

ABSTRACT

Currently, the use of electric cars, especially in Indonesia, continues to increase in line with the carbon emission reduction program. This development certainly requires infrastructure and supporting facilities that facilitate and make electric cars relevant to use. The lack of electric vehicle infrastructure and the high cost of the Public Electric Vehicle Charging Station system are the main problems in the development of electric cars. Until this document was made, Telkom University did not have a Public Electric Vehicle Charging Station (SPKLU) for electric cars with standards in accordance with ESDM.

The proposed charging station is a SPKLU with IEC 61851-1 Pilot communication standard so that it can compete and be developed massively. To meet these objectives and standards, an electric vehicle charging station system with an Arduino microcontroller is made. To add IoT features, Arduino is connected to ESP32. The sensors used are DHT22 for humidity and temperature measurement, ground fault circuit interupter (GFCI) sensor to detect temperature leakage, ZMPT101b for voltage measurement and SCT-013 or current measurement. Then for the switch, a 5V relay is used which is connected to a 40A contactor.

Based on the implementation results, it can be concluded that the electric car charging station has been successfully developed. The design of the Pilot control communication subsystem has been able to read the Pilot signal and control the output voltage level according to IEC 61851-1 standard parameters. The implementation of the protection system against leakage current runs well with a delay of 21.87 ms. The IoT communication system is successfully implemented with Arduino Nano integrated with ESP32 which is able to send and read information from sensors to the database with a 220V and 16A configuration. Implementation of the monitoring system also runs well using Android applications and Human Machine Interface with an average transmission time of 7 seconds.

Keywords: *EVSE, Electic Vehicle Supply Equipment, Internet of Things*