

# MIRCOD E-AGRICULTURE

## BRIEF SUMMARY

EASY TO USE, LONG LIFE SOIL CONTROL STATIONS

OPTIONAL AMBIENT TEMPERATURE AND HUMIDITY SENSOR

REAL-TIME SOIL MOISTURE AND TEMPERATURE MONITORING

MEASUREMENTS AT 8", 20" AND 38" DEPTH

1-YEAR WARRANTY INCLUDED

NO TELEMETRY TOWER REQUIRED (DIRECT CELLULAR CONNECTION)

RECHARGEABLE UNITS (OPTIONAL)

WORLDWIDE COVERAGE

ADVANCED SENSING CAPABILITIES PROVIDING BETTER ACCURACY

ELECTRICAL CONDUCTIVITY (EC) SENSING READY

SUBSCRIPTION FEE MODELS INCLUDED: POWERFUL WEB SERVERS, ACCESS DATA WITH ANY STANDARD BROWSER ON YOUR PC / TABLET/ SMARTPHONE.

CUSTOM THRESHOLD SETTINGS FOR EACH STATION TO CONFIGURE YOUR OWN ALERTS.

SDK & API CALLS WITH SENSOR DATA OUTPUT IN XML/JSON FORMAT



## ADVANCED ENTERPRISE FEATURES

EMAIL, EMAIL-TO-SMS ALERTS

HARDWARE SUPPORT FOR ADDITIONAL SENSORS

CUSTOM CONFIGURABLE SMTP SETTINGS FOR YOUR OWN EMAIL SERVERS.

PUSH TO CLOUD FEATURE ENABLES REMOTE DATA LOGGING, APPS, AND PROCESSING.

SNMP SUPPORT

POSSIBLE INTEGRATION WITH IT MONITORING SOFTWARE SUCH AS NAGIOS, SPLUNK, SOLARWINDS, PRTG AND MORE.

OPTIONAL: CUSTOM PLUGINS FOR: NAGIOS, XML APIS, OR SNMP.

## POSSIBLE APPLICATIONS

PRECISION AGRICULTURE

LEAF WETNESS

IRRIGATION SYSTEMS

SOIL MOISTURE

GREENHOUSES

SOLAR RADIATION, HUMIDITY, TEMPERATURE

WEATHER STATIONS

ANEMOMETER, WIND VANE, PLUVIOMETER



## SOIL MOISTURE SENSOR ACCURACY

TOLERANCE OF  $\pm 1.5\%$  AFTER CALIBRATION. WEB INTERFACE IS AVAILABLE FOR FIELD CALIBRATION AS WELL.



## SENSORS VARIATIONS AND POSSIBLE COMBINATIONS

AIR TEMPERATURE, HUMIDITY AND PRESSURE

SOIL TEMPERATURE / MOISTURE

LEAF WETNESS

SOLAR RADIATION - PAR

ULTRAVIOLET RADIATION - UV

ANEMOMETER

WIND VANE

PLUVIOMETER

LUMINOSITY (LUXES) – STANDALONE ATTACHMENT

ULTRASOUND (ANTITHEFT SYSTEM) (DISTANCE MEASUREMENT) – STANDALONE ATTACHMENT



## SPECIAL SENSORS AND STATION CONFIGURATIONS:

AMMONIUM (NH <sub>4</sub> <sup>+</sup> )	MAGNESIUM (MG <sub>2</sub> <sup>+</sup> )
BROMIDE (BR <sup>-</sup> )	NITRATE (NO <sub>3</sub> <sup>-</sup> )
CALCIUM (CA <sub>2</sub> <sup>+</sup> )	NITRITE (NO <sub>2</sub> <sup>-</sup> )
CHLORIDE (CL <sup>-</sup> )	PERCHLORATE (CIO <sub>4</sub> <sup>-</sup> )
CUPRIC (CU <sub>2</sub> <sup>+</sup> )	POTASSIUM (K <sup>+</sup> )
FLUORIDE (F <sup>-</sup> )	SILVER (AG <sup>+</sup> )
IODIDE (I <sup>-</sup> )	SODIUM (NA <sup>+</sup> )
LITHIUM (LI <sup>+</sup> )	PH LEVEL

## WHEN AND WHY?

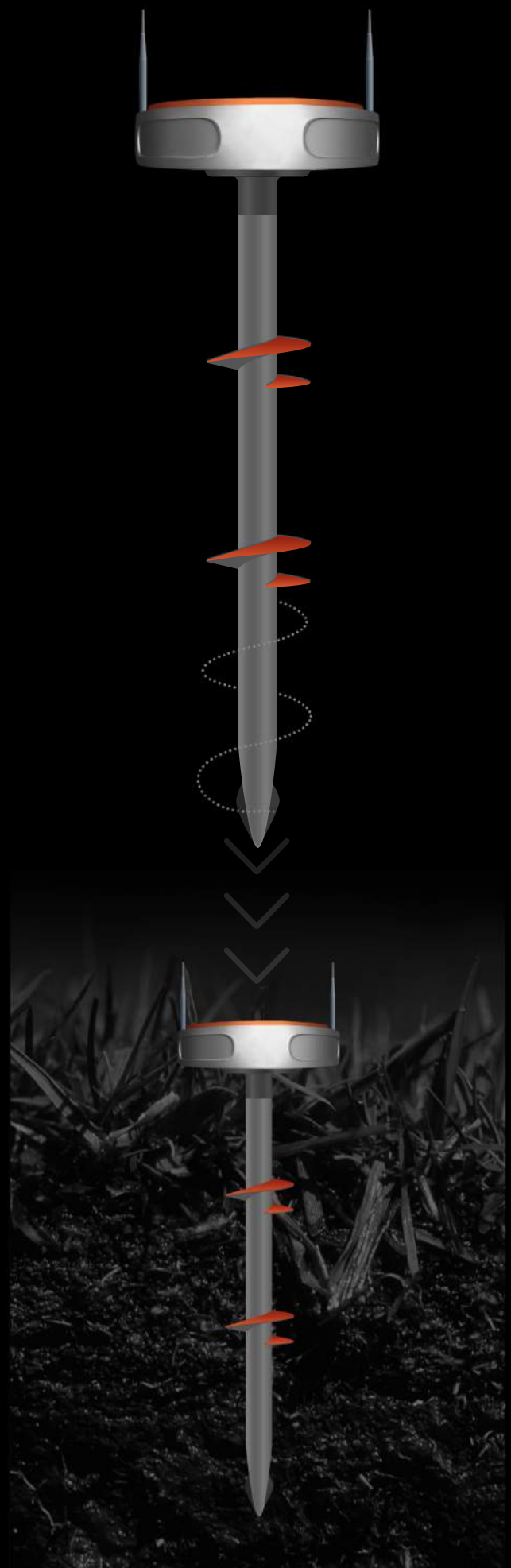
When you want to measure soil moisture and temperature with extreme accuracy at multiple depths to analyze water penetration through the soil.

When you need an extremely accurate and durable single-point soil sensor to measure moisture content and temperature.

When you need the electrical conductivity (salinity) and would like a simple way to measure the wetting front.

When you want a large area of influence surrounding the sensor.

Measurement range	Moisture	0% to 100%
	Temperature	-20°C to +70°C (-4°F to 158°F)
	EC	0 to 4 dS/m
Accuracy	Moisture	±1.5%
	Temperature	±0.5 °C
	EC	±3%
Precision	Moisture	< 0.2%



## MIRCOD BENEFITS

GENERALLY USES UNLICENSED SPECTRUM (868 MHZ IN EUROPE AND 915 MHZ IN US, CANADA FOR EXAMPLE)

RANGE: FROM A FEW KILOMETERS IN DENSE URBAN AREAS UP TO 15-30 KILOMETERS IN OPEN AREAS

POWER: 5+ YEARS OF BATTERY LIFE (THE DEVICE'S POWER PRODUCED CANNOT EXCEED 25-50 MW, TO COMPLY WITH USAGE OF BAND OF FREQUENCIES CLUSTERED AROUND 2.4 GHZ (WERE DESIGNATED, ALONG WITH A HANDFUL OF OTHERS, AS THE INDUSTRIAL, SCIENTIFIC, AND MEDICAL RADIO BANDS), AND TO LIMIT DATA CONSUMPTION AND PRESERVE BATTERY LIFE.)

RADIO CHIPSET COST: \$25 OR LESS

RADIO SUBSCRIPTION COST: \$60 PER DEVICE/ YEAR

## MIRCOD HIGHLIGHTS

MIRCOD LOW POWER WIDE AREA (LPWA) TECHNOLOGIES MOST SUITED FOR ON/OFF TYPE APPLICATIONS WITH ONLY A FEW MESSAGES PER HOUR. (TRACKING, AGRICULTURE, SCIENTIFIC USAGE ETC...)

5 - 10X FEWER BASE STATIONS REQUIRED THAN EXISTING 3G/4G

LPWAN CAPABILITIES WILL EVENTUALLY BE INTEGRATED INTO 5G SERVICE BASE STATIONS ALL AROUND THE WORLD

