

SKYIND1-E

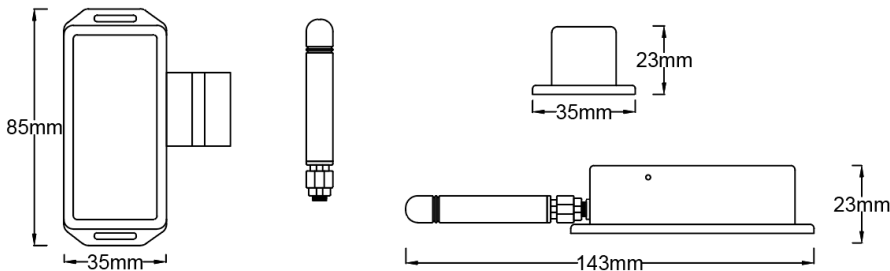
Energy Meter Reading Device

Skysens SKYENR1 is an energy metering device with RS-485 port compatible with IEC 62056-21 protocol. It provides a cost-effective solution with its long battery life and integration capability to with existing meters.

- Completely programmable interface.
- Excellent long-term stability.
- LED Interface.
- Easy attachment with accessories.
- Adjustable sensor reading interval from network.
- Ready with end-to-end software application.
- 2 Mode restart pin button.
- Up to 8 meters can be read with only one device.



Application Areas: Buildings, residential areas, campuses, stadiums, factories, etc.



Dimensions	35 x 85 x 23 mm	Expected Life	Battery	min 5 year with 30 min interval
Casing	ABS	Weight		150 gr (apprx)
Available Frequencies	All	Interface		RS485 - IEC 62056-21
Antenna	+2 dBi or +3dBi external	Working Range		0%-100% RH, -60 °C +85°C
Battery	1 1/2 AA Battery or 5V1A Supply			

SKYIND1-E

PRODUCT IMAGES, BUTTONS AND PLUG-INS



SKYIND1-E

PAYLOAD STRUCTURE

Manual Read Uplink

Device sends this message after reading manually a meter connected to it.

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4
Prefix (11)	Meter Serial XMSB	Meter Serial XLSB	Meter Serial MSB	Meter Serial LSB
Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
Active Index XMSB	Active Index XLSB	Active Index MSB	Active Index LSB	Capacitive Index XMSB
Byte 10	Byte 11	Byte 12	Byte 13	Byte 14
Capacitive Index XLSB	Capacitive Index MSB	Capacitive Index LSB	Inductive Index XMSB	Inductive Index XLSB
Byte 15	Byte 16	Byte 17	Byte 18	Byte 19
Inductive Index MSB	Inductive Index LSB	Battery MSB	Battery LSB	Read Status

Note: All of the index and serial numbers are in 32 bits hexadecimal form.

Slot Read Uplink

Device sends this message after receiving a specific read downlink. Meter serial saved on a slot can be read by this message.

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4
Prefix (31)	Slot Number	Serial 0	Serial 1	Serial 2
Byte 5	Byte 6	Byte 7	Byte 8	Byte 9
Serial 3	Serial 4	Serial 5	Serial 6	Serial 7

Take each byte of the serial number and convert these byte from ASCII to hexadecimal to find the serial number of the device.

SKYIND1-E

PAYLOAD STRUCTURE

Regular Uplink

Device sends regular uplink message after each read of connected meters to it.

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
SN XMSB	SN XLSB	SN MSB	SN LSB	1.8.0 XMSB	1.8.0 XLSB

Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11
1.8.0 MSB	1.8.0 LSB	1.8.1 XMSB	1.8.1 XLSB	1.8.1 MSB	1.8.1 LSB

Byte 12	Byte 13	Byte 14	Byte 15	Byte 16	Byte 17
1.8.2 XMSB	1.8.2 XLSB	1.8.2 MSB	1.8.2 LSB	1.8.3 XMSB	1.8.3 XLSB

Byte 18	Byte 19	Byte 20	Byte 21	Byte 22	Byte 23
1.8.3 MSB	1.8.3 LSB	8.8.0 XMSB	8.8.0 XLSB	8.8.0 MSB	8.8.0 LSB

Byte 24	Byte 25	Byte 26	Byte 27	Byte 28	Byte 29
5.8.0 XMSB	5.8.0 XLSB	5.8.0 MSB	5.8.0 LSB	Battery MSB	Battery LSB

Byte 30

Readout Err
Check Byte

Note: All Data are represented as 4 bytes form. Consider all of 4 bytes are 1 number (from XMSB to LSB). Battery information is given in mV form. All index information is given in kWh or kVarh form, convert 32 bits hexadecimal number into decimal to get index values (Ex: H000000BA = 186 kVarh). Indexes from 1.8.0 to 1.8.3 represents active power indexes, 5.8.0 represents inductive power index, 8.8.0 represents capacitive power index. Readout Error Check Byte represents if there are any read error happened, 0x01 means error

SKYIND1-E

PAYLOAD STRUCTURE

Erase Memory Downlink

This message should be sent to the device to erase serial numbers written on its memory.

Erase Memory Downlink	
Port	Message
0x0A	0x41

Save Meter Serial Number Downlink

This message should be sent to the device to save a serial number to device's memory. Device will automatically read the meter with given specific serial number regularly.

Save Meter Serial Number Downlink										
Port	Message									
0x0A	0x21	Slot Nr.	Ser. 0	Ser. 1	Ser. 2	Ser. 3	Ser. 4	Ser. 5	Ser. 6	Ser. 7

Each byte of the serial number of meter should be sent in hexadecimal form converted from ASCII number.

Read Previously Saved Meter Serial Number Downlink

This message should be sent to the device to read serial number of a meter previously saved in a given specific memory location (slot).

Read Previously Saved Meter Serial Number Downlink	
Port	Message
0x0A	0x31SN

Here, SN represents the slot number. Can be from 0 to 7.

SKYIND1-E

PAYLOAD STRUCTURE

Manual Read Downlink

This message should be sent to the device to read a connected meter manually.

Save Meter Serial Number Downlink									
Port	Message								
0x0A	0x11	Ser. 0	Ser. 1	Ser. 2	Ser. 3	Ser. 4	Ser. 5	Ser. 6	Ser. 7

Each byte of the serial number of meter should be sent in hexadecimal form converted from ASCII number.

Interval Change Downlink

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

Interval Change Downlink	
Port	Message
0x0B	0x02T ₀ T ₀ T ₁ T ₁ T ₂ T ₂ T ₃ T 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.

Remote Reset Downlink

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

Reset Command	
Port	Message
0xFA	0x01

SKYIND1-E

DEVICE INFORMATION

Reset Operation

Push the reset button and hold, red LED must light for a while and start blinking. When you see the blinking release the button. The device gets reset by this operation and after every reset operation, the device goes into sleep mode automatically by blinking red and green LEDs once.

Wake Up

To exit sleep mode and take the device to the normal operation mode, push the reset button until you see the red LED light. When you see red light release the button and the device will go into normal operation mode by blinking LEDs in a sequence of green-red-green.

This device will automatically wake up when energized.

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 green LED once per request. When the device successfully joins to OTAA mode green LED lights for a while.

Communication

The device indicates uplink communication by blinking green 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.