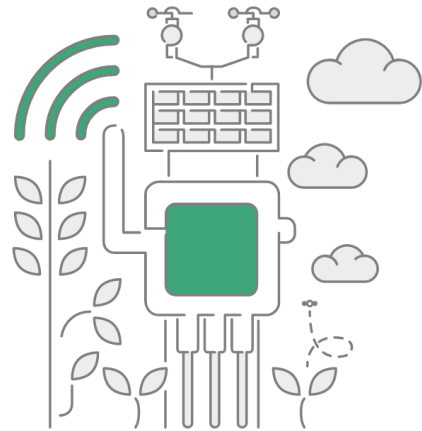


IIOT outdoor smart agriculture solutions

The challenge

Hunger and food security are new era challenges that can be solved with IoT technology applied to agricultural crops.

Farm owners and managers are attracted by the number of measurements that sensors can perform and by the capacity of prediction and management systems.



IIOT Solution for Smart Agriculture

What precision agriculture looks for...

↑ Increases

- Higher crop yield
- Better quality
- Understand which factors govern crop growth and yields
- Guaranteeing food security

↓ Reduces

- Less transport costs: human interventions only when needed.
- Less time spent
- Reduce crop losses through disease or adverse weather
- Cost savings reducing use of fertilizers, pesticides and consumables
- Fight against droughts, scarcity and famine



SIZE OF FIELDS	VALUE OF CROPS	WHAT FACTOR IS USUALLY MORE IMPORTANT TO CONSIDER?	SENSORS RECOMMENDED	EXAMPLES
Large fields	Low yield crops per hectare	Micro-climate factors	<ul style="list-style-type: none"> ✓ Temperature, humidity and pressure ✓ Weather station 	<ul style="list-style-type: none"> ✓ Cereals ✓ Corn ✓ Coffee
Small or medium fields	High yield crops per hectare, fragile crops	<ul style="list-style-type: none"> ✓ Soil parameters ✓ Plant level oriented 	<ul style="list-style-type: none"> ✓ Soil moisture ✓ Soil morphology ✓ Leaf humidity ✓ Solar radiation 	<ul style="list-style-type: none"> ✓ Fruits ✓ Vegetables ✓ Flowers

IIOT smart outdoor gateway

CPU cores	4
CPU architecture	64 bits
CPU frequency	1 GHz
RAM	2 GB DDR3
Storing	SSD disk 16 GB
Linux Kernel	3.16
WiFi	a/b/g/n (up to 144 Mbps)
Cellular	Up to 42 Mbps downlink
Geolocation	GPS + GLONASS*
Power consumption	~ 15 W
Enclosure (mm)	255 x 225 x 80
Certifications	CE (Europe) / FCC (US) / IC (Canada) / ANATEL (Brazil) / RCM (Australia) / PTCRB (US) / AT&T (US)



IIOT smart outdoor Agri/Env solar sensor node

IIOT smart outdoor Agri/Env solar sensor node is an evolution of our Agriculture line with a new selection of high-end professional sensors. It allows to monitor multiple environmental parameters involving a wide range of applications, from plant growing analysis to weather observation. There are sensors for atmospheric and soil monitoring and plants health. More than 20 sensors can be connected.

Material	polycarbonate
Sealing	Polyurethane
Cover screws	stainless steel
Ingress protection	IP65
Impact resistance	IK08
Weatherproof	true - nach UL 746 C
Temperature	-30 °C to 70 °C
Approximated weight	800 g



Sensors supported :

- Non-contact surface temperature measurement SI-411
- Leaf and flower bud temperature SF-421
- Soil oxygen level SO-411 and SO-421
- Solar radiation (shortwave, PAR and UV): SP-510, SQ-100x and SU-202
- Air temperature, humidity and pressure
- Volumetric water content and soil temperature TEROS 11
- Conductivity, water content and soil temperature TEROS 12
- Soil water potential TEROS 21
- Soil water potential MPS-6
- Vapor pressure, humidity, temperature and air pressure sensor probe (Meter ATMOS 14)
- Leaf wetness Phytos 31
- Trunk, stem and fruit diameter: DC3, DD-S and DF
- Advanced Weather Stations
- Luminosity (Luxes Accuracy)
- Ultrasound (distance measurement)

- 4-20 mA type (generic input)
- RS-232 type (generic input)
- Datasol MET (photovoltaic uses)

Applications of IoT Technology for Agriculture



Other Solutions

IoT Solution for Smart Cities

What can be measured?

- Air quality, pollution
- Noise levels
- Waste management
- Lighting
- Parking
- Buildings
- People
- Parks and green areas



Applications of IoT technology for Smart Cities

