DEVELOPING A WIRELESS TOUCH SCREEN SWITCH PANEL CONNECTED WITH ZIGBEE

THESIS

Presented in partial fulfillment of the requirement

for the degree of Sarjana Komputer (S.Kom)

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STATEMENT

I hereby declare that the thesis entitled "**DEVELOPING A WIRELESS TOUCH SCREEN SWITCH PANEL CONNECTED WITH ZIGBEE**" and all its contents is truly the work of my own and I did not do any plagiarism from any other people's or institutions' scientific works. All quotation sources from others' scientific works referred to this thesis have been mentioned in Bibliography.

On this statement, I am ready to bear the risk or any sanctions imposed to me in accordance with applicable regulations, if the future found a breach of scientific ethics, or anyone has a claim against the authenticity of my work.

Gading Serpong, October 2014

Linda Sualdani

APPROVAL

A thesis with title below

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Being aware of many shortcomings in this research and thesis, any suggestions and constructive criticism in order to develop better in the future are welcome. Hopefully this research and thesis can be useful, both as a source of information and sources inspiration for the readers.

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ABSTRACT

In this research, a wireless touch screen switch panel has been developed. The device is connected to the light bulbs through ZigBee communication. The wireless touch screen switch panel can turn on/off or dim all the lights in the room. Besides, there are two user profiles available to control the lights directly based on the preferences (i.e. turn on/off, dim the lights) have been made and InstaOn/Off button to turn on or turn off all the lights in one button. The device can handle all the operations in a reliable way and real-time by keep updated the device to the current state of the lights when the customers try to turn on/off, dim, InstaOn/Off, or pick a user profile, even when the device is unsynchronized because of the connection or the electricity is down, the device will also inform the customers directly. The device is fairly power efficient by using a Sleep Mode whenever the device is being idle for more than 15 seconds with estimation battery life up to 33.29 days on daily use. With flash memory feature offered by the device, all the user profiles made will not be deleted and reset to be default whenever the battery is changed or even when the device needs to be reset.

Keyword: ZigBee, switch panel, touch screen, user profile, wireless

ABSTRAK

Dalam penelitian yang dilakukan, sebuah saklar *touch screen* nirkabel telah dikembangkan. Alat ini terhubung dengan lampu melalui komunikasi *ZigBee*. Saklar *touch screen* nirkabel ini dapat menyalakan dan mematikan atau meredup dan menerangkan semua lampu dalam sebuah ruangan. Selain itu, terdapat dua *user profile* yang tersedia untuk mengontrol lampu-lampu tersebut secara langsung berdasarkan pilihan pengguna seperti menyalakan dan mematikan lampu atau meredup dan menerangkan lampu-lampu tersebut. Terdapat pula tombol *InstaOn/Off* untuk mematikan dan menyalakan semua lampu sekaligus dari satu tombol. Alat ini dapat menangani semua operasi secara handal dan langsung dengan tetap memperbarui informasi pada alat sesuai dengan kondisi lampu terbaru saat pengguna menyalakan/mematikan, meredup/menerangkan lampu, memilih *InstaOn/Off*, atau memilih salah satu *user profile*, bahkan ketika alat tidak sinkron karena jaringan atau listrik padam, alat akan menginformasikan pengguna secara langsung. Dengan memanfaatkan fitur *Sleep Mode*, alat ini cukup hemat daya dengan estimasi pemakaian normal 33.29 hari hingga pengisian baterai selanjutnya dimana setiap dalam posisi *idle* selama lebih dari 15 detik, alat ini akan *sleep*. Dengan fitur *memory* pada alat, pengguna tidak akan kehilangan *user profile* yang telah diset sebelumnya jika sewaktu-waktu pengguna mengganti baterai atau bahkan jika pengguna ingin mereset alat.

Kata kunci: *ZigBee*, saklar lampu, *touch screen*, *user profile*, nirkabel

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