



# NB-IoT smart metering gateway

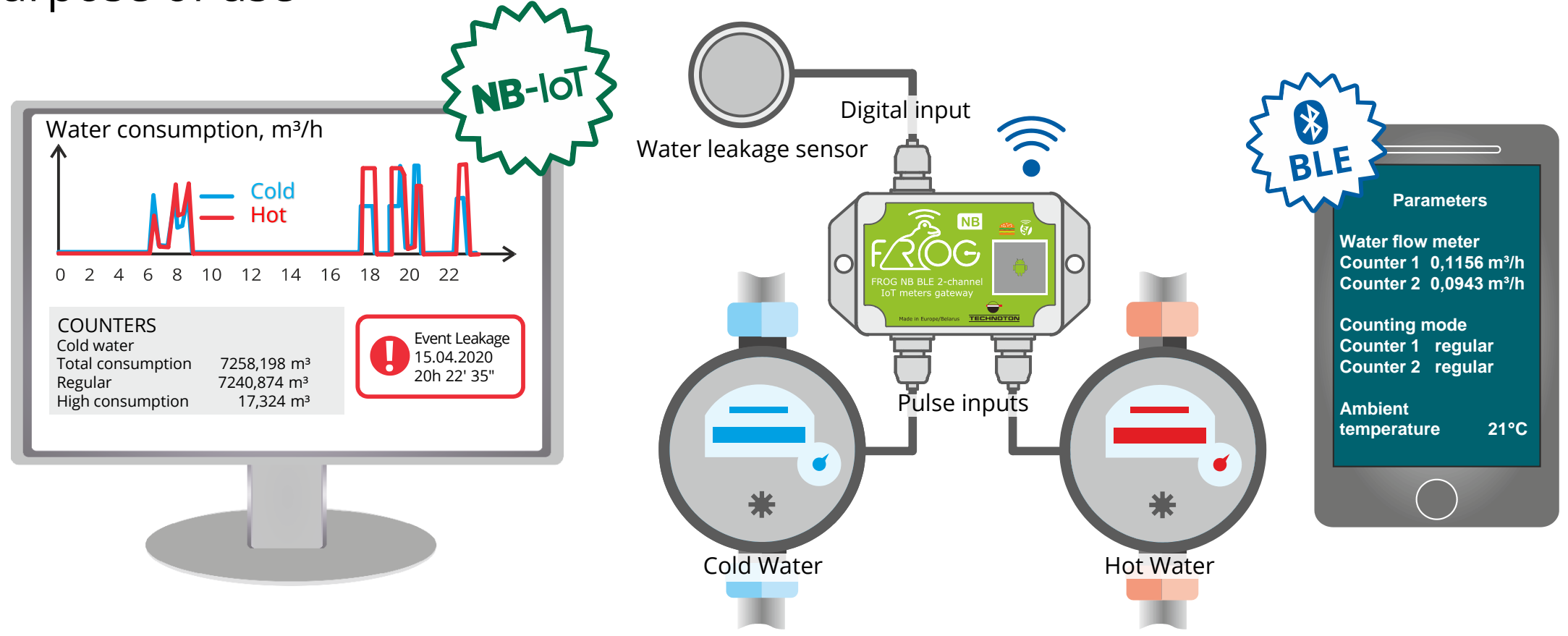




# NB IoT smart metering gateway



## Purpose of use



Remote signal reading of water meters, storage of water consumption data and sending reports to a web-based server using NB IoT and to Android-devices over Bluetooth Low Energy.



# NB IoT smart metering gateway

## Application areas



Office buildings shopping centers, hotels



Manufacturing enterprises, warehouses

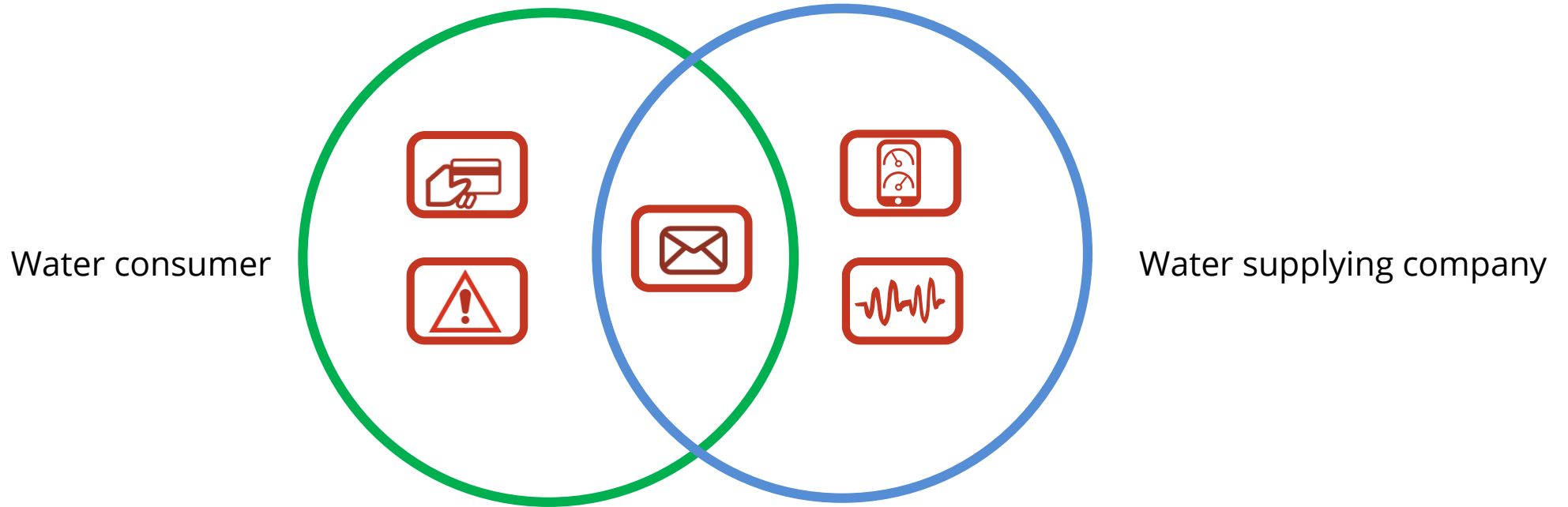


Apartment buildings and houses



# Solved tasks

Automatic sending of water consumption readings



Payment for water consumed only  
Alarms on water leakage

Monitoring reliability of water meter readings  
Observation of water consumption habits



# NB IoT smart metering gateway



## Features



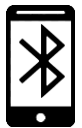
Remote signal reading of water meters



Water consumption data storage



Sending readings and reports to a web-based server using NB IoT



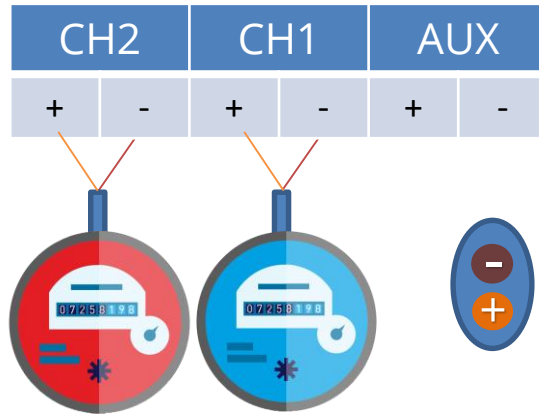
Data transfer to Android-devices via Bluetooth Low Energy



Alerting water consumer on water leakage



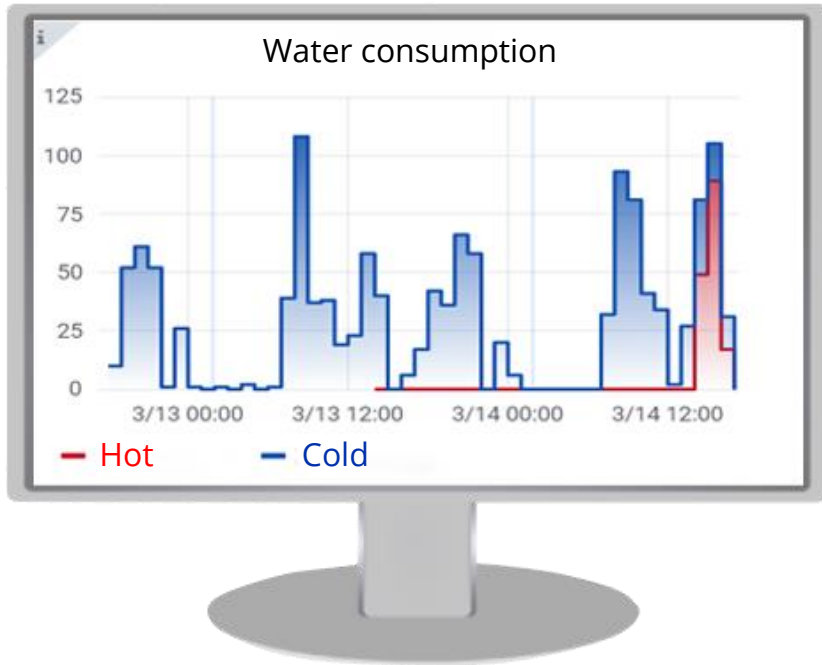
## Connection to water meters



Pin	Designation	Signal
1	CH2+	Pulsed input, Frequency 0.1 Hz ...10 Hz Active low level (negative short circuit) Level 0 – 0 V ... 0.2 V , Level 1 – 0.5 V ... 80 V
2	CH2-	
3	CH1+	Pulsed input, Frequency 0.1 Hz ...10 Hz Active low level (negative short circuit) Level 0 – 0 V ... 0.2 V , Level 1 – 0.5 V ... 80 V
4	CH1-	
5	AUX+	Discrete input Active low level (negative short circuit) Level 0 – 0 V ... 0.2 V , Level 1 – 0.5 V ... 80 V
6	AUX-	



# Sending data to online server



Monitoring water meter readings



Receiving alerts on Events

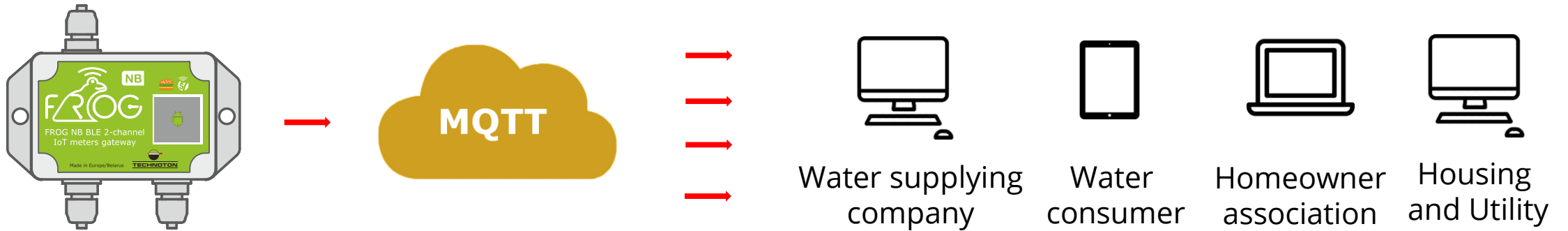


# NB IoT smart metering gateway



## FROG MQTT data transfer protocol

NB IoT smart metering gateway sends data over NB IoT cellular technology using MQTT FROG protocol. Stored readings are transferred to MQTT broker, and then to subscribers – water supplying company, water consumer, homeowner association, housing and utility organization.

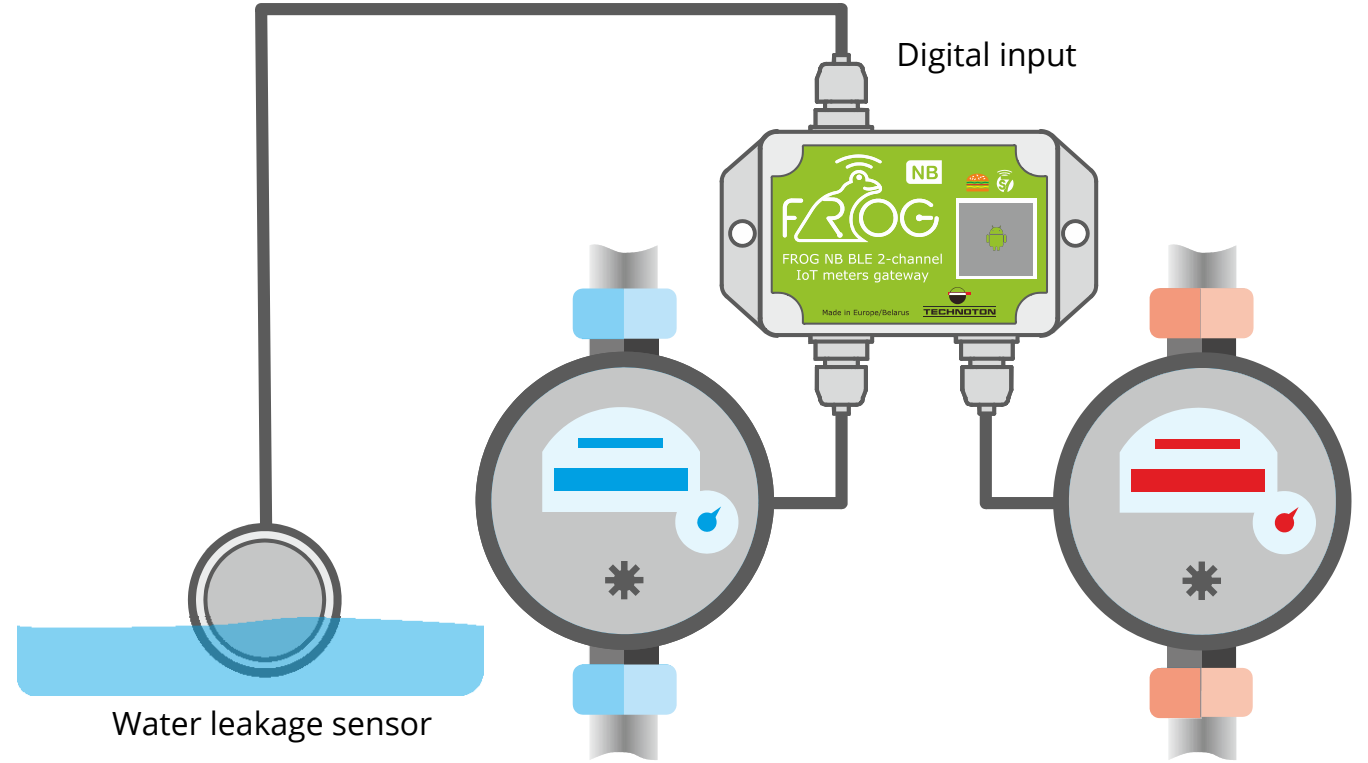
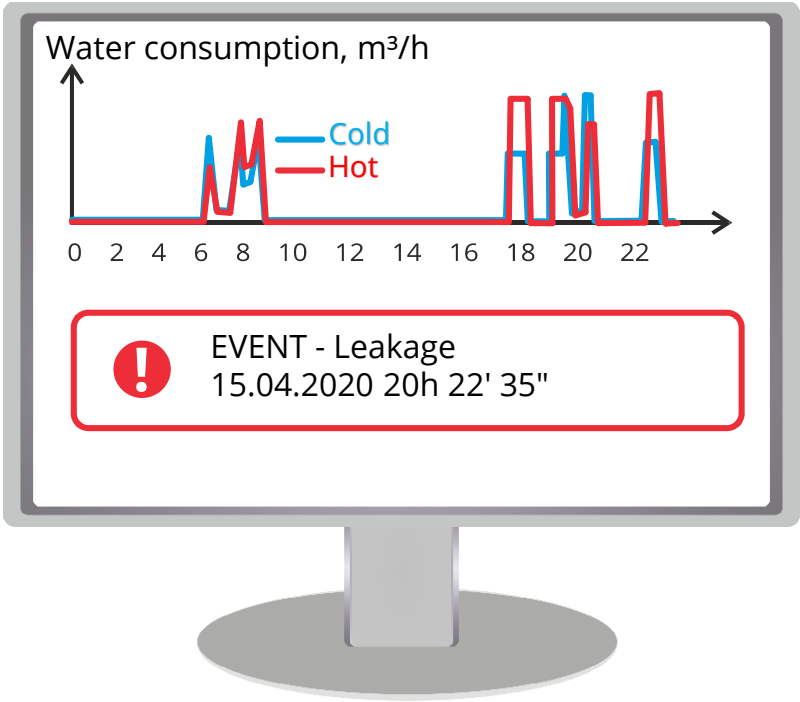


Report	Regulation of sending by default*
Flowmeter	Timer, once per 24 h
Service	Timer, once per 24 h
Flowmeter. Overload	When consumption Counters are switching to “High consumption” mode
Collector	When Unit’s digital input state is changing

\* You may change the regulation with Smart Flow Monitor app.



## Detection of water leakage



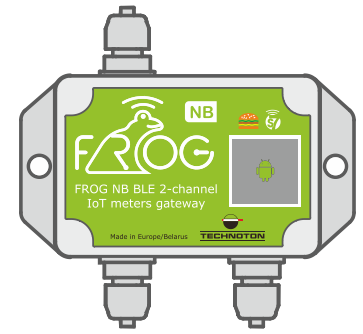
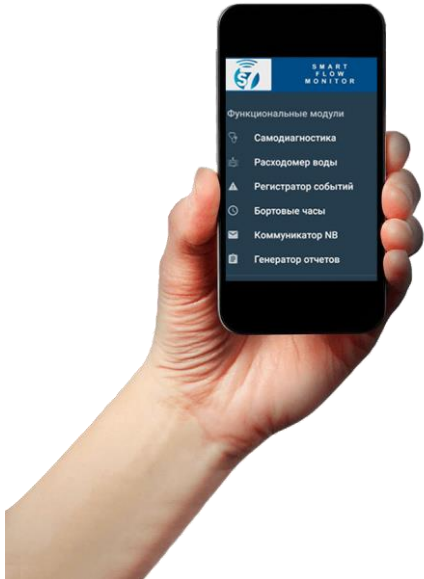
Additional external water leakage sensor can be connected to FROG via digital input



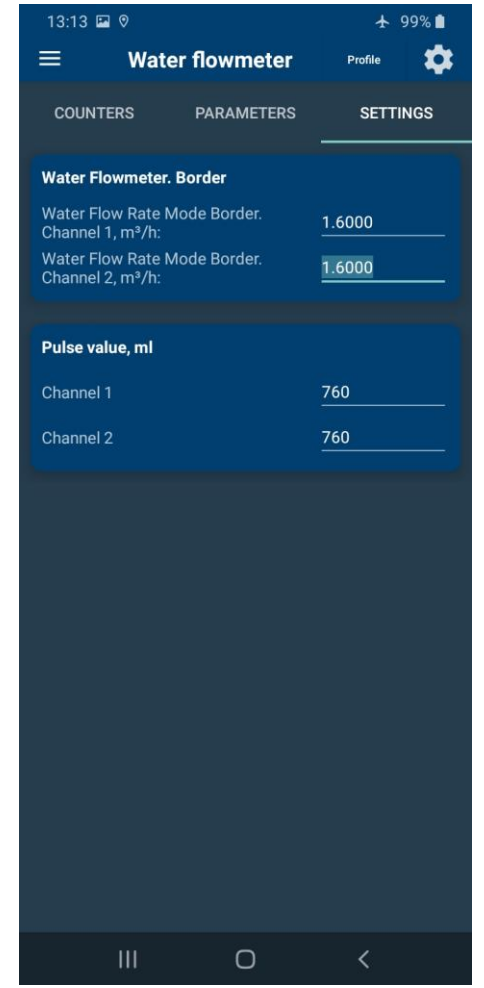
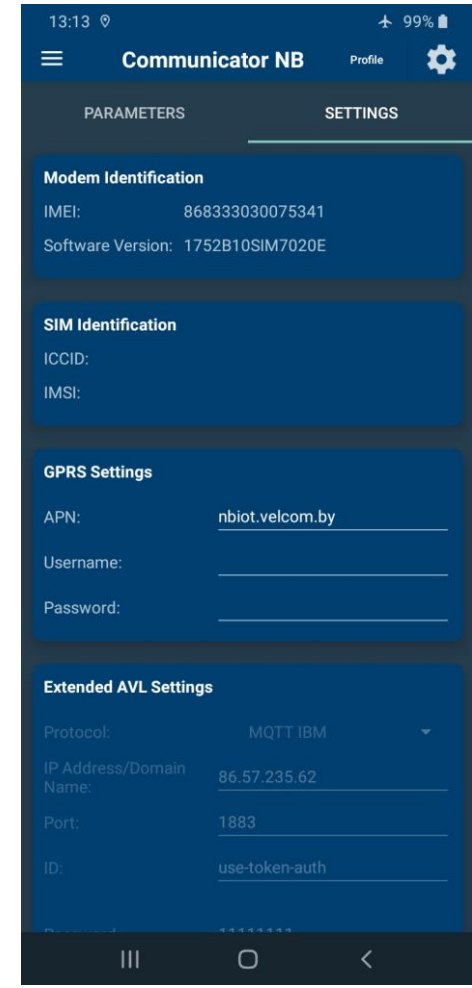
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## Configuring FROG



- Setting up water consumption counter's limits
- Setting value of pulse input
- Changing the frequency of sending reports
- Changing cellular connectivity settings

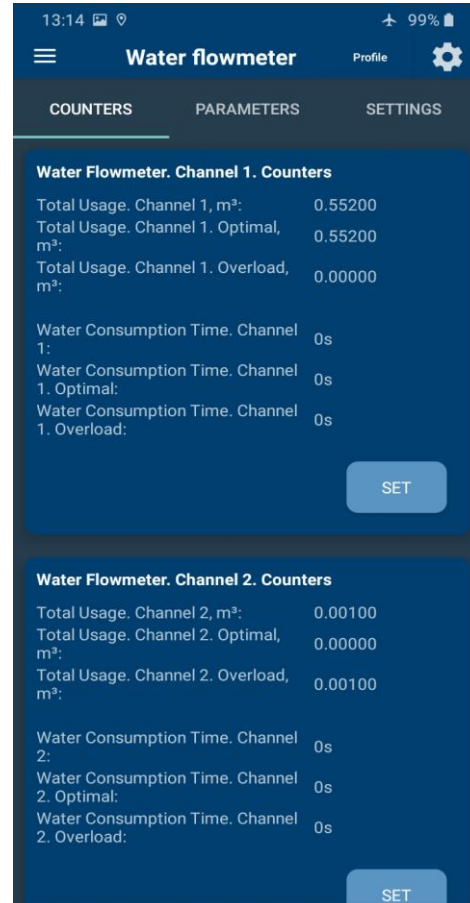
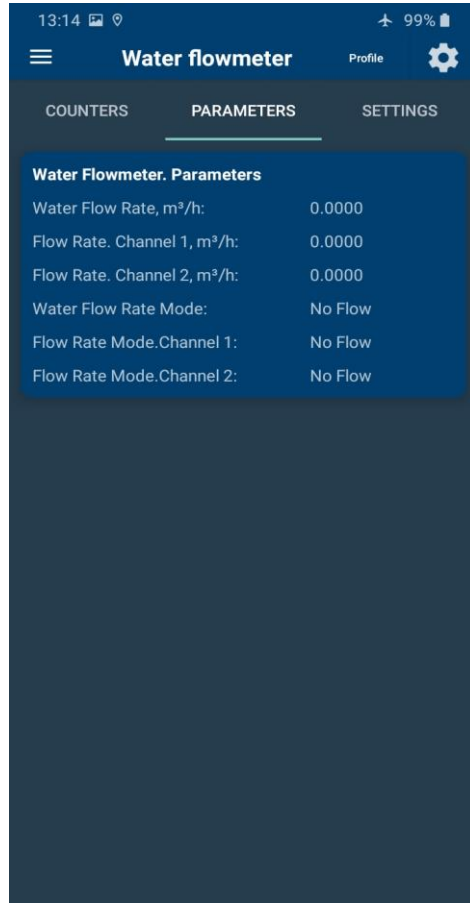




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## Monitoring Parameters and Counters on smartphone



Smart Flow Monitor mobile app

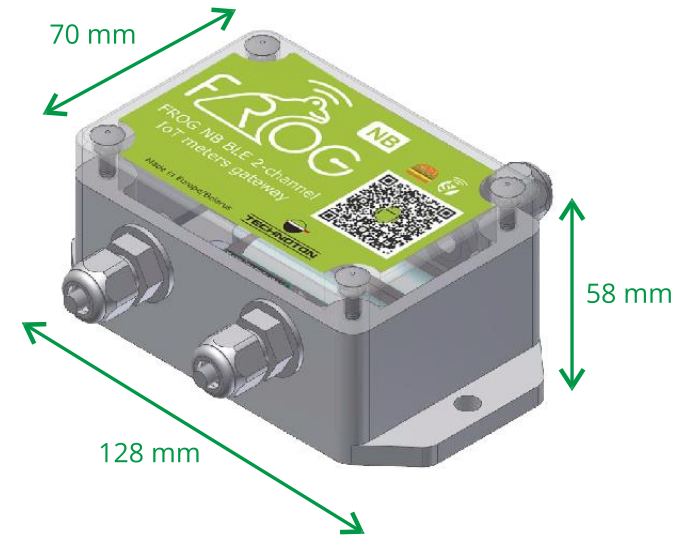


# NB IoT smart metering gateway



## Technical specifications

- Number of inputs ..... 2 pulse, 1 digital
- Type of power supply ..... embedded battery
- Embedded battery lifecycle ..... 5 years at least
- GSM standard : ..... LTE-Cat-NB1 (NB-IoT),  
B1 / B3 / B5 / B8 / B20 / B28
- Protocol suite NB-IoT: ..... 3GPP release 13
- Data transfer technology to smartphone: ..... Bluetooth 4.x (BLE)
- Ambient temperature ..... from -18°C to +85°C
- Ingress protection rating..... IP65 or IP68 (optionally)





## Summary

FROG receives data from 2 water meters and water leakage sensor simultaneously.

FROG keeps a record of water consumption readings and sends Reports to server over NB IoT cellular technology, also to user's smartphone via Bluetooth Low Energy

Data gathered by FROG smart metering gateway allows:

- ✓ Implementing automatic gathering of water meter reading;
- ✓ Introducing utility bill system on actual water consumption;
- ✓ Checking real-time water consumption using a smartphone;
- ✓ Receiving alarms on water leakage.



NB IoT smart metering gateway



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