ABSTRACT

This project introduces an IoT-based temperature monitoring module specifically designed to maintain product quality in the cold storage and frozen food warehousing industry. The module adopts an optimal PCB design with a combination of ESP32 microcontroller and DS18B20 temperature sensor to provide accurate and real-time temperature data. The system implemented IoT technology, connecting sensor nodes through the HTTP protocol. The ESP32 Wi-Fi module is used to send data to an platform. With the ability to integrate with telematics platforms, this module allows for remote monitoring and efficient data analysis. Test results demonstrate the module's stable performance, high measurement accuracy, and reliability for long-term use. This module has the potential to improve operational efficiency and maintain product quality in the warehousing industry.

Keywords: Temperature Monitoring Module, ESP32, DS18B20, PCB Design, IoT, HTTP, Telematics