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Enabling better global research outcomes in soil, plant & environmental monitoring

ICT-LWS Leaf Wetness Sensor

The ICT-LWS Leaf Wetness Sensor is an important tool for observing and studying leaf wetness, preventing pests and diseases, and spraying sprinkler control. The accurate measurement of the moisture content of the leaf surface can be used to monitor the trace moisture or ice crystal residue. The shape of the sensor is simulated by the blade, which can simulate the characteristics of the leaf surface, so that it can reflect the situation of the leaf surface more accurately. By measuring the variation of the dielectric constant of the upper surface of the blade, the mist, water vapour and ice can be measured.

Leaf wetness sensors are used mainly in environmental applications, either to study the effects of vegetative wetting or to determine the best planting time for crops. Another common application is to monitor and prevent the conditions that result in fungal development and growth on plant surfaces (therefore, foliar plant diseases).

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FEATURES

- Reflect the water content of leaf
- Fog, freezing, condensation and rainfall can be detected
- Good waterproof sealing performance
- High precision, fast response, reliable performance.
- Multiple signal output options
- Low power requirement, which gives you the ability to make as many measurements as you want over a long period of time (such as a growing season) with minimal battery usage.
- High resolution, which gives you the ability to detect very small amounts of water (or ice) on the sensor surface.

MOUNTING

- Installation with textured side facing up
- Adjust the sensor angle according to the surrounding leaves
- If using for foliar fertilization pray testing, it can be installed at plant height or at different heights, to ensure the plant is affected by foliar fertilization

MAINTENANCE

When there is an increase of dry output data, or if these values are very high compared to a standard monitored situation, it means dust or other materials have accumulated on the sensors. When this is observed, it is recommended to clean the sensors with a wet cloth only (with water). UV protectant can also be applied once a year to enhance the sensor's performance and operation.

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OUTPUT CHARACTERISTICS

- **CURRENT / 4-20mA**: H= (I-4)/16*100%, where H is humidity (RH) and I is output current (mA)
- **VOLTAGE**: H = V/V_fullscale *100%, where H is humidity (RH), V is output voltage (V), V_full scale is 5V or 10V

COMMUNICATION PROTOCOL (SDI-12)

No.	Command	Sensor return	Command name
1	?!	0!	Read current sensor address
3	aI!	013DLQIFENGFWS-1-100 00043	Read sensor information
4	aAb!	b!	Change the address, change address a to b
6	aM!	00012 0	Start measuring leaf humidity, temperature with 1 second wait to have ready 2 variables.
9	aD0!	0+100.0+14.0	Leaf Wetness 100% Leaf Temperature 14.0 ℃

"a" and "b" is the sensor's address.

Band rate: 1200, Start bit: 1, Data bits: 7, Check bit: Even, Stop bit: 1, Sensor address: factory default 0

ELECTRICAL CONNECTIONS

Connector (cable)	Function
Red	Power Supply Positive
Black	Common Ground
Yellow	Signal Output

Note: this product has been tested and complies with European CE requirements for EMC directive.

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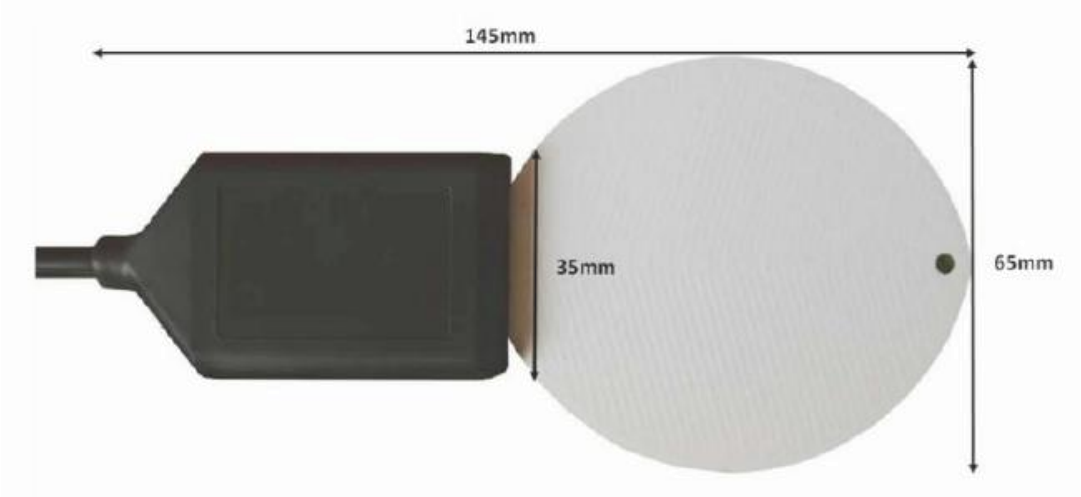
SPECIFICATIONS

Item	Technical Specification	
	Wetness	**Temperature**
Range	0-100%	-40 to +80 °C
Accuracy	+/- 3% (0-50%), +/- 5% (>50%)	+/- 0.5 °C (-10°C ~ 50°C)
Principle	Capacitance	Thermal Resistance
Repeatability	< +/- 3% FS	
Temperature Drift	<= 0.2% FS / °C	
Supply	Marked on the label	
Output	4-20mA, 0-5V, 0-2V, SDI-12	
IP Rating	IP67	
Operating Temperature	-40 °C to +80 °C	
Dimensions	65*13-145mm	
Storage	-40°C to +80 °C at 20% to 90% RH	



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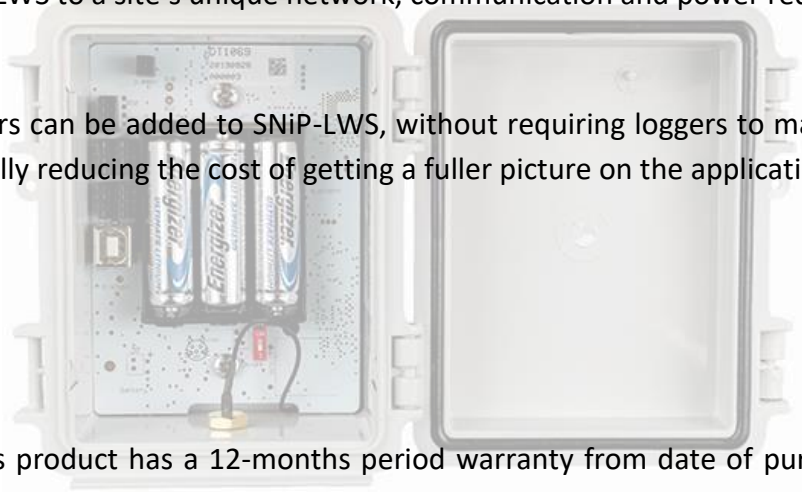
IoT-ENABLED SENSOR: SNiP-LWS

The SNiP-LWS is a 'Sensor Node Integrated Package' for LoRaWAN communication of real-time plant leaf wetness/duration, indicating the potential development of disease and pathogens and, determining the appropriate time for use of preventative measures. This SNiP allows for continuous plant, light, and environmental monitoring. The base SNiP-LWS integrates 1x AD-NODE and 1x ICT-LWS to a site's unique network, communication and power requirements.



Further parameters can be added to SNiP-LWS, without requiring loggers to match each distinct sensor, substantially reducing the cost of getting a fuller picture on the application.

WARRANTY – this product has a 12-months period warranty from date of purchase. Liability is limited to repair or replace defective items.

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