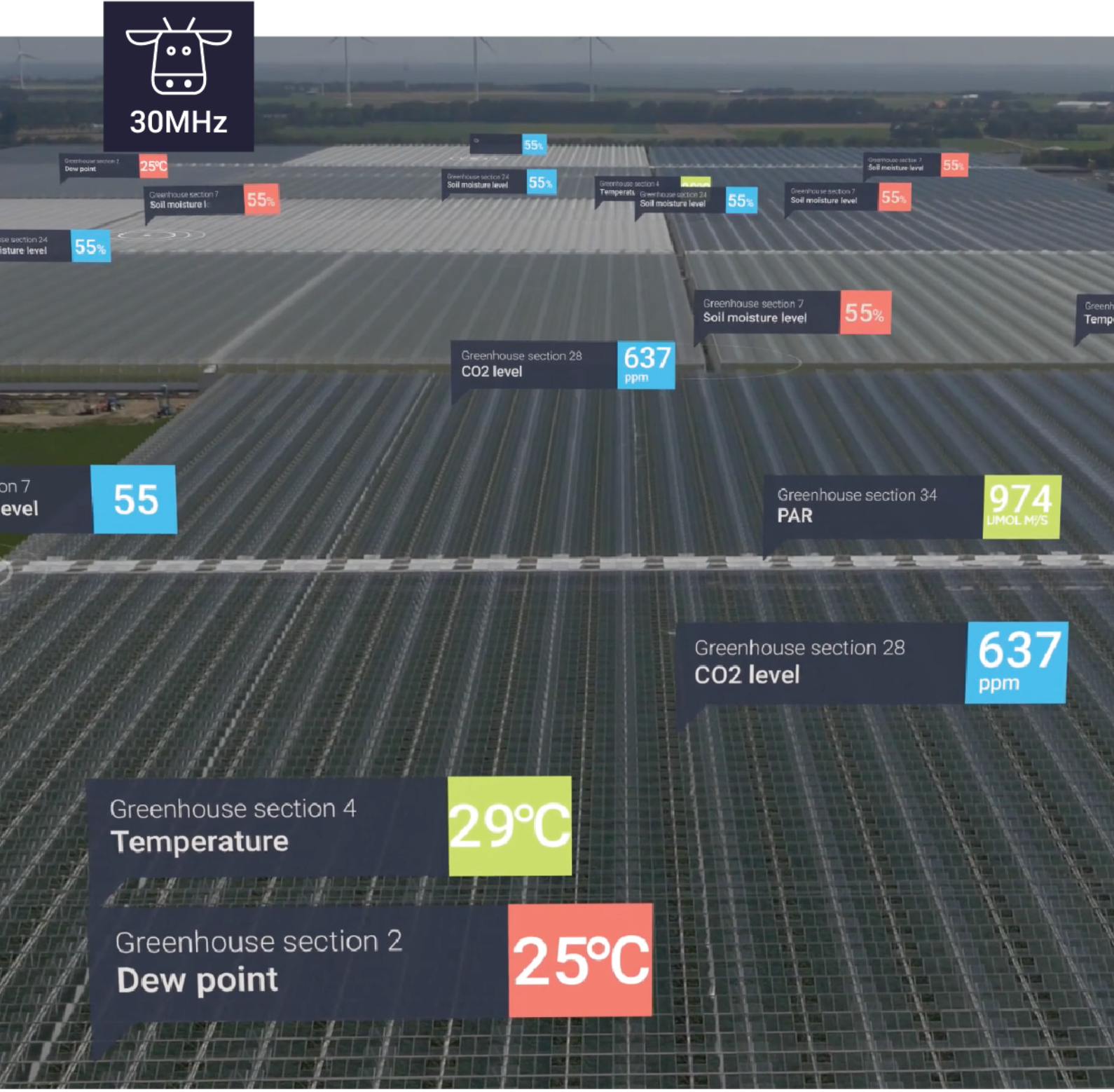


Product Catalogue

January 2018

Gateway (ethernet)

Suggested retail price
£ 500,-

External article number
MET1AM17

The 30MHz gateway is the central access point for network connectivity in the 30MHz Smart Sensing Toolkit. The gateway guarantees network access even in challenging, industrial conditions. Watertight and rugged, a single gateway can support up to 4,000 sensors, providing connectivity through walls, industrial materials and offshore.

Radio frequency range:
863MHz – 870MHz

Indoor/Urban range:
Up to 112m with a 2.1 dBi antenna, up to 14m with a PCB embedded antenna

Outdoor RF line-of-sight range:
Up to 8.4 km with a 2.1 dBi antenna, up to 0.64 km with a PCB embedded antenna

Power supply:
Power plug

Operating device limits:
Temperature -40 – 85°C

Ingress protection:
IP65

Gateway (3g)

Suggested retail price
£ 650,-

External article number
MCL1AM17

The 30MHz gateway is the central access point for network connectivity in the 30MHz Smart Sensing Toolkit. In its mobile version, the gateway comes equipped with a 3G modem, guaranteeing network access even in the most remote locations, without a fixed internet connection or power supply.

Radio frequency range:
863MHz – 870MHz

Indoor/Urban range:
Up to 112m with a 2.1 dBi antenna, up to 14m with a PCB embedded antenna

Outdoor RF line-of-sight range:
Up to 8.4 km with a 2.1 dBi antenna, up to 0.64 km with a PCB embedded antenna

Power supply:
Power plug

Repeater

Suggested retail price
£ 175

External article number
RTR1PR17

The 30MHz Repeater propagates the sensor mesh network. It serves as a router, ensuring network connectivity and preventing path loss, regardless of terrain, obstructions in the environment (ex: walls or metal structures) or propagation medium (ex: level of moisture in the air).

Unit of measurement:
V (internal) battery measurement

Temperature Humidity sensor

Suggested retail price
£ 162

External article number
SHT1AM16

Developed for the needs of commercial farmers, the temperature humidity sensor is designed to provide real-time granular data on environmental conditions from any location, including harsh environments for long periods e.g. cold storage container. Set your parameters in the ZENSIE dashboard, and get alerts as soon as temperature or humidity rises or falls beyond your defined thresholds. *Not recommended for use in direct sunlight

Unit of measurement:
Temperature-Celsius; Humidity- %; Internal (battery)- Volts

Measurement range:
Temperature -40°C – 125°C; Humidity 0% – 100%; Voltage 0 -4.2 Volts

Measurement deviations:
Temperature ±0.2°C; Humidity ±1.8%

Operating device limits:
Temperature -40°C – 60°C; Humidity up to 100%

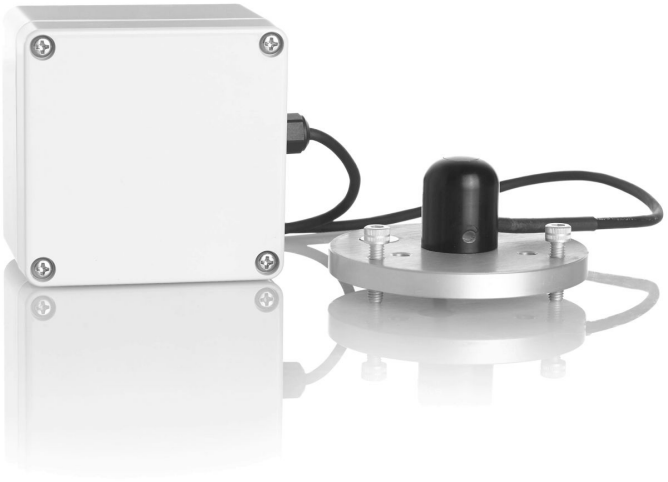
Power supply:
Battery

Ingress protection:
IP65

PAR sensor
(electric calibrated)

Suggested retail price
£ 500

External article number
APE1AM16



This rugged sun calibration quantum sensor was designed to measure the strength of electric light. Use the PAR sensor to measure PPFD (Photosynthetic Photon Flux Density) in agricultural environments including greenhouses, growth chambers, or outdoor plant canopy environments.

Power supply:
Power plug

Operating device limits:
Temperature -25 – 55°C; Humidity 35 – 85%

Ingress protection:
IP65

Output (sensitivity):
0.2 mV per µmol m-2 s-1

Calibration uncertainty:
± 5 %

Measurement repeatability:
Less than 0.5 %

Long-term drift:
Less than 2 % per year

Non-linearity:
Less than 1 % (up to 4000 µmol m-2 s-1)

Field of view:
180°

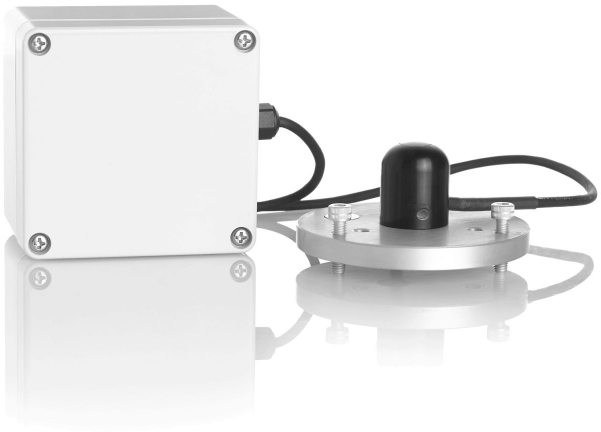
Spectral range:
410 nm to 655 nm

Can be submerged in water up to depths of 30m

PAR sensor
(sun calibrated)

Suggested retail price
£ 500

External article number
APS1AM16



This rugged sun calibration quantum sensor was designed to measure the strength of natural sunlight. Use the PAR sensor to measure PPFD (Photosynthetic Photon Flux Density) in agricultural environments including greenhouses, growth chambers, or outdoor plant canopy environments.

Power supply:
Power plug

Operating device limits:
Temperature -25 – 55°C; Humidity 35 – 85%

Ingress protection:
IP65

Output (sensitivity):
0.2 mV per µmol m-2 s-1

Calibration uncertainty:
± 5 %

Measurement repeatability:
Less than 0.5 %

Long-term drift:
Less than 2 % per year

Non-linearity:
Less than 1 % (up to 4000 µmol m-2 s-1)

Field of view:
180°

Spectral range:
410 nm to 655 nm

Can be submerged in water up to depths of 30m

Pointed Temperature sensor

Suggested retail price
£ 384

External article number
PNT2AM17

This design is built to flexibly position around objects of any shape and measure surface temperature without contact. Go beyond measuring ambient temperature in your greenhouse, with real-time data on every plant, vegetable, fruit or leaf. Benchmark and compare temperatures across greenhouse sections, or contrast granular metrics on a single plant. Set your parameters in the ZENSIE dashboard, and get alerts as soon as temperature rises or falls beyond your defined thresholds.

Unit of measurement:
Temperature – Celcius; Internal (battery) voltage – Volts

Measurement range:
Temperature -20°C – 120°C; Voltage 0-4.2 Volt

Measurement deviations:
Temperature ±0.5°C

Sensing distance:
FoV (Field of View) 10°

Power supply:
Battery/plugin rechargeable

Operating device limits:
Temperature -20 – 120°C; Humidity up to 85%

Ingress protection:
IP65

Pointed Microclimate sensor

Suggested retail price
£ 534

External article number
DPT1AM17

This sensor uses object temperature and temperature humidity measurements to continuously capture dew point, vpd, temperature and humidity on crop level, at close range. Use data from the sensor to better determine, plant acitivity, heating needs, cutting unnecessary energy expenditures and lowering the risk of plant disease.

Power supply:
Battery

Ingress protection:
IP67 watertight
Suitable for measurements in the sun

Temperature humidity element:
Mounted in a sensor hut that protects it from sun and allows for ventilation

Range:
0-100% relative humidity; -40 – 125 C temperature

Accuracy:
2% ; 0.2 C

Pointed temperature element:
Mounted in a flex tube that allows for the sensor to be aimed at an object

Range:
-40 – 125 C ambient temperature

Range:
-70 – 380 C object temperature

Accuracy:
0.5 C accuracy

FOV (field of view):
10 degrees

Charger Pointed Temperature sensor

Suggested retail price
£ 80,-

External article number
PTH1AM17

Charger suitable for the Pointed Temperature sensor and the Pointed Microclimate sensor

Power supply: Battery	**Ingress protection:** IP65

Airflow sensor

(0-20 m/s)

Suggested retail price
£ 600

External article number
AFX1AM17

Developed for the needs of commercial farmers, this rugged, watertight and easy to mount anemometer captures sensory data on rapid airflow at 0-20 meters per second. Use real-time airspeed data captured in the ZENSIE dashboard to optimize outdoor irrigation, bulb drying and processing, as well as manufacturing conditions.

Unit of measurement:
Meters per second

Measurement range:
0-324 m/s

Measurement deviations:
±1 m/s

Power supply:
Power plug

Airflow sensor
(0-2 m/s)

Suggested retail price
£ 688,-

External article number
AF21AM17

Developed for the needs of commercial farmers, this rugged, watertight and easy to mount anemometer captures sensory data on subtle changes in airflow at 0-2 meters per second. Use real-time airspeed data captured in the ZENSIE dashboard to monitor storage, drying and processing, as well as manufacturing conditions.

Range:
0-2 m/s

Ingress protection:
IP65

Power supply:
Power plug; 24vdc

Working range:

Humidity:
10…95 % RH (non-condensing); working

Temperature:
-20…60 °C (-4…140 °F);

Storage temperature:
-30…60 °C (-22…140 °F)

C02 sensor (plug)

Suggested retail price
£ 295,-

External article number
SAP1AM16

Whether it’s an office space, retail location, or museum, make better decisions managing your facilities by combining air quality data with other insights on your physical. Track space occupancy, people flow, ambient temperature, or tell us the metric you need below.

Unit of measurement:
ppmvol

Measurement range:
0 – 2000 ppmvol

Power supply:
Power plug

Operating device limits:
Temperature: 0 – 50°C

Humidity:
0 – 95%

Arable Soil Moisture sensor (GS1)

Suggested retail price
£ 472,-

External article number
GS11AM17

This soil sensor determines volumetric water content (VWC) by measuring the dielectric constant of the medium using capacitance and frequency domain technology to provide accurate measurements of all soils and soilless medias with a wide range of salinities.

Using real-time data from soil sensors, farmers can adjust and tailor a granular approach to irrigation and nutrient delivery. Custom alerts can provide insights on which crops are in need of irrigation, and which are in need of drainage to prevent the damaging effects of overwatering including standing water compromising root development, overaccumulation of salts, root rot, fungus and mildew.

Measurement Time:
10 ms (milliseconds)

Output:
1,000 to 2,500 mV

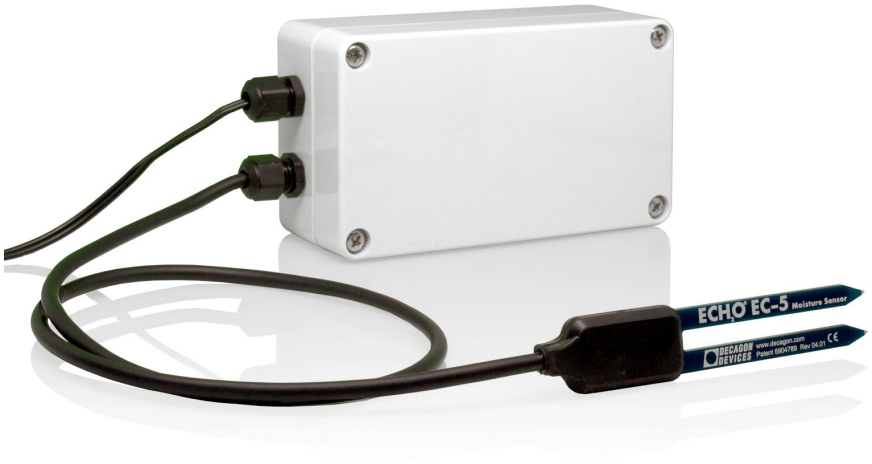
Operating Environment:
-40 to 50°C

Range of Measurement:
0 to 57% VWC

Potted Soil Moisture sensor (EC5)

Suggested retail price
£ 434,-

External article number
EC51AM17



This wireless soil moisture sensor is built to monitor volumetric water content (VWC) for an accurate measurement of all soils and soilless medias with a wide range of salinities. Using real-time data from soil sensors, farmers can adjust and tailor a granular approach to irrigation and nutrient delivery. Custom alerts can provide insights on which crops are in need of irrigation, and which are in need of drainage to prevent the damaging effects of overwatering including standing water compromising root development, overaccumulation of salts, root rot, fungus and mildew.

Measurement Time:
10 ms (milliseconds)

Output:
10 to 40% of excitation voltage (250 to 1,000 mV at 2,500 mV excitation)

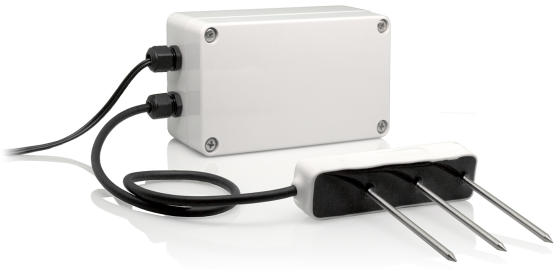
Operating Environment:
-40 to 50C

Range of Measurement:
0 to 100%

Substrate Moisture sensor (GS3)

Suggested retail price
£ 942,-

External article number
GS31AM17



This sensor was designed to measure the water content, electrical conductivity, and temperature of many types of growing media, primarily in greenhouse applications where the slim, stainless steel needles could be inserted easily into a variety of substrates. Besides the sensor can provide insights on which crops are in need of irrigation, and which are in need of drainage to prevent the damaging effects of overwatering including standing water compromising root development, overaccumulation of salts, root rot, fungus and mildew.

Volumetric Water Content
Accuracy:
Ea: +/-1 Ea (unitless) from 1 to 40 (soil range), +/-15% from 40 to 80:

Using a generic calibration: +/-0.03 m3 (+/- 3% VWC) typical in mineral soils that have solution electrical conductivity < 5 dS/m

Using medium specific calibration, +/- 0.01 to 0.02 m3 (+/-1 to 2% VWC) in any porous medium
Resolution:
Ea: 0.1 Ea (unitless) from 1 to 20
< 0.75 “a (unitless) from 20 to 80
0.002 m3 (0.2% VWC) from 0 to 40% VWC
0.001 m3 (0.1% VWC) > 40% VWC

Range:
Apparent dielectric permittivity (Ea): 1 (air) to 80 (water)

Bulk Electrical Conductivity

Accuracy:
+/- 5% from 0 to 5 dS/m, +/-10% from 5 to 23 dS/m

Resolution:
0.001 dS/m from 0 to 23 dS/m
Range: 0 to 25 dS/m (bulk)

Temperature

Accuracy: +/- 1 C
Resolution: 0.1 C
Range: -40 to 60 C

Vibration sensor

Suggested retail price
£ 130,-

External article number
VBR1AM16

This vibration sensor is designed to detect occupancy with adjustable levels of sensitivity. Monitor the occupancy of desks, benches or chairs to optimize hot desking in offices, track seating in bars, restaurants, or ticketing desks in airports. Use the vibration sensor alongside the people sensor, CO2 sensor and PIR sensor for deeper insights on space usage, or attach to any asset to track utilisation.

Unit of measurement:
%; Volt (internal battery)

Measurement range:
0 – 100%; 0 – 4.2 Vol

Power supply:
Battery

Ingress protection:
IP50

Passive Infrared sensor (PIR)

Suggested retail price
£ 250,-

External article number
PRS1AM17

The Passive Infrared (PIR) Sensor measures infrared light emitted from objects that generate heat, and therefore infrared radiation. Use this sensor to detect occupancy and presence at desks, in office spaces, detect the presence of animals in pens or mice in mouse traps.

Power source:
Battery

Detection range:
5m

Viewing angle:
Horizontal 94 deg. (+/- 47 deg.); vertical 82 deg. (+/- 41 deg.)

64 detection zones

Object Counter

Suggested retail price
£ 270,-

External article number
CTR1AM16

Developed with Dutch seed company Pop Vriend to monitor and optimise conveyor belt usage, this photoelectric sensor counts passing items in real-time at up to a meter distance. This sensor can detect and count transparent and reflective objects, and its visible, high power LED light compensates for dirt and makes alignment easy.

Unit of measurement:
Items counted

Measurement range:
Positive integer

Sensing distance:
1m

Power supply:
Power plug

Operating device limits:
Temperature -25 – 55°C; Humidity 35 – 85%

Ingress protection:
IP65

Magneto sensor

Suggested retail price
£ 320,-

External article number
MAG1AM17

Designed for rugged industrial conditions, this three-axis magnetic field sensor can detect the presence of metal objects like cars, ships or bicycles.

Unit of measurement:
Presence- yes/no; Volt (internal battery)

Measurement range:
0.01 – 0.5m; 0-4.2 Volt

Measurement deviations:
Adjustable

Sensing distance:
±0.5m

Power supply:
Battery

Operating device limits:
Temperature -20 – 85°C

Ingress protection:
IP65

PT 100, 500, 1000

Suggested retail price
£ 500,-

External article number
PTC1AM17

PTD1AM17

PTM1AM17

This sensor is designed for an accurate measurement of the temperature of raw materials, liquids or crops in storage. Especially suited for locations where its necessary to monitor in the center, such as a pile of crops, reservoirs or any similar situation.

Unit of measurement:
Temperatuur; Volt (internal battery)

Measurement range:
-50º- +250º – 0.5m; 0-4.2 Volt

Measurement deviations:
Class B

Measuring probe:
Variable length; base 300mm
Diameter: 6mm

Power supply:
Battery

Operating device limits:
Temperature -20 – 85°C

Ingress protection:
IP65

Wind Direction sensor

Suggested retail price
£ 550,-

External article number
LBD1AM17

Have more control over the airflow in in your greenhouse, storage units or workplace with the wind direction sensor. Use it alongside the 30MHz airflow sensor to determine how variables such as CO2, temperature and humidity affect wind direction.
The sensor is also suitable for outdoor use.

Unit of measurement:
º; Volt (internal battery)

Measurement range:
0 – 360°; 0-2.5 Volt

Measurement deviations:
< ± 2°

Power supply:
Power Plug

Operating device limits:
Rate: max 80 m/s

Ingress protection:
IP65

Wind Speed sensor

Suggested retail price
£ 550,-

External article number
LBS1AM17

This sensor measures wind speeds up to 55 m/s and is therefore also suitable for outdoor measurement. Gain insights on weather conditions in fields and lower tech greenhouses, or monitor areas where significant airstreams affect growth.

Unit of measurement:
m/s - Yes/no; Volt

Measurement range:
0.4 tot 55 m/s; 0-2.5 Volt

Measurement deviations:
< ± 0.5 m/s

Power supply:
Power plug

Operating device limits:
Rate: max 80 m/s

Ingress protection:
IP65

Pay as you use service

*Variable monthly pricing depends on how frequently the user is updating the information (i.e. every minute, 5 minutes, hourly, daily). Eg: updating every minute will cost £4/month and every 5 minutes £1.6/month.

No contract - End of season or sensors not in use, simply turn off to stop paying.

Product	Monthly Price (GBP)
Gateway	£25
Sensors	£1-£4*
Relay	No fee
ZENSIE dashboard/API	No fee