Technical Article
How FRAM MCUs Are Contributing to Portable Weather Stations

TEXAS INSTRUMENTS

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Lack of wind at the beach may not mean much to many of us, but to a kite boarder, it means their drive to the beach was all for nothing. But with the help of a GSM weather station logging and transmitting real-time data and a few kite board lovers at THEWINDOP.com that trip to the beach will not be a waste of time anymore. The founders of THEWINDOP wanted a source for real-time high-resolution wind speeds directly from the beach to assess if kiteboarding was possible.

The weather station they created is a cost-optimized solution for collecting wind, temperature and humidity data down to a time period of a few seconds. This is done without external power (leverages a solar panel and battery) and can be used worldwide by leveraging a cellular modem (GPRS).

So how much data has been collected? Over a two-year period, it has logged more than 11 million data points. This is possible due to the high write endurance of the on-board MSP430FR5969 FRAM microcontroller. The on-chip AES could also be used to encrypt the data on-the-fly for wireless transmission.

"*The FRAM series allows us to achieve ultra-low-power as well as simplify data buffering in our firmware…
We have had a unit up and running in St. Andrews [Scotland] since 2013*" - Andy Maginnis, co-founder of THEWINDOP.

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