Arduino Auto Start System – KYGM

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Basic Overview: Auto start is a system that allows the vehicle driver to start their vehicle while away from the vehicle. Many auto start systems are currently in the market, however very few well documented, cost effective, and practical DIY options are available for drivers. That is the reason that I developed this system based around the Arduino platform, it makes it available for anyone.

Operation: To operate the system, simply plug in all inputs and outputs to the device. Once the wiring is done, all that must be done to start the vehicle is to ensure that it is in neutral and hit the start button.

Basic Component Capabilities: The auto start system uses a 433MHZ receiver and transmitter to send the start signal to the Arduino. The cost of components is under ten dollars per unit which makes this one of the cheapest options on the market. The approximate range of the 433MHZ transmitter is between 10 and 30 meters making it ideal for most drivers.

Wiring: This device must be wired to the following: 12V power source (typically the battery, ensure battery voltage is adequate), Neutral Switch, Engine started input (A wire coming from the alternator is adequate or a hall effect sensor connected to a spinning component on the engine works. One more option is to connect input to tachometer. The ignition switch must be connected to the device, in order to turn on ignition system, ECU, and fuel pump. Finally, if the vehicle has a manual transmission, a neutral switch may be necessary. If no neutral switch is present, install one. If vehicle is automatic, connect neutral input to 12VDC.

Sources of Error: As with any wiring project, errors can be made and device operation may be inhibited by faulty wiring. Ensure that all connections are wired correctly by referencing the schematic. If all wiring is correct, check error codes. The list of error codes are as follows:

1. **3 Blinks:** Engine is already running
2. **1 Blink:** Fuel pump delay
3. **5 Blinks:** General error code, could be caused by neutral switch or a failure to start the engine when the start signal is sent (starter or other engine issues)

Components List: For this project, the following items are required:

1. 1 Arduino (any version works, recommended versions are the UNO or the Nano)
2. 3 Electromechanical Relays
3. 1 N channel MOSFET (IR520)
4. 1 5A Fusible Link
5. 1 LED (Red)

6. 1 Voltage regulator (12VDC -> 5VDC)
7. 1 433MHZ receiver/transmitter
8. 1 Analog voltage meter

Contact: For any questions, contact me via email at kygm.mfg@gmail.com.