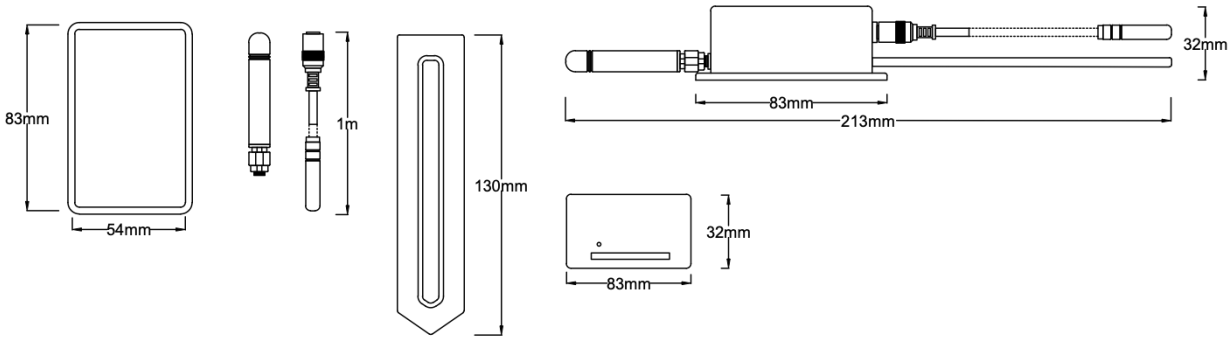
SKYAGR1

Soil Monitoring Sensor

Skysens SKYAGR1 is LoRaWAN based cost-effective, easy to use soil moisture and temperature monitoring solution for landscaping, farming and other application areas.

- Linear moisture reading.
- Up to 5 years of battery life.
- Excellent long-term stability.
- LED interface.
- Adjustable sensor reading interval from network
- Ready with end-to-end software application.
- Magnetic restart function.

Application Areas : Agricultural fields, greenhouse areas, stadiums, farms, landscaping applications, golf courts, etc.



Dimensions	54 x 83 x 32 mm Probe: 100 mm	Available Frequencies	All
Weight	150 gr (apprx)	Temperature Sensitivity	0.5 C between -10 and +85 C
Casing	ABS with RoHS Compliancy	Humidity Sensitivity	1% RH between 20% and 80%
Antenna	+3 dBi external	Operating Conditions	-40ºC to +80ºC & 0% RH to 100% RH
Expected Battery Life	Up to 5 years	Battery	3.6V $LiSOCl_2$ AA (Changeable)

SKYAGR1

PRODUCT IMAGES, BUTTONS AND PLUG-INS

SKYAGR1

PAYLOAD STRUCTURE – Uplink

Sample Payload: 0x00E90320000000000000000000000E1000

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
Temperature MSB	Temperature LSB	Humidity MSB	Humidity LSB	Reserved	Reserved

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
Reserved	Reserved	Reserved	Reserved	Battery MSB	Battery LSB

Byte 18
Reserved

- Note: Temperature is multiplied by 10, divide by 10 to find temperature value. Battery information is given in mV form. Battery must be changed when the value goes below 3200mV.

- Note: For moisture calculation take moisture MSB and moisture LSB bytes, convert them to decimal directly. Use following formula to convert raw data to real moisture percentage:

$$MoistureinPercentage(\%) = -0.2017 \times RawMoisture + 192.96$$

SKYAGR1

PAYLOAD STRUCTURE – Downlink

Interval Change Downlink

Following message should be sent to the device in order to change message period of the device.

Interval Change Command	
Port	**Message**
0x0B	0x02$T_0T_0T_1T_1T_2T_2T_3T_3$

T values at the above table are time values in seconds and hexadecimal form. Must be sent in MSB first form. For example, 0x0200000384 message should be sent to the device in order to set message interval to 900 seconds. (0x384H = 900) These values can take from 1 minute to 6 hours.

Reset Downlink

Following message should be sent to the device in order to reset the device.

Reset Command	
Port	**Message**
0xFA	0x01

SKYAGR1

Reset Operation

Bring the magnet close to the magnetic area and hold, red LED must light for a while and start blinking. When you see the blinking take the magnet away. The device gets reset by this operation and after every reset operation, the device goes into sleep mode automatically by blinking red LED twice.

Wake Up

To exit sleep mode and take the device to the normal operation mode, bring the magnet close to the magnetic area button until you see the red LED light. When you see red light take the magnet away and the device will go into normal operation mode by blinking red LED a couple of times.

OTAA Mode

The device requests OTAA join to the server after the device wakes up and goes into the normal operation mode. OTAA requests are represented by the blinking red LED once per request. When the device successfully joins to OTAA mode red LED lights for a while.

Communication

The device indicates uplink communication by blinking red LED once and downlink communication by blinking red LED once.

ABP

For ABP please contact SKYSENS.

Error Behaviour

The first time device with a hardware problem is energized, it flashes the red led at the intervals of five hundred milliseconds, to indicate there is a hardware problem.