CHAPTER 12

FFF – Field Humidity Wireless

Using the FFF, measurement data – preferably moisture and temperature in the soil – that is recorded from remote and scattered areas can be transferred directly to your PC or smartphone for monitoring purposes.

This system enables the recording of real-time measurement data and monitoring with the help of a web-based dashboard. Thus, it is ideal for managing both urban facilities and farming operations. The wireless unit itself works with a very long-lasting battery and is waterproof. As such, it can be installed under the floor together with the sensors and is thus protected against vandalism. A special feature is the option to connect several different sensors to one wireless unit. Remote-controlled irrigation can be implemented using further components.

The system set up (installation) is simple. It only consists of connecting the sensors to the wireless unit and inserting the battery.

The dashboard of the Holfuy web service provides a clear user interface for easily viewing the sent measurement data. Measuring intervals can be easily changed, automatic notifications can be set and solenoid valves can be switched at the click of a mouse.

We would be happy to advise you on the best combination of wireless units and sensors for your projects and applications.

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TECHNICAL DATA (wireless unit):

Power supply:	3.6 V lithium battery, type LS33600	
	with 17 Ah capacity	
Power consumption	< 3.5 µA in sleep mode	
80 mA LoRa, 500) mA NB-loT during transmissions	
Battery life:	at measuring interval of 4 hours:	
	> 5 years is possible	
Measurement interval: > 30 min to 4 hours, adjustable		
Degree of protection	I: IP68	
Dimensions:	140 x 97 x 97 mm	
Weight:	190 g without battery	
Operating temperate	ure: -40 °C to +80 °C	







HUMIDITY ANALYSIS

CHAPTER 13

Wireless radio technology	B-IoT	
Application range	No need to install your own network. Wireless unit trans- mits directly via the pro- vider's NB-IoT network	Can be integrated into existing LoRa networks (SmartCity design)
Wireless radio net- work availability	According to the provider (e.g. Vodafone)	Your own wireless radio network
Range	unlimited	up to 5 km

Connection options

	Measuring soil moisture and temperature	Measuring method
SMT50	low-cost sensor, maintenance- free, under-floor installation	FDR
SMT100	precision sensor, maintenance- free, under-floor installation	TDT
Electronic tensiometers	maintenance-free, above-floor (without temperature measurement)	Suction force
	Flow measurement	
Measuring head for water meter	precise, maintenance-free	inductive
	Controllable units	
Solenoid valve	Bi-stable impulse solenoid valve for connecting to irrigation systems	



Flow meter



FFF – Customized solutions for remotely monitoring drain water

In fertigation facilities for gutter and container crops, it is important to avoid dangerous salt accumulation due to uncontrolled or too frequent irrigation.

The amount of drainage depends on many factors and changes frequently. The conditions of the facility, the irrigation intensity, leaf mass and rooting, weather conditions and substrate permeability all have an influence. Time-consuming manual measurements can be replaced by more reliable, automatic monitoring.

Depending on the weather, fertigation should always be carried out in a continuous flow with from 5 % (cloudy) to 20% (sunny) drain water. The conductivity value should also be checked daily to avoid concentrations > 2 mS /cm. A customized solution involving the FFF with a conductivity sensor in the drain water measures continuously. It can also transfer the measured values to a PC or mobile phone.



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Usable sensors	Max. number per wireless unit	(Nev)
Volumetric humidity sensors with temperature measurement • Volume sensor SMT 50 (refer to page 14) • Volume sensor SMT 100 (refer to page 14)	4 4	War war
Electronic tensiometer (refer to page 12)	4 – 8	and the second
Conductivity sensor	4	
Measuring head for flow meter (irrigation control)	1	行く
Controllable units • Solenoid valve for irrigation control	1	DXAL

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