**Function Test:** Program Knock

**Test ID:** Test Case 4.1

**Test Description:** This function test checks that the basic function of programming a knock sequence is working correctly. To conduct this function test use the Program Use-Case found in the T02 System Design document.

**Equipment:**

1. Oscilloscope
2. Digital Multi-meter
3. Function Generator
4. Two Channel DC Power Supply
5. AVR Dragon Board

**Part(s):**

1. Microcontroller module
2. Knock Sensor module
3. Solenoid Drive module
4. Program Button module
5. Unlock Button module
6. Erase EEPROM module
7. LED Sensor module

**Reference:**

1. T02\_nocLock\_rev3.sch
2. Test Case 1.1
3. Test Case 1.2
4. Test Case 1.3
5. Test Case 1.4
6. Test Case 1.5
7. Test Case 1.6
8. Test Case 1.7
9. Program Use-Case (T02 System Design.doc)

**Setup:**

The setup for this test case involves the Microcontroller module, Knock Sensor module, Solenoid Drive module, Program Button module, Unlock Button Module, Erase EEPROM module, and LED Sensor module. For instruction on how to setup individual modules refer to the modules test case and/or reference the nocLock Schematic. This test setup will mainly focus on the connections between each module and the microcontroller module.

1. Connect Solenoid Drive Module to 9 VDC power supply. Connect Microcontroller PB2 (Pin 14) to Solenoid Control on Solenoid Drive Module.
2. Connect Microcontroller PC5 (Pin 28) to Knock Sense on the Knock Sensor.
3. Connect Microcontroller PB3 (Pin 15) to Green Drive on the LED Module.
4. Connect Microcontroller PB4 (Pin 16) to Red Drive on the LED module.
5. Connect Microcontroller PB0 (Pin 12) to Program on the Program Button Module.
6. Connect Microcontroller PB1 (Pin 13) to Unlock on the Unlock Button Module.
7. Connect Microcontroller PB6 (Pin 7) to U1 on Erase EEPROM Module.

**Procedure:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Step** | **Action** | **Expected Result** | **Pass/Fail** | **Comments** |
| 1. | Push Unlock Button. | LED turns green, solenoid activates for five seconds opening nocLock. |  |  |
| 2. | Push Program Button | LED turns yellow, waits for knock sequence to be entered. |  |  |
| 3. | Enter Knock Sequence | LED remains yellow |  |  |
| 4. | Push Program Button | LED turns green confirming knock entry, LED turns Green. |  |  |
| 5. | Re-enter Knock Sequence | 1. LED turns green confirming new knock sequence has been successfully program. 2. LED turns Red signifying that knock sequences were different. Go back to Step 2. |  |  |