

A Conversion System Based on Acoustic Communication for Using Bluetooth Low Energy Sensors Underwater

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Abstract—In this paper, we propose a system for using a commercially available Bluetooth Low Energy (BLE) sensor underwater. Our system comprises a mounting device located close to the BLE sensor and a part located on the water surface. In the water, the mounting device receives the BLE signals from the sensor and converts them into acoustic waves that are emitted from a speaker. The part on the water surface receives those acoustic waves via a microphone and demodulates the data transmitted by the BLE sensor. The proposed system enables existing BLE sensors to be used underwater. Some of the functions of our proposed system are developed and evaluated using commercially available products, and the basic performance of the system is confirmed.

Keyword—Bluetooth Low Energy, acoustic communication, underwater, sensor.

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