

Smart Agriculture Solution



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How well you know the crop?

Nowadays, agriculture needs tools and technology to improve the efficiency and quality of production and reduce the environmental impact on the crop. The wireless sensor network in agriculture may bring out the fundamental contribution to precision agriculture. The precision agriculture is defined as the technique of applying the right amount of input (water, fertilizer, pesticides etc.) at the right location and at the right time to enhance production and improve quality, while protecting the environment.

Environment monitoring & Automated Control Platform



Vegetation farm, Taiwan



Poultry Farm, Chile



Organic Tomato, Holland



Data aggregation made easy!

To provide best cultivation conditions, the agricultural environment monitoring systems are developed based on various wireless sensors. LPWAN technology, which is targeting the large-scale wireless sensor network, can work effectively in agriculture environment consisting of constrained sensor devices.

LoRa Network Gateway

Features

- LoRa transmission over 10 KM (Line of sky)
- Setting up to 16 channel
- Ease of installation
- IP66 water-proof and dust tight enclosure
- Ethernet connection
- NB-IOT / 3G output (Optional)
- SMA Antenna connection for wide variety of antenna options
- 922~928 Radio Frequency Band adaption



Smart Multiple-protocol Controller Gateway

DC-powered smart controller gateway operates as the brain of whole eco-system. It receives wireless signal, implements logics computing and sends commands for local control and automation.

Wireless network

IEEE802.11 b/g/n(AP mode)

Network to Cloud

Ethernet(default)

Wireless Network

802.11 b/g/n

Wireless LPWAN(Optional)

LPWAN

NB-IOT/CAT-M(Optional)

LoRa Wan(Optional)

Server Integration

MQTT data-forward mode

Dimension

11.8 X 9.7 X 2.7cm

IoT device to gateway

IEEE802.15.4(HA profile)

LoRa(Physical Layer)

Application Server

SENTROL CLOUD®

Sensor Cloud Platform

Radio Frequency

ZB/Wireless Network: 2.4 GHz

LPWAN: 433/868/915 MHz

Power Supply

12VDC adapter

Certification

CE, FCC,NCC



[illegible]



SOIL

Smart High Precision Soil Moisture & Temperature Sensor

Battery-powered temp. & humidity sensor
with IP66 SGS certified test report with
NB-IOT Wireless Transmission

Measuring Range
-40~60°C
0.0 ~ 100.0% output scale
True read: 6.0~56.0% WME

Accuracy(At 25°C)Ref. of Mineral soils
Temperature: +/-1°C
Moisture: +/-5%

Repeatability
< 1% per year (typical)

Temp. Compensation
+/-0.02% / °C (Effect @ 0%RH)

Housing / Protection
ABS plastic water-resistant IP65.
Probe: SUS304 or SUS316

Wireless Protocol
ZB(2.4GHz)/ LPWAN(Sub-1GHz)

Supply Voltage
12VDC power supply
Enclosure
SGS Lab.-verified IP66 grade

Antenna
SMA connection

Certification
CE, FCC, TELEC, NCC





Smart CO2 Concentration Sensor

DC-powered smart CO2 concentration sensor measures reliable readings in outdoor or greenhouse monitoring.

Measuring Range
0~10000 ppm

Accuracy
+/-0.02% volume
CO2 +/-3% of reading

Alert Indication
1500 ppm

Indication
Human voice

Enclosure
IP54(Do not splash water)

Wireless Coverage
Up to 500 meters(Line-of-sight)

Power Supply
12VDC adapter

Radio Frequency
ZB:2.40~2.48 GHz
LoRa:433/868/915 MHz

Wireless Protocol
ZB HA Profile)ZigBee_3.0 Pending; LoRa

Certification
CE, FCC, NCC



Sensor probe

Smart Temperature and Humidity Sensor

Battery-powered wireless temperature & relative humidity sensor with IP66 SGS-verified enclosure meeting requirement in greenhouse and outdoor installation.

Measuring Range
T: -20~+65°C

Accuracy(ar 25°C)
T: +/-0.4°C(25°C)

Measuring Range
RH: 0%~100%(Non-cond.)

Accuracy
RH:+/-5%

Probe Length
2 meters

Wireless Protocol
ZB(2.4GHz)/ LPWAN(Sub-1GHz)

Power Voltage
AA battery(1.5V) X 4

Enclosure
SGB Lab.-verified IP66 grade

Antenna
SMA connection

Certification
CE, FCC, TELEC, NCC



Smart Extreme Range Temperature Sensor

Battery-powered wireless extreme range temperature sensor with IP66 grade housing and PT1000 sensor probe to measure temperature in -100 ~ +200 Celsius degree.

Measuring Range
T: -100~+200°C

Accuracy(ar 25°C)
T: +/-0.4°C(25°C)

Cable Material
Teflon

Probe material
SIU304 or SIU315

Probe Length
2 meters

Wireless Protocol
ZB(2.4GHz)/ LPWAN(Sub-1GHz)

Power Voltage
AA battery(1.5V) X 4

Enclosure
SGB Lab.-verified IP66 grade

Antenna
SMA connection

Certification
CE, FCC, TELEC, NCC



Smart Illuminance Sensor

12VDC-powered smart illuminance sensor provides installer with accurate brightness level readings for any brightness-dependent control and automation.

Measuring Range
0~200,000 Lux

Accuracy(ar 25°C)
+/-3%

Repeatability
<1% per year(typical)

Ambient Temp.
-15~+55°C

Housing
ABS water-resistant IP65

Wireless Protocol
ZB(2.4GHz)/ LPWAN(Sub-1GHz)

Power Voltage
12VDC power supply

Enclosure
SGB Lab.-verified IP66 grade

Antenna
SMA connection

Certification
CE, FCC, TELEC, NCC





Aquaculture monitoring and sensor-based control

Aquaculture is moving toward an intensive controlled environment production with a significant increase in production, but at a cost of increased risk of catastrophic loss due to equipment or management failures. In addition, managers of intensive production facilities need accurate, real-time information on system status and performance in order to maximize their potential.



pH

Measuring Range
0~14.00 pH

Accuracy(At 25°C)
0.01 pH

Resolution
0.01 pH +/-1 digit

Pressure
Max. 50 Psig

Reference system
Ag/AgCl Double Junction

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

DissolvedOxygen

Measuring Range
0~20.00 ppm

Accuracy(At 25°C)
+/-1% full scale

Resolution
0.01 pH +/-1 digit

Pressure
Max. 30 Psig

Response time
90% at 90 seconds or less

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

ORP

Measuring Range
-1000~+1000mV

Accuracy(At 25°C)
1mV

Resolution
1mV +/-1 digit

Pressure
Max. 50 Psig

Reference system
Ag/AgCl Double Junction

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Salinity

Measuring Range
0~50.0 ppt

Accuracy(At 25°C)
+/-1% full scale

Resolution
0.1ppt(0~50.0ppt)

Cell Constant
5.00

Sensor material
Material=graphite

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Dissolved Solids

Measuring Range
0~50.0 ppt

Accuracy(At 25°C)
+/-1% full scale

Resolution
0.1ppt(0~50.0ppt)

Cell Constant
1.00

Response time
90% at 90 seconds or less

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Electric Conductivity

Measuring Range
0~5.00 ms/cm

Accuracy(At 25°C)
+/-1% full scale

Resolution
0.01ms/cm(0~5.00 ms/cm)

Cell Constant
1.00

Sensor material
Material=graphite

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Ammonia(NH3)

Measuring Range
0~1000 ppm

Accuracy(At 25°C)
+/-2% full scale

Resolution
1ppm +/-1 Digit

Pressure
Max. 30Psig

Reference system
Ag/AgCl Double Junction

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Nitrate(NO3)

Measuring Range
0~1000 ppm

Accuracy(At 25°C)
+/-2% full scale

Resolution
1ppm +/-1 Digit

Pressure
Max. 30Psig

Reference system
Ag/AgCl Double Junction

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor

Fluoride

Measuring Range
0~1000 ppm

Accuracy(At 25°C)
+/-2% full scale

Resolution
1ppm +/-1 Digit

Pressure
Max. 30Psig

Reference system
Ag/AgCl Double Junction

Temp. Compensat
Automatic: 0~80°C

Supply Voltage
12VDC, >200mA

Ambient Temp.
-40 ~ +60°C

Enclosure
IP68 for sensor



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