).

Working principle

There are two grid-shaped electrodes on the sensitive surface of the sensor. The sensor detects the variation in the dielectric constant between the two electrodes caused by the presence of drops of water on the surface. Thanks to the operating principle used, WLS_RK is able to detect even the presence of very small drops of water, unlike common sensors based on resistance or conductivity measurement, which require that the drop of water between the two electrodes has a minimum size to be detected. The construction materials and the white colour of the sensitive surface have been chosen to simulate as closely as possible the thermal and radiant properties of a real leaf. The analogue voltage output 0...5Vdc corresponds to the wetting degree 0 ... 100%. The degree (percentage) of wetting indicates how much sensitive surface is covered by water compared to the total surface of the sensitive area.

Main applications

- ✓ Agro-meteorology
- ✓ Greenhouses
- ✓ Plant disease monitoring

Advantages

- ✓ Low cost
- ✓ Good precision
- ✓ Resistant to chemical and atmospheric agents
- ✓ Excellent quality / price ratio

Technical features

Model	WLS_RK – Wetting leaves sensor
Measuring range	0...100% of leaf wetting
Transducer	Capacitive
Accuracy	<±5%
Output	Vers. -V: 0...5Vdc where 0V=0% (dry), 5V=100% (wet)
Power, consumption	12...24Vdc, <1mA
Working temperature	-40...+80°C
Cable	Shielded for outdoor, length 5m
Protection degree	IP65
Housing	Plastic
Dimensions, weight	65 x 13 x 145mm, 50g (cable excluded)

Installation

WLS_RK can be positioned inside the foliage of the plant (the optimal position depends on the type of plant, but it is preferable to place it in the outermost foliage) or fixed to the pole of a meteorological station located near the cultivation. Position the sensor with the sensitive surface facing upwards (see the side picture) and secure it with a clamp in the plastic support near the cable. The sensor must be inclined by about 45 ° with respect to the ground, in order to prevent the stagnation of condensation or rainwater on the sensitive surface and simulate the real condition of the type of leaf of the cultivation in question. Also make sure that the sensitive surface is not in contact with leaves, branches or other objects. In case of mounting on a weather pole, fix the sensor to an inclined bracket such as the STF-UNI Geoves bracket.

We recommend installing the sensor approximately 2m above the ground



Example of installation

Maintenance

The sensor requires no special maintenance. It is recommended to perform a periodic cleaning of the sensitive surface with water and normal detergent in order to avoid the accumulation of anti-parasitic substances or other elements present in the air that could alter the size of the sensor.



STF-UNI bracket

Electrical connection

Connect the cable to a Geoves datalogger or other PLCs with analog voltage input and power the sensor respecting the colour coding indicated in the layout supplied by the sensor