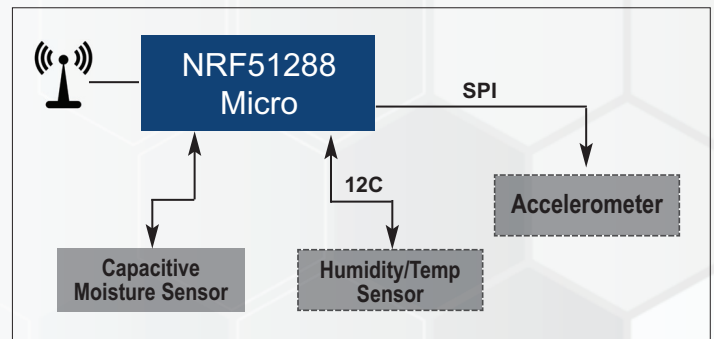




Ultimate sensor for controlled Agriculture Environment

Features:

- Easy to install and operate
- Long battery life of up to 24 months
- Air temperature/humidity and soil moisture measurement every 60 seconds
- Reports proximity every 10 seconds to GSM or WiFi readers
- Reports 'movement' and 'tip' events
- Up to 80m/262.4ft range



The Agriculture Tag (AG-A9B) has been developed by WatchNET Inc. to provide a cost-effective solution for monitoring the environment in which plants are grown. The AG-A9B can accurately measure soil moisture, and temperature/humidity of the surrounding air. Furthermore, the orientation and movement status of the AG-A9B is also measured for plant security/integrity. The sensor readings are communicated to the WatchNET Inc. platform via WatchNET hub devices.

The WatchNET Inc. platform enables you to view the location and alert notifications, and easily configure system level behavior based upon events for different business needs. The same controls are accessible to 3rd party applications via JSON API to the WatchNET server.

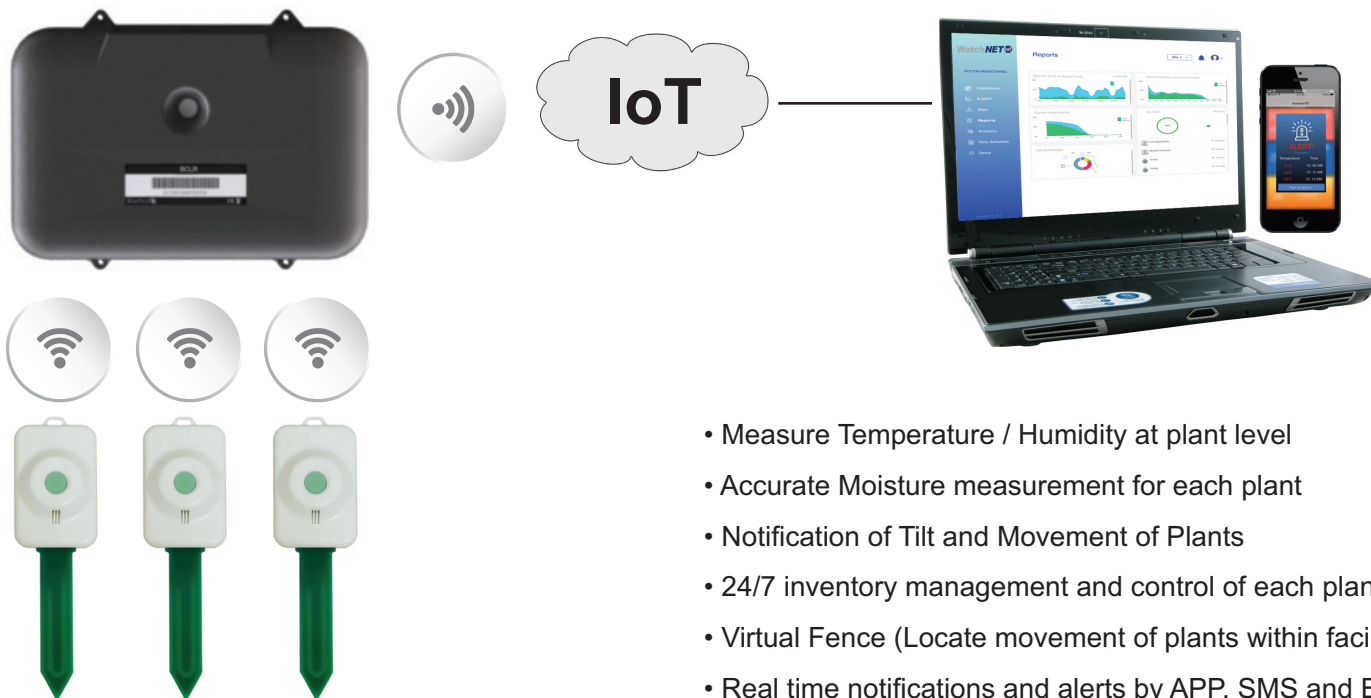
Design considerations:

The system has been developed with end-to-end security in mind, and protection against replay and masquerade attacks are provided as standard. Each AG-A9B has a unique key programmed at manufacture and all communication is authenticated.

Activation, Self-test & Association

Activation is completed by a long button press (2 seconds). The Moisture Tag (AG-A9B) shall indicate that it is operational by a one-time green-flashing LED (1 second). The AG-A9B can be turned off by a long button press (2 seconds), which will be indicated by a one-time red-flashing LED (1 second). A self-test can be completed by a short button press (whilst the device is operational), this self-test will communicate sensor data via BLE broadcast packets for 30 seconds. During this self-test the green LED will flash every 1 second.

Each AG-A9B has a unique identifier that is presented as a number and a barcode on its label. Association may be completed by scanning this barcode and entering details regarding the tracked item.



- Measure Temperature / Humidity at plant level
- Accurate Moisture measurement for each plant
- Notification of Tilt and Movement of Plants
- 24/7 inventory management and control of each plant
- Virtual Fence (Locate movement of plants within facility)
- Real time notifications and alerts by APP, SMS and E-Mail

Technical Specifications

Communication	
Authenticated proprietary protocol over 2.4GHz	
Sensing capabilities	
Sensing capabilities include:	
Battery	Voltage measurement (mV)
Soil Moisture	0% to 100% indicative
Temperature	NIST traceable, sub 1°C/33.8°F accuracy
Humidity	sub 2% RH accuracy
Accelerometer	Providing movement & tip angle
Reporting Range	
Range	20m/65.6ft (indoors) 80m/262.4ft (outdoors / LOS)
Number of tags	Up to 2000 tags per reader
Reporting interval	10 seconds
Power Consumption	
Off Mode	0.002 mA (average)
On Mode	0.003 mA (quiescent) 0.010 mA (average)
Reporting	12 mA peak for 1ms

Battery	
1xBR-2477 1000mAh primary battery (non-rechargeable), providing 24 months of operation with normal use	
Mechanical Characteristics	
Dimension (LxWxH)	145mm x 41mm x 24mm 5.71" x 1.61" x 0.94"
Weight	38gr / 0.08lb
Material	PC+ABS (recyclable casing)
Color	White
Environmental	
IP rating	IP67
Storage temperature	-20°C ~ 60°C / -4°F ~ 140°F
Operating temperature	-20°C ~ 60°C / -4°F ~ 140°F
Part numbers	
AG-A98	Moisture Tag (v1.0)

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CANADA:

351 Ferrier Street, Unit 5
Markham, ON L3R 5Z2
Toll Free: 1-866-843-6865
Tel: 416-410-6865

www.watchnetiot.com
info@watchnetiot.com

USA:

171 Cooper Ave. Suite 110
Tonawanda, NY 14150 USA
Toll Free: 1-866-843-6865
Local: 1-716-877-7277