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Home domotica system

DIY Project

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# Preface

This project is for a DIY home domotica system for controlling your light, doors, window shutters and many more. This project will have one master and the ability to communicate with up to nine slaves. Later this project will include a Arduino with a WIFI module and an app to control the system.

It is not for meant for large scale use in buildings or for use in products

# Research

## Antenna

The transmitters and receivers that are used don't have an antenna this means that the transmitter and receiver can't be more than 5 meters apart from each other. To solve this problem a antenna with the correct length must be added to the transmitters and receiver. The formula that is used is: (300/f[MHz])/2 -> (300/433)/2 = 34.6cm this is the total length of the antenna. The length of the antenna is divided in two sperate antenna's, one signal 17.3cm and one ground 17.3cm. The transmitters and receivers can have the signal and the ground antenna but for practical use only the signal antenna will be mounted to the transmitters and receivers. To not mount the ground antenna will add noise in the signal but this will be terminated by the use of a LRC (Longitudinal Redundancy Check).

## Communication protocol

For this project we need to make sure that the different modules don’t

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Data pack 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| Data pack 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| Data pack 3 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| Data pack 4 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| LRC | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |

With the use of a LRC the message is check for possible error and transmission mistakes. For this project a uneven LRC will be used.

To make sure each module can only decode the message that is for him each module needs an address.

# Appendix

## Appendix 1: Connection schematic