Application note about the autonomy of the ROCK devices

Summary

Bartec Syscom has tested the autonomy of the ROCK by installing a device in its laboratory for about 8.5 months, without being connected to any power source. The configuration and the number of events generated are chosen to simulate a real monitoring on site.
Based on these conditions, after 257 days the ROCK battery is still at 17% of the total charge, leading by extrapolation to an estimated autonomy of more than 10 months.

Configuration

The parameters used for the ROCK (displayed in Figure 1) are:

- Sampling frequency: 1000 Hz
- Frequency range: 1-315 Hz
- Trigger level: 1 mm/s on the three axes
- Pre-event: 1 s, post-event: 2 s
- Background mode: Peak, every 30 s
- Synchronization with SCS: 60 minutes

In the entire period of 257 days, 922 events are recorded and transferred to the SCS, corresponding to an average of 3.6 events per day.

Figure 1. The ROCK in our laboratory.

Results

As shown in Figure 2, after 257 days of uninterrupted monitoring the battery voltage passed from the full-charge value of about 4.20 V to 3.37 V. Since the minimum value before the ROCK turns off is about 3.20 V, 17% of the remaining charge is still available. This leads to an estimated total autonomy of more than 10 months.

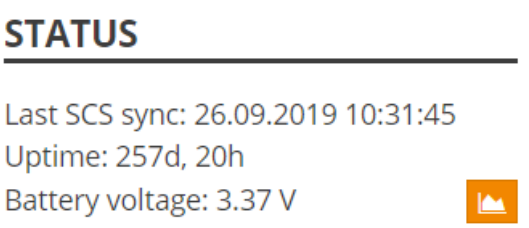

Figure 2. Status information of the ROCK, coming from the dedicated project created on the SCS.

How to increase the ROCK autonomy

The ROCK autonomy mainly depends on the frequency of the modem activation and data transmission to SCS. During a monitoring on site, the three factors that mainly affects the autonomy of the ROCK are:

- The duration of the events: it is determined by the pre- and post-event values and by the duration of the vibrations.
- The number of events: the modem is activated immediately after the event is created to send it as quickly as possible to the SCS;
- The synchronization ROCK-SCS: the modem is activated to update the parameters on the ROCK and to send the background data to the SCS.

To have a longer autonomy Bartec Syscom recommends to:

- setup a trigger threshold leading to few events per day;
- limit pre- and post-event durations;
- choose a period not shorter than 60 minutes for the synchronization ROCK-SCS.

Conclusion

A ROCK with typical settings was tested during many months, showing the capability to reach more than 10 months of autonomy in a cable free manner, on the sole internal battery.

About BARTEC SYSCOM

SYSCOM Instruments SA is a subsidiary of BARTEC GROUP, a multinational manufacturer of industrial safety equipment. SYSCOM Instruments SA is a leading provider of vibration and seismic monitoring equipment for civil engineering and safety related markets, especially for NPP and LNG plants.

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