OLN868-X USER GUIDE

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INTRODUCTION

This user guide will specify how to use and interact with OLN868-X type of devices. Some sections will be specific to a specific type of device. The devices uses LoraWAN stack V1.0.2. — Class A

2. TURNING UNIT ON/OFF

The unit should arrive in the off state to conserve battery power. Some units could arrive without the battery on with a plastic tab preventing the battery from being connected — in this case remove the plastic tab or insert the battery. By default, the unit will be **off after the battery is inserted.** This means no radio messages will be sent. T**he magnetic switch is close to the bottom right corner.**

2.1. Turning on
To turn the LoraWAN radio on — hold a magnet close to the bottom right corner for 2 to 3 seconds. The unit will turn on the red light for a few seconds continuously indicating that it is powered up. The unit will now attempt to register on the LoraWAN network with the settings programmed.

2.2. Turning off
To turn off the LoraWAN radio — hold a magnet close to the bottom right corner for 2 to 3 seconds. The unit will flash the red light 3 times to indicate that it is turning off.
NOTE: A pulse counter unit (OLN868W) (e.g., water meter) will still count pulses in the off state — all other units will stop measuring/sensing.

3. PROGRAMMING/CHANGING SETTINGS

The unit must be opened, and a programming cable attached before going further. To place the unit in programming mode (can be done in either on or off state) — hold a magnet close to the bottom right corner for 10 seconds or until the unit flashes both red and blue lights together. The lights will flash every 3 seconds to indicate that it is in programming mode. The unit will exit programming mode after 60 seconds of not receiving any data. Use the LoraWAN Sensor Configurator (LWSC) software to read up the device, change settings and then program (Write Config) back to the device.

3.1. LoraWan Sensor Configurator

This section describes the fields in the software to change the behavior of the device.

3.1.1. LoraWAN Settings

· Application EUI — the exact application EUI as per your LoraWAN server application ID — this has to be 8 bytes long.
· Encryption Key — the specific encryption key for the device as entered in your LoraWAN server — this must be 16 bytes long.
· Report Interval — how often the device has to report on it sensor/measurements.

3.1.2. Pulse Count Settings

· Force TX Count — the number of pulses to force a transmit. Only applicable to a pulse counter device (OLN868W)

3.1.3. Trigger Settings

· High Time — the number of seconds a high level (pressure, input, temperature, etc.) must be valid for (equal or exceed) continuously before triggering a valid high-level message.
· Low Time — the number of seconds a low level (pressure, input, temperature, etc.) must be valid for (equal or exceed) continuously before triggering a valid low-level message.

3.1.4. Actions

· Read Config — will read the current config from the device.
· Write Config — will write the form data back to the device.

4. OVER AIR CONFIG CHANGES

The unit can change settings by sending a LoraWAN downlink message to the device. USE THIS AT YOUR OWN RISK as certain reserved sections can render the device inoperable on the LoraWAN network. This device is a class-A type device which means it will only get the message after it has transmitted its own message.

4.1. Message structure

The following bytes must be sent to change a register in the device:

Byte No:	0	1	2	3	4	5	...	L + 4
Data	Write to register command	Register address	Reserved	Length Number of bytes to write	Register address	Register address + 1	Register address …….	Register address + L - 1
Decimal	32	See Table	0	L	LSB	LSB + 1	……	MSB
Hex	0x20	See Table	0x00	L	LSB	LSB + 1	……	MSB

The device will continue to write till all data is written (so if the data exceeds the register length, the next bytes of data will be written to the next register space)

4.2. Registers

Name	Address decimal	Address hex	Length In bytes	Description	Units
Pulse Count	12	0x0C	4	The total count of pulses – this register gets update on every TX event only.	pulses
Report interval	16	0x10	4	How often the radio should report (TX)	seconds
Pulse force interval	20	0x14	2	How many pulses should force a TX	pulses
RESERVED - DANGER!!!	22	0x16	24	**DO NOT WRITE TO THIS LOCATION Device may not work on LoraWAN network after writing here!!!!**	DANGER
TX Throttle	47	0x2F	1	Limit for number of TX's that the unit will do in an hour	TX messages
Low Time	48	0x30	2	The time the low level must be equal or exceeded (less than) to trigger a low-level message.	seconds
High Time	50	0x32	2	The time the high level must be equal or exceeded to trigger a high-level message.	seconds

4.3. Example message

This section describes by way of an example how to send a message to the device.

To change the report interval to every 5400 (0x00001518) seconds (1 hour and 30 minutes). The following message must be sent:

Byte No	0	1	2	3	4	5	6	7
Decimal	32	16	0	4	24	21	0	0
Hex	0x20	0x10	0x00	0x04	0x18	0x15	0x00	0x00