



TEST PLAN FOR GREENHOUSE



| General information | |
|---------------------|----------------------|
| Customer | Software Tester 2021 |
| Created by | Test Planning Inc. |
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SUMMARY

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1. Introduction

a. General information

This document describes the methods and procedures that will be used by Test Planning inc. in the functional testing process of the GreenHouse HMI functionality.

We will use an emulated environment before we will be able to run tests against the real hardware. Products we will include in the project are SimuLink two lab kits and emulation of keypad and LCD on a PC.

The objective of the testing activities is to check whether the HMI with keypad and LCD functions as expected and to ensure the full functionality of the devices in regards to HMI documentation.

b. Purpose

This Test Plan document for the project supports the following objectives:

- i. Identify existing information and software components to be tested.
- ii. Description of the testing strategies to be employed
- iii. List the test deliverable elements

The results of test execution will be sent to the customer as reports. All bugs will be tracked with the corresponding tools to be described.

2. Scope of project

a. Scope of testing the HMI commands

- i. Testing of the LCD functionality is one of the objectives of this test plan. The following requirements would be tested:
 1. [ReqID:003] It shall be possible to send the status signal to the CAN.
 2. [ReqID:005] It shall be possible to view the current real-world date and time.
 3. [ReqID:006] It shall be possible to view the menu.
 4. [ReqID:010] It shall be possible to update the content of the display every 300ms.
- ii. Testing of the KeyPad functionality is one of the objectives. The following requirements would be tested:



1. [ReqID:003] It shall be possible to send the status signal to the CAN.
 2. [ReqID:004] It shall be possible to enter numbers from 0-9
 3. [ReqID:005] It shall be possible to enter two special characters (* and #)
- iii. Testing of the RGB functionality is one of the objectives. The following requirements would be tested:
1. [ReqID:001] It shall be possible to initialize the RGB led.
 2. [ReqID:002] It shall be possible to get the status of the RGB led.
 3. [ReqID:004] It shall be possible to send the status signal to the CAN.
 4. [ReqID:006] It shall be possible to change the color of LED to GREEN, RED, YELLOW.

3. Work plan

- a. The parties are agreed to follow the next work plan:
 - i. Test plan preparation
 - ii. Test plan approval
 - iii. Functional testing and bugs reporting
 - iv. Daily reports preparation
 - v. Final report preparation

4. Test Plan and Strategy

- a. Test Objective: Ensure proper functionality of the components in HMI node in the GreenHouse project.
- b. Technique: Perform tests via SimuLink, two lab kits and emulation on the PC.
- c. Entry Criteria:
 - i. The devices is working and connected to the computer properly
 - ii. The programs being used to connect to the device seem operational
 - iii. Test environment is prepared.
- d. Completion Criteria:
 - i. All the planned tests are performed
 - ii. There are no blockers that stop us from testing the planned commands.
 - iii. The test results are evaluated, discussed and approved.

5. Test Procedure

- a. The testing of the HMI before we have the real hardware will be conducted as follows:
 - i. Connect the Labkit1 and Labkit2 to the computer where the testing will be carried out.
 - ii. Connect Labkit1 to Labkit2's CAN bus.
 - iii. Run tests from SimuLink to Labkit1
 - iv. Save the test results in SimuLink.
- b. The testing of the HMI when we have the real hardware will be conducted as follows:
 - i. Connect the Labkit1 to the computer where the testing will be carried out.
 - ii. Connect Labkit1 to GreenHouse CAN bus.
 - iii. Run tests from SimuLink to Labkit1
 - iv. Save the test results in SimuLink.

5. Resources

c. Tools

The following tools will be used for this project:

| Name of Process | Tool |
|-----------------|----------|
| Defect Tracking | SimuLink |

d. Devices

- i. We will be using two different units of the SWT21 Kit. A PC to emulate keypad and LCD.

e. Software

- i. We will use SimuLink to perform the tests as well as save the results and then generate reports.

6. Criteria of quality

The product should operate in accordance with the requirements and the functional

specification (if present).

The product should not contain critical and blocking defects in the final version of the project

7. Testing Process Risks

The next issues may influence testing:

- a. The device not being able to connect as intended might be a major blocker.
- b. That we do not use the right CAN frames in our test environment as in the real hardware.

8. Test Team Expectations

- a. The test team must be provided with valid, updated documents during the whole testing process.
- b. All the required equipment, instruments, devices and software must be acquired and prepared before beginning the testing process.
- c. All show-stopping errors must be corrected as soon as possible.
- d. Release notes should be added to each software release to the test team.
The note must explain which elements, functions and features were added to the program and how these additions affect the software.
- e. The developers should correct all the errors in the software modules before releasing a new version.

9. Responsibilities of Test Team Members

- a. Project Manager
 - i. Managing the whole testing process
 - ii. Providing all the needed resources for the testing activities.
- b. QA Lead
 - i. Collecting and learning the requirements
 - ii. Validation of the documentation
 - iii. Planning the testing works.
 - iv. Monitoring the testing activities, making sure that the works are performed according to the plan
 - v. Reporting about the progress, number and severity of the found errors.
- c. Test Engineer
 - i. QA process and logging found errors into the approved bug tracking system.



10. Deliverables
 - a. Test Plan
 - b. Test Report