mCerberus™ User Guide
MCB-200 Series

CONTACT INFORMATION

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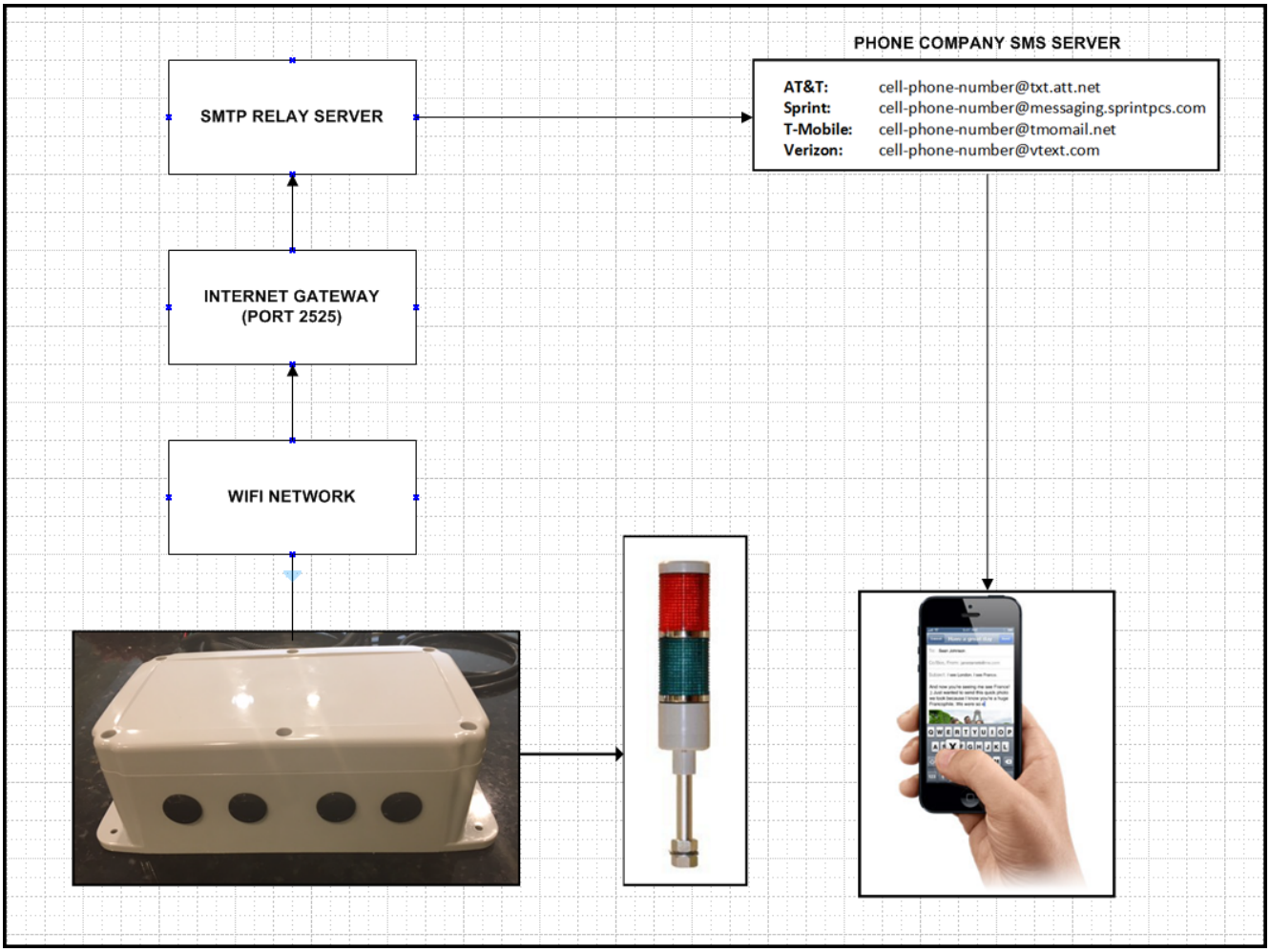
TABLE OF CONTENTS

I. Introduction

Welcome to the mCerberus™ User Guide.

This guide will provide you with basic instructions on how to implement and use the mCerberus™ system (hereafter referred to as the SYSTEM). The SYSTEM can be utilized by the User to change the light status on the LED Tower Light and also send text messages to programmed phone numbers.

The basic flow diagram of the SYSTEM is illustrated below. The SYSTEM improves on the standard LED Visual light indicator (GREEN/RED) via the implementation of three separate and unique "send text message" buttons.



II. Hardware Components

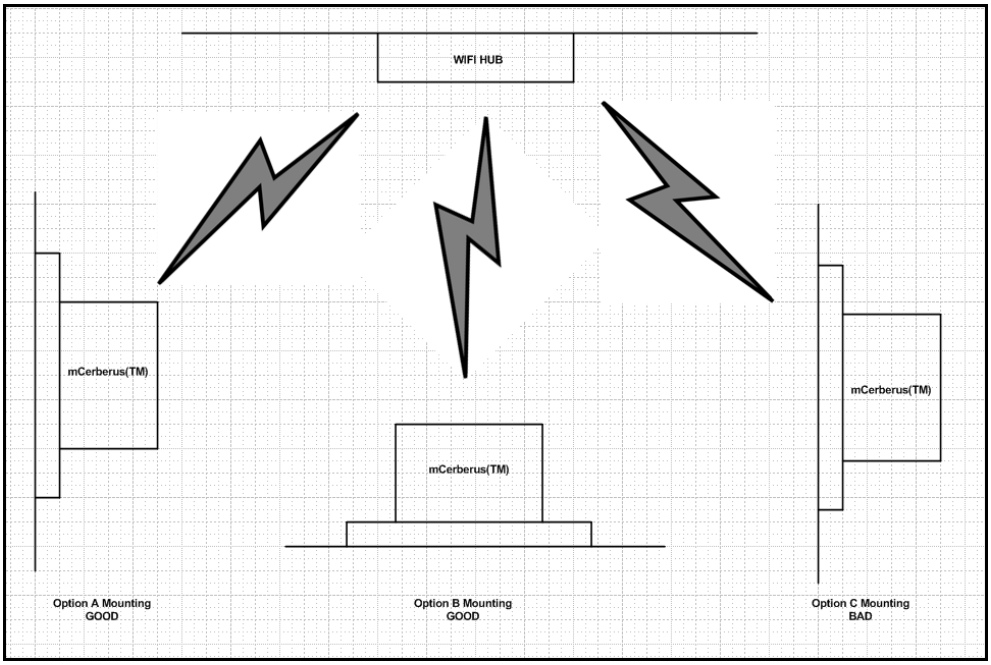
The following hardware components are necessary (and provided) in order to run the SYSTEM:

1. The mCerberus™ hardware unit (identified as MCB-200) which includes four (4) push buttons and one (1) RED status LED light.

2. 120 VAC @ 2.5 AMPS Power Required: We provide a 120VAC Power Cord with the system. Internally to the system, this power is converted to 5VDC to power the microprocessor and relay board AND 24VDC to power the LED.

3. LED Tower Light, 24VDC, RED/GREEN (henceforth referred to as "LED"). We provide an electrical connection from the LED to the MCB-200 box via Weather Pack connectors.

Proper mounting of the SYSTEM may make a significant difference in the quality of the WiFi signal to the SYSTEM. The following schematic illustrates the best way to mount the hardware unit.



III. Networking Requirements

1. The SYSTEM requires access to your WiFi.

- If you do not have access to WiFi coverage where the SYSTEM is to be placed -- the SYSTEM will not operate.
- If there is no WiFi coverage where the SYSTEM is to be placed -- the SYSTEM will not operate.
- If the WiFi signal strength is less than -75 dB, then the SYSTEM reliability and performance in sending text messages may be derated significantly.

2. Ports 80 and 2525 on your WIFI gateway must be open. These ports are utilized by the SYSTEM in order to transmit emails and/or text messages.

3. If you do NOT program the SYSTEM -- the system will NOT operate.

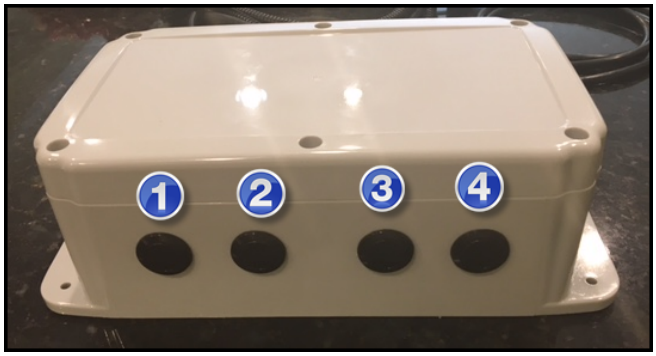
4. RT Automation has contracted with SMTP.COM to provide email relay service. The server is located at mail.smtp.com (74.91.83.181). This IP address must NOT be blocked by your gateway.

IV. mCerberus™ Function

When the SYSTEM is in RUN mode, there are four buttons on the unit which provide various output functions. These buttons are identified as BTN1, BTN2, BTN3, AND BTN4 (from left to right) as shown.

The buttons perform the following operations:

- BTN1: Changes LED Status from GREEN to RED (or vice versa).
- BTN2: Sends a text message to the ENGINEERING designee
- BTN3: Sends a text message to the PLANNER designee
- BTN4: Sends a text message to the MANAGEMENT designee



The SYSTEM offers flexibility and programmability during the SYSTEM configuration by allowing the User to programming the following items:

- Designee phone number (or email address)
- Work cell name. Please note that the work cell name may NOT have any spaces in it. If there are spaces -- we modify the work cell name by convert spaces to dashes ("-")

Currently, the text message format and content may NOT be changed without sending your unit back to RT Automation. We offer this service at no charge however you are responsible for shipping charges (both directions).

V. Configuration/Programming

When the SYSTEM is received by the User, the first step is to program it. If this step is not completed, the SYSTEM will not operate correctly. Please follow the following steps:

1. User: Connect the LED unit to the MCB-200 Hardware via the Weather Pack connectors.

2. User: Plug the power cord into 120VAC power outlet

3. System: After a few seconds, the LED light will turn RED followed by GREEN. The RED status LED will be OFF. At this point, the User has ten (10) seconds to complete the "press the buttons in order" sequence. There is no need to panic or do this too fast as you have ten seconds to do it.

4. User: Press BTN1 - The RED status LED will turn ON for one second and then turn OFF (make sure you WAIT for it to turn OFF before proceeding)

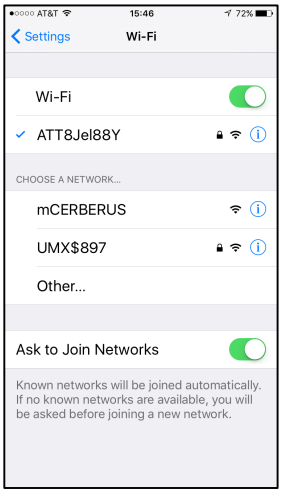
5. User: Press BTN2 - The RED status LED light will turn ON for one second and then OFF

6. User: Press BTN3 - The RED status LED light will turn ON for one second and then OFF

7. User: Press BTN4 - The RED status LED light will turn ON for one second and then OFF

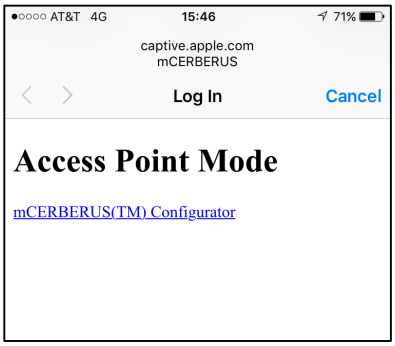
8. User: Wait for the remaining ten seconds to finish. **If the User completed these four operations within the required ten (10) seconds -- the RED status LED will then flash ON/OFF approximately 25 times in rapid fashion.** Then the RED status LED will remain ON. This is your indication that setup mode has been enabled. The SYSTEM has become a WiFi Access Point. This allows you (the User) to login to the system and configure it for operation in your manufacturing operation.

9. User: Log into the SYSTEM using your Smart Phone. The Network name of the SYSTEM is called **mCerberus** (as illustrated).



- If you are using an iPhone -- simply click on this Network name to gain access to it. After you click on this Network name -- your web browser will automatically open up to the Access Point menu (see Step 10)

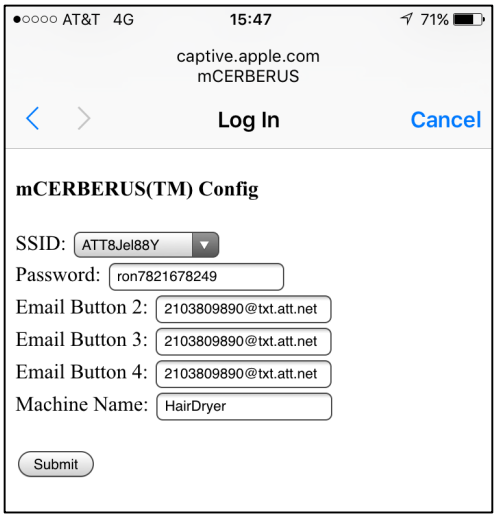
- If you are using something other than an iPhone (like a laptop with WiFi capability) -- configure your laptop to gain access to the mCerberus WiFi Network. Then open a web browser on your laptop and type in "194.168.1.1" into the web browser address bar and press ENTER.



10. User: At this point, the following screen should appear on your browser screen. Select the **mCerberus™ Configurator** link to enter the SYSTEM configuration screen.

11. User: Next (and finally) the **mCerberus™ Config** screen will appear. Update applicable fields as necessary.

SSID: Select the SSID from the drop down dialog box. The SYSTEM polls and records all current available WiFi Networks in the vicinity. The SYSTEM must be in the area where your designated WiFi Network is operating AND the WiFi Network must be actively broadcasting its name.



Password: Enter the WiFi Network Password.

Note: If you enter the WiFi password into the system wrong -- the SYSTEM will NOT function correctly.

Email Button 2: This is the email address that the text message is sent to when BTN2 is pressed. We provide the following Short Message System (SMS) phone number to EMAIL equivalents for the Major USA carriers (replace cell-phone-number w/ the applicable nine digit cell phone number):

AT&T:	cell-phone-number@txt.att.net
Sprint:	cell-phone-number@messaging.sprintpcs.com
T-Mobile:	cell-phone-number@tmomail.net
Verizon:	cell-phone-number@vtext.com

Email Button 3: This is the equivalent phone number email address that the text message is sent to when BTN3 is pressed.
Email Button 4: This is the equivalent phone number email address that the text message is sent to when BTN4 is pressed.
Machine Name: Enter the name of your WORKCELL in this dialog box (limited to 20 characters)

When you have properly (and carefully) configured the system -- select the **SUBMIT** button. Wait approximately ten (10) seconds for the information to be written to EEPROM.

12. User: **Cycle Power to the SYSTEM by unplugging the unit from the wall power outlet**. Wait a minimum of five (5) seconds and then plug the system into the power outlet. You are done!

NOTE: This step is VERY important if you happen to have multiple mCerberus™ units in your manufacturing plant. If you do not complete this step, the SYSTEM will/may continue to broadcast the mCerberus™ as an available Network Access Point when in fact it is NOT available. The only way to remove this AP Name Broadcast is by completely removing power to the Unit after configuring it.

VI. Getting to RUN Mode

The following table summarizes the overall operation of the SYSTEM.

A	B	C
EVENT	**TIMEFRAME (seconds)**	**SYSTEM RESPONSE**
UNIT INITIALIZATION	2	The ADDON Light will turn Red followed by GREEN. Unit is initializing variables, configuring INPUTS AND OUTPUTS, and reading EEPROM When Initialization is complete -- RED LED status light will be OFF
Opportunity to enter **SETUP MODE** This is REQUIRED when the unit is first received.	10	**HOW TO ENTER SETUP MODE (RIGHT AFTER INITIALIZATION ONLY)** Step 1: Press BTN1 -- RED LED status light will turn ON (one sec) then OFF Step 2: Press BTN2 -- RED LED status light will turn ON (one sec) then OFF Step 3: Press BTN3 -- RED LED status light will turn ON (one sec) then OFF Step 4: Press BTN4 -- RED LED status light will turn ON (one sec) then OFF If the User completes these four operations within the required ten (10) seconds -- the RED status LED will turn ON/OFF (rapidly) 25 times. Then the RED LED status light will remain RED. This is your indication that setup mode has been enabled.
LOGIN TO WIFI SYSTEM	Typically 2 - 6 seconds	System will change the RED LED status light from ON to OFF every 1000 ms. It will do this continuously UNTIL it logs into the WIFI system. Normally this will take no more than 2 to 6 seconds. NOTE: If the RED LED status light continues to flash from ON to OFF to ON for more than ten seconds -- you have an error that needs to be corrected: (1) You did not configure the WIFI system properly (wrong SSID password, etc), OR (2) The WIFI signal strength is too low.
RUN MODE	n/a	WHEN the system has successfully logged into the WIFI system, the RED LED status light will turn ON and remain ON. At this point -- the system is fully enabled and ready to be used.

If the User does NOT enter SETUP MODE, the SYSTEM will perform the following steps:

- Initialize system (takes approximately 2 second)
- Wait for ten seconds to allow User to Enter SETUP MODE
- If the User does NOT enter SETUP MODE, the SYSTEM will attempt to login to the WiFi System
- If the SYSTEM successfully logins to the WiFi system, the SYSTEM will enter RUN MODE.
  - The RED LED status light will be ON (solid)
  - The LED status will be set to GREEN

At this point, the SYSTEM may be used. When the SYSTEM is in RUN mode -- any button may be pressed when the RED status light is ON as shown in the figure to the RIGHT.

VII. RUN Mode

Once the SYSTEM has entered RUN mode, the SYSTEM may be used as follows:

- Select BTN1 to change the state of the LED light (from GREEN to RED or from RED to GREEN)
- BTN2, BTN3, and BTN4 sends a text message to the applicable department designee.

NOTE: When either BTN2, BTN3, or BTN4 are selected, the SYSTEM will NOT respond to any User selections UNTIL it has completed the processing of the current selected button. It takes approximately 30 seconds to process a text message.

The SYSTEM indicates to the User that it is ready to receive a button press by turning on the RED status LED.

- The figure on the left illustrates when the RED LED status light is OFF (SYSTEM is busy and will not respond to a button press)
- The figure on the right illustrates when the RED LED status light is on (SYSTEM ready for a button press)

SYSTEM is busy (RED LED status light is OFF)

SYSTEM is ready (RED LED status light is ON)

TEXT SENDING CONFIRMATION

The following sequence will indicate to the User of the SYSTEM if the TEXT sending operation was successful.

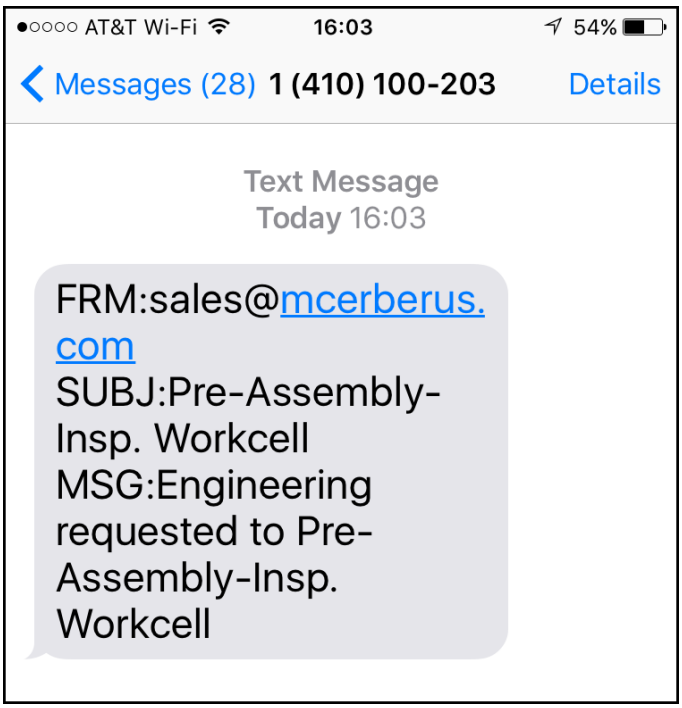
Step 1: The User presses either BTN2, BTN3, or BTN4.
Step 2: The System will turn OFF the RED LED status light.
Step 3: The System will attempt to send the text message (per the applicable button). This process takes approximately 15 to 30 seconds.
Step 4: The SYSTEM will indicate to the User if the text message was sent successfully.

a. If the SYSTEM was SUCCESSFUL -- the RED LED status light will turn from OFF to ON
b. If the SYSTEM was UNSUCCESSFUL - the RED LED status light will flash ON/OFF several times. It then will remain ON indicating that the SYSTEM is waiting for a button to be pressed. If the text message sending process was UNSUCCESSFUL -- repeat the operation.

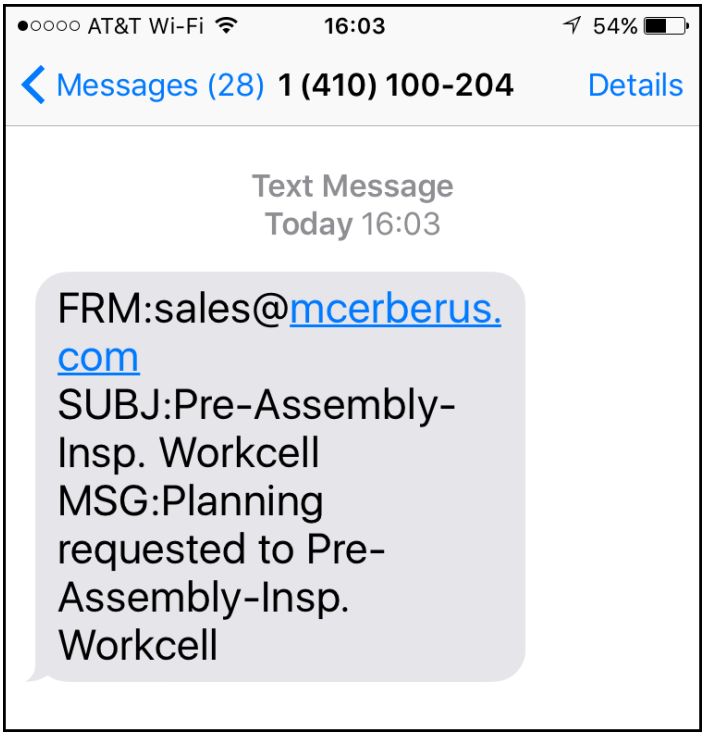
TEXT MESSAGE FORMATING

The following illustrates the text message formatting by example.

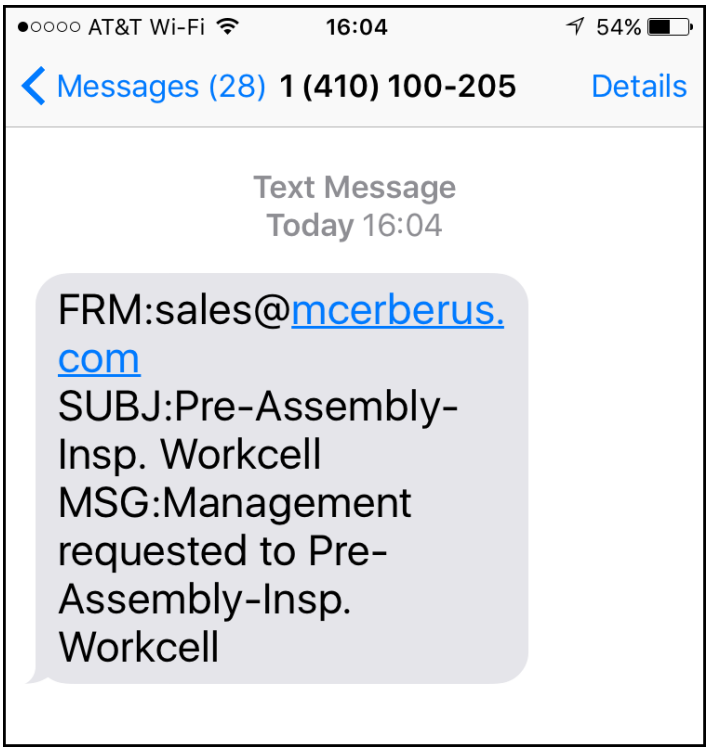
Select BTN2 to send a text message to the Engineering designee. This formatting may be updated by returning the SYSTEM to RT Automation.



Select BTN3 to send a text message to the Planner designee



Select BTN4 to send a text message to the Management designee



VIII. Troubleshooting Guide

While it is expected that the units will perform flawlessly for you, we provide the following troubleshooting guide that will assist you in diagnosing any issues you may be having with the SYSTEM.

FAULT CONDITION	CORRECTIVE ACTIONS	MAJOR FAULTS
When I turn the SYSTEM ON, the RED LED status light just blinks ON and OFF and never STOPS	Your SYSTEM was unable to connect to the WiFI system. . Ensure that the WiFi Network is ON . Ensure that the WiFI Signal Strength is at least -75 dBm If these are proper -- you will then need to make sure that the system was configured properly. See Section V of the User's Guide	
LED Light is not ON	Ensure AC Power Cord is plugged into Power (120VAC, 60Hz). Ensure that LED Light is electrical connected to the Main Hardware box Use Voltmeter to check that Output Voltage to the LED light between GREEN/BLACK or RED/BLACK Leads is 24VDC (depending on the current state -- only one of these will be at 24VDC and the other will be at 0VDC).	LED light has failed 24VDC Power Supply in Main unit has failed Relay Board has failed
When I press BTN1, the LED light status does not change	You cannot change the LED light status UNLESS the RED LED status light is ON. There is a time delay of approximately 5 seconds after pressing BTN1 before it can be selected again. Alternately, if you selected BTN2, BTN3, or BTN4, you will have to wait up to 30 seconds before any other buttons can be selected (and acknowledged)	
When I press BTN2, BTN3, or BTN4, nothing happens	If you have just pressed either BTN2, BTN3, or BTN4 -- you have to wait 30 seconds before another button can be selected. If you just selected BTN1 -- you have to wait only 5 seconds before another button may be selected. The system indicates that it is ready for INPUT via the RED LED status light. If the LED light is not ON -- that is an indication that the SYSTEM has no power.	
The TEXT message was never received by the intended designee	It may take up to five (5) minutes for a text message to be processed by the Phone Carrier (and sometimes longer). In addition, sometimes text messages are "lost." Ensure that the SYSTEM was properly setup with the proper phone number (see Section V of the User's Guide) The SYSTEM will also acknowledge the fact that the text message was successfully sent (see Section VII of the User's Guide).	Contact RT Automation if your text messages are not being received. Our SMTP relay server records data with regards to the transmissions of text messages.

IX. Product Summary

Main Unit Size:	8.75" x 5.25" x 3.30" (flange mountable). We reserve the right to modify the enclosure size
Weight:	approximately 2 lbs
Electrical Requirements:	120VAC, 60 Hz, 2 Amp (power cord supplied)
WiFi	802.11 b/g/n, 2.4GHz, supports WPA and WPA2.
WiFi Network Signal Strength:	-75 dBm minimum: See Section II of the User's Guide
Network Requirements:	Ports 80 and 2525 must be open on your network. The SMTP relay server located at mail.smtp.com (74.91.83.181) must not be blocked.
LED Light:	Industrial Signal Light; Rated Voltage : DC 24V;Light Color : Red, Green, Light Size : 24.5 x 5cm / 9.6'' x 2'' (L*D), Cable Length : 78cm / 30.7'';Installing Pole Size : 29.5 x 1.86cm / 11.6" x 0.732"(L*Thread D), Installing Base Size : 7.3 x 3.2cm / 2.87" x 1.2"(L*W), Installing Hole Dia : 0.83cm / 0.327"
Classification:	Finished Assembly is a digital device that is to used only as part of an industrial test equipment system
Temperature:	0 - 40 degrees C. No external cooling is required
Humidity:	5 - 95% RH (non-condensing)
Vibration:	Not rated. Item is a sensitive piece of electrical equipment. Do not drop, shake, rattle, or roll. **DO NOT DROP!**
Push button ratings:	100K cycles
LED Switch states:	100K cycles (mechanical relay)
Repairable Items:	Push buttons, 5V and 24VDC internal power supplies, mechanical relay board
Warranty:	Twelve months from date of shipment. We retain the right to repair or replace failed units.

X. FCC Test Results

The SYSTEM utilizes an ESP8266. The following test report summary provides the FCC Test Results Certification for this WiFi Module.

TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Anxinke technology co., LTD
Address	:	5A,B Building,Gushu WanLiHua Industrial,XiXiang Town, BaoAn District,ShenZhen,China
Manufacture's Name	:	Shenzhen Anxinke technology co., LTD
Address	:	5A,B Building,Gushu WanLiHua Industrial,XiXiang Town, BaoAn District,ShenZhen,China
Product description		
Product name	:	WIFI Module
Model and/or type reference	:	ESP-12
Serial Model	:	ESP
Standards	:	FCC Part15.247
Test procedure		ANSI C63.4-2003

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of BCTC, this document may be altered or revised by BCTC, personal only, and shall be noted in the revision of the document.

Test Result ..... : **Pass**

Prepared by(Engineer): Eric Yang

Reviewer(Quality Manager): Sophie Lu

Approved & Authorized Signer(Manager): Casey Wang

SHENZHEN BCTC TECHNOLOGY CO., LTD APPROVED

XI. Service Information

Warranty Service: Please contact us obtain an RMA #. Return the product in the original packaging with proof of purchase to the address below. Clearly state on the RMA the performance problem and return any leads, probes, connectors and accessories that you are using with the device.

Non-Warranty Service: Please contact us to obtain an RMA #. Return the product in the original packaging to the address below. Clearly state on the RMA the performance problem and return any leads, probes, connectors and accessories that you are using with the device.

Return all merchandise to us with pre-paid shipping. The flat-rate repair charge for Non-Warranty Service does not include return shipping. Return shipping to locations in North America is included for Warranty Service.

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Include with the returned instrument your complete return shipping address, contact name, phone number and description of problem.

XII. Warranty

RT Automation warrants to the original purchaser that its products and the component parts thereof, will be free from defects in workmanship and materials for a period of twelve months from date of purchase. We will, without charge, repair or replace (at OUR option) defective product or component parts. Returned product must be accompanied by proof of the purchase date in the form of a sales receipt.

Exclusions: This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. The warranty is void if the serial number is altered, defaced or removed. RT Automation shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. If this exclusion provision is not acceptable then we require that you return the unit to us for a full refund within the first 30 days of purchase.

This warranty gives you specific rights and you may have other rights, which vary from state-to-state.

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