REFERENCE MANUAL

GENERAC®

Troubleshooting and Diagnostics
Wireless Monitoring Systems

Wireless Remote
Wireless Advanced Module
Wireless Local Monitor

Mobile Link™
Mobile Link™ Wi-Fi

STANDBY GENERATORS

Safety

Throughout this publication and on tags and decals affixed to the generator, DANGER, WARNING, and CAUTION blocks are used to alert personnel to special instructions about a particular operation that may be hazardous if performed incorrectly or carelessly. Observe them carefully. Their definitions are as follows:

⚠DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.

(000001)

⚠WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

(000002)

⚠CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

(000003)

NOTE: Notes provide additional information important to a procedure or component.

These safety alerts cannot eliminate the hazards they indicate. Observing safety precautions and strict compliance with the special instructions while performing the action or service are essential to preventing accidents.

⚠WARNING

CANCER AND REPRODUCTIVE HARM

www.P65Warnings.ca.gov.

(000393a)

Read This Manual Thoroughly

This diagnostic manual has been written and published by Generac to aid qualified Generac dealer technicians and company service personnel when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures for these products, or like or similar products manufactured and marketed by Generac, and that they have been trained in the recommended servicing procedures for these products, including the use of common hand tools and any special Generac tools or tools from other suppliers.

Generac could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a procedure or tool not recommended by Generac must first satisfy themselves that neither his nor the products safety will be endangered by the service procedure selected.

All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication.

When working on these products, remember that the electrical system and engine ignition system are capable of violent and damaging short circuits or severe electrical shocks. If you intend to perform work where electrical terminals could be grounded or touched, the battery cables should be disconnected at the battery.

Any time the intake or exhaust openings of the engine are exposed during service, they should be covered to prevent accidental entry of foreign material. Entry of such materials will result in extensive damage when the engine Is started.

During any maintenance procedure, replacement fasteners must have the same measurements and strength as the fasteners that were removed. Metric bolts and nuts have numbers that indicate their strength. Customary bolts use radial lines to indicate strength while most customary nuts do not have strength markings. Mismatched or incorrect fasteners can cause damage, malfunction and possible injury.

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Section 1 Wireless Remote and Mobile Link™

Wireless Monitor

See ***Figure 1-1***. This wireless device provides three basic alerts indicated by colored LEDs.

Green LED (A) – Generator OK indicates one of the following conditions:

- The controller on the generator is set to AUTO, no alarms are present. The generator is ready to start and run or is running.
- The controller on the generator is set to Manual. The engine is running and no alarms are active.

When active, the green LED will flash once every 10 seconds.

Yellow LED (B) – Maintenance Needed indicates that either a Generator Warning is present or generator maintenance is required. The generator will not be prevented from running when the yellow LED is on. When active, the yellow LED will flash once every two (2) seconds.

Red LED (C) – Contact Dealer indicates any one of the following conditions:

- The controller on the generator is set to Off.
- The generator has not been registered.
- A Generator Alarm is present.
- The controller has been powered up, but the Installation Wizard procedure has not been completed.

Figure 1-1. Wireless Monitor

If a generator alarm is present the generator will not start and run in the event of a utility loss, or will be automatically shut down if the engine is already running. When active, the red LED will flash once every second.

The internal buzzer will sound once every 30 seconds when the red LED is on. The buzzer can be silenced by briefly pressing and releasing the Pair/Reset button; the buzzer will pulse twice to indicate it has been silenced. The buzzer will not reactivate until a new alarm has been detected.

The wireless monitor display unit updates the status of its LED's every 30 to 60 seconds. To conserve power and extend battery life, the LEDs are not lit continuously: instead they are briefly flashed as indicated above.

Wireless Basic Troubleshooting

Pairing the Generator Transceiver with the Display Unit

See ***Figure 1-1*** for the location of the “Pair/Reset” button (D) on the display unit.

1. Place the display unit against the generator transceiver as shown in ***Figure 1-2***, then immediately press and hold the “Pair/Reset” button on the display unit.

Figure 1-2. Place the Display Unit Against the Generator Transceiver

2. The yellow LED will begin flashing after about three seconds, indicating the modules are in pairing mode. Release the “Pair/Reset” button on the display unit and move the display unit away from the generator transceiver.
3. The Yellow LED will continue to flash during the pairing process.
4. Once the two modules have been successfully paired the yellow LED will stop flashing and the green LED will begin flashing.
5. Press and release the Pair/Reset button to complete the pairing process. At this time the green LED will stop flashing and the display unit will enter its normal mode of operation.

NOTE: If the controller is still set to OFF the red LED will begin to flash, indicating the generator is in Alarm Mode. Do not confuse this flashing red LED with ***Failure To Pair*** described below.

NOTE: The magnets in the display unit activate a magnetic reed switch in the generator transceiver in Step 1. The relative positioning of the two units needs to be as shown in ***Figure 1-2*** to activate the magnetic reed switch.

Failure To Pair

If the two modules fail to pair up within 30 seconds, the yellow LED will stop flashing and the red LED will begin to flash. If this happens proceed as follows:

1. Press and release the Pair/Reset button to stop the red LED from flashing.
2. Verify that good non-rechargeable AAA 1.5V batteries are installed.
3. Check the wiring to make sure all the plugs are fully inserted.
4. Repeat the pairing process from Step 1.

Results

1. If the link is established, discontinue troubleshooting.
2. If the link continues to fail, replace the wireless remote and transmitter.

Wireless Advanced Module

The wireless display system consists of a wireless transmitter and a remote monitor display. The system has a “line of sight” range of about 300 feet but this will be reduced if the signal must go through walls, floors, etc.

Figure 1-3. Wireless Advanced Module

NOTE: Some building materials may completely block the passage of the signal. For example: steel beams, metal siding, foil radiant barrier insulation.

The display is intended to show the status of the generator and to give warning if the system is in an alarm state. It also provides the following functions:

- Permanent time/date stamped history of generator alarms.
- Allows for remote testing of generator start and transfer functions (when utility power is present).
- Facility to set an exercise time and day from the display.
- A separate battery backed clock (with date) which is synchronized to the generator clock. If power is removed from the generator, the time and date will automatically be restored from this clock.
- Ability to add extra displays.
- Graphing capability for trending of Engine RPM, Utility Voltage and Battery Voltage.

Wireless Advanced Features

One of the most commonly used features on the device is the ability to test the functions of the generator. The “TEST” menu provides the option to remotely start, start and transfer, and stop the generator. This feature only works when Utility voltage is available and the controller is set to AUTO.

NOTE: The remote cannot disable or prevent the generator from running. The only method to disable the generator is by cycling the controller the OFF.

Some operational rules apply when using the “TEST” feature and are not due to product failure:

- The generator can only be shutdown if it was started via the remote. It will not respond to the command if running in a Utility failure.
- When the command has been given for a start and transfer to occur the generator will stay running until the “STOP” command has been given. The generator will then run for a 1 minute cool down period.

Wireless Advanced Troubleshooting

Resynchronizing the Radio After Battery Disconnection or In the Event of Loss of Communication

If the battery is ever disconnected from the generator, the radio system will stop working and will not automatically resynchronize. To resynchronize the system, follow the steps shown below:

1. Verify the display unit has working batteries.
2. Turn the display unit off using the slide switch on the side of the unit.
3. Take the display unit to the generator.

4. Open the generator lid and set the generator controller to OFF.
5. Remove the enclosure panel from the front of the generator enclosure.
6. Locate and disconnect the radio connector under the generator display panel.*

NOTE: *The radio connector has a white connector with gray cable. Remove the connector by squeezing the locking tab and pulling the connector down. Carefully use a pliers if necessary.

7. Turn on the display unit and navigate to the RADIO menu.
8. Select “RESET RADIO” and immediately (within 5 seconds) put the connector back into the controller (removed in Step 6).

The display unit will begin searching for the generator. Up to one minute will pass while the remote unit and generator synchronize. Once the generator is found, the radio link is established and the settings will be remembered.

9. Install the front enclosure panel and close the lid.
10. Set the controller to AUTO.
11. Return the display unit to its original location and connect it to the wall transformer.
12. Turn it off and back on again. (this is just to get it out of sleep mode which it may have entered on battery power).

Results

1. If the link is established, discontinue troubleshooting.
2. If the link fails to establish, repeat Steps 6-8 using a different channel.
3. If the link continues to fail, replace the wireless remote and transmitter.

Mobile Link™

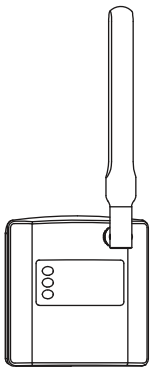


Figure 1-4. Mobile Link Unit

Table 1-1. Mobile Link Troubleshooting.

Problem	Cause	Correction
All LEDs off	1. No power to Mobile Link unit.	1. Check the 5 Amp fuse located on the yellow harness wire. 2. Check harness is connected to battery properly. Yellow to (+) Battery/ Black to (-) Battery. 3. Re-seat connector to Mobile Link. 4. Replace cable.
Top LED off	1. Unit not enrolled.	1. Enroll Mobile Link at www.StandbyStatus.com. 2. Verify Mobile Device Number is enrolled at www.StandbyStatus.com and enrolled number matches Mobile Device Number (MDN) of the Mobile Link unit.
Middle LED flashing	1. Poor connection.	1. Re-seat connector at generator controller and Mobile Link. 2. Replace cable.
Bottom LED off	1. No cellular network connection.	1. Check cellular coverage in your area. 2. Mobile Link in “Suspended” mode. Contact Customer Service for assistance at 1-888-436-3722.
Bottom LED flashing	1. Cellular connection pending. 2. Server may be down.	1. Network connection established. Awaiting server response. 2. Wait for problem to resolve itself.*
* The Mobile Link will retry several times before resting and retrying later. The full retry cycle lasts for about one (1) hour and includes several resets of the internal cellular modem. When these resets occur, the Mobile Link will indicate a loss of the cellular network connection until it is reestablished. If the end of the retry cycle has been reached without successfully completing communication with the server, the Mobile Link will rest for an hour, and then start another retry cycle. This rest period can be interrupted by switching the generator from OFF to AUTO. The Mobile Link will continue this cycle until it successfully connects to the server and receives a response.		

Diagnosing Mobile Link Communication to Controller

A flashing middle LED on the Mobile Link controller indicates a loss of communication between the Mobile Link unit and the generator controller.

The problem can be the generator controller, the Mobile Link controller, or the harness between the two units.

To determine the problem, perform voltage checks according to the charts below. This will help determine whether the Mobile Link controller or the generator controller is at fault.

Three wires are used to communicate between the Mobile Link controller and the generator controller. The SHLD wire is connected to the Mobile Link controller only. There are two communication wires (Wires 387 and 388) connected between the two controllers.

First, verify that the harness is plugged in correctly and that the generator starts and runs properly. If the harness is plugged in correctly and there is still no communication, disconnect both ends of the harness. Perform a continuity test on the wires in the harness to verify that they are not shorted between one another, and there are no opens except for the shield wire, which is connected to the Mobile Link connector only.

There are four charts. Charts 1 and 2 are used with all connectors connected while back probing each wire to battery ground (-) and to battery positive (+).

Charts 3 and 4 determine the voltage output from each unit while the other end of the harness is disconnected.

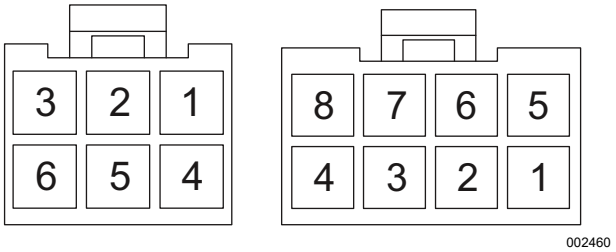


Figure 1-5. Mobile Link Connector

Chart 1 – Back Probe at Mobile Link connector (All connectors plugged in) All voltages +/- 0.5 volts		
	DM Negative lead on Battery NEG	DM Positive lead on Battery POS
Pin 1, Wire SHLD	0 VDC	Battery Voltage
Pin 2, Wire 388	- 4.2 to - 5.6 VDC Fluctuating	18.0 to 19.2 VDC Fluctuating
Pin 3, EMPTY	EMPTY	EMPTY
Pin 4, Wire 0	0 VDC	Battery Voltage
Pin 5, Wire 387	-5.8 to -6.8 VDC Fluctuating	22.33 VDC
Pin 6, Wire 13A	Battery Voltage	0 VDC

Chart 2 – Back Probe at Evolution Controller (All connectors plugged in) All voltages +/- 0.5 volts		
	DM Negative lead on Battery NEG	DM Positive lead on Battery POS
Pin 7, Wire 388	4.4 to - 5.3 VDC Fluctuating	18.3 to 19.4 VDC Fluctuating
Pin 8, Wire 387	6.0 to - 6.8 VDC Fluctuating	19.8 to 20.5 VDC Fluctuating

Chart 3 – Back Probe at Mobile Link connector (Mobile Link connector unplugged) All voltages +/- 0.5 volts		
	DM Negative lead on Battery NEG	DM Positive lead on Battery POS
Pin 1, Wire SHLD	0 VDC	0 VDC
Pin 2, Wire 388	0 VDC	Battery Voltage
Pin 3, EMPTY	EMPTY	EMPTY
Pin 4, Wire 0	0 VDC	Battery Voltage
Pin 5, Wire 387	- 8.56 VDC	22.33 VDC
Pin 6, Wire 13A	Battery Voltage	0 VDC
If no voltages are indicated based on this chart the controller is at fault.		

Chart 4 – Back Probe at Evolution Controller (Mobile link plugged in Evolution connector unplugged) All voltages +/- 0.5 volts		
	DM Negative lead on Battery NEG	DM Positive lead on Battery POS
Pin 7, Wire 388	- 5.5 VDC	19.3 VDC
Pin 8, Wire 387	0 VDC	Battery Voltage
If no voltages are indicated based on this chart the Mobile Link unit is at fault.		

If all LEDs are on and Mobile Link is communicating normally, then the power wire (13A), ground wire (0), and fuse to the Mobile Link unit are good.

If no LEDs are illuminated on the Mobile link unit, verify that the power wire (13A), ground wire (0), and fuse to the Mobile Link Unit are good.

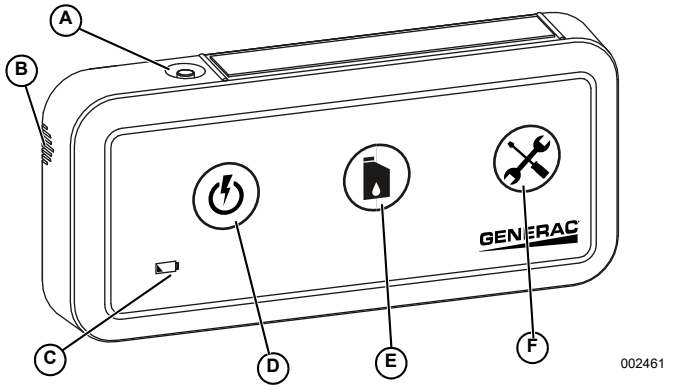
Wireless Local Monitor

The Wireless Local Monitor consists of one transceiver, mounted on the generator, and a display unit, placed in a convenient viewing location within the home or business. The system has a “line of sight” range of about 600 feet, but this will be reduced when the signal must pass through walls, floors, etc. With this remote monitoring system, the status of the generator can be checked easily from within the home or business.

The generator transceiver and display unit are shipped from the factory paired. These units are pre-paired to ensure communication and prevent cross-communication from other devices in the area.

NOTE: Some building materials may completely block the passage of the signal, for example, steel beams, metal siding and foil radiant barrier insulation.

- The Wireless Local Monitor indicates the generator status via three lights - Green, Yellow or Red.
- The Test button performs a Signal Strength Test.
- The Battery Status Indicator provides low battery status.
- The Buzzer gives audible warnings in conjunction with Yellow or Red lights.



A.	Test Button
B.	Buzzer - sounds with Yellow or Red Lights
C.	Battery Status Indicator
D.	Green Light - Generator OK / generator operates
E.	Yellow Light - Warning or Maintenance required / generator operates
F.	Red Light - Alarm / generator shuts down

Figure 1-6. Wireless Local Monitor Functions

Generator Compatibility

- This unit can be installed on all 2008 and later air-cooled home standby units with an LCD display and all 2010 and later liquid-cooled gaseous fuel standby units. The unit can also be used on 2013 and later Evolution controlled liquid-cooled diesel fuel standby units.
- For liquid-cooled units, an additional adapter harness is required (model 006665-0).
- Maximum ambient temperature rating: 122 °F / 50 °C.

Signal Strength Test

The display unit is equipped with a Signal Strength Test Mode. Press the Test button for five (5) seconds to enter the Signal Strength Test Mode. The Green, Yellow and Red lights will alternately light for a short period to indicate transition from Status mode to the Signal Strength Test Mode. The unit will be in this mode for 30 seconds. During the Signal Strength Test:

- Green - Good Signal Strength
- Yellow - Marginal Signal Strength
- Red - No Signal Strength

After 30 seconds, the unit will automatically exit the Signal Strength Test Mode. When this happens, the indicators alternately light to signal the transition back to Status Mode.

NOTE: Extended or frequent use of the Signal Strength Test may deplete battery life.

NOTE: The display unit will still work if the signal strength is yellow but battery life may be reduced.

Signal Strength Test Quick Reference Chart

Signal Strength Test is active - Display unit button must be pressed for more than 5 seconds - Display unit lights will go from providing current generator status to a rotating light pattern to signal a change in function to a Signal Strength Test Mode. It will repeat the rotating light pattern when it exits Signal Strength Test Mode.

Green Light	Yellow Light	Red Light	Meaning
ON	OFF	OFF	Strong signal from Transceiver unit to Display unit.
OFF	ON	OFF	Weak signal from Transceiver to Display unit.
OFF	OFF	ON	No signal from Transceiver to Base unit.

Wireless Local Monitor General Operation

The normal state of the display unit is to have no lights active. This indicates that the generator has no problems. When any problems occur, the lights will indicate the problem based on the information in this section.

Generator Transceiver Status Light

- The generator transceiver has a green status light that indicates it has power and is communicating with the display unit. This light can be viewed inside the generator compartment, through the wire loom opening when the generator lid is raised.
- Solid light Green light - power present / communication established
- Flashing Green light - power present / no communication

Display Unit Green Light (Generator OK or Running)

During normal operation, if the generator is in AUTO and does not have any maintenance actions, warnings or alarms active, no lights will be illuminated.

To verify the status of the generator, press the Test button to show the status. If the generator is set to AUTO and no alarms or warnings are present, the green light will illuminate when the Test button is pressed.

The green light will flash every five (5) seconds when the generator is running either in AUTO or MANUAL.

Display Unit Yellow Light (Maintenance Needed OR Warning Active)

The yellow light indicates either:

- Generator warning is present
- Generator maintenance is required.

NOTE: The generator will not be prevented from running when the yellow light is on.

When active and the generator is not running, the yellow light will flash once every five (5) seconds. If the generator is running with a yellow light active, both the green and yellow lights will flash once every five (5) seconds.

The internal buzzer will sound once every four (4) hours for one (1) second when the yellow light is active. During a period of inactivity, the buzzer may be silenced by briefly pressing and releasing the Test button; the buzzer will pulse twice to indicate it has been silenced. The buzzer will not reactivate until a new alarm has been detected.

NOTE: If the button is pressed while the buzzer is sounding, it may not be silenced.

Display Unit Red Light (Check Generator Status, Call Dealer If Necessary)

The red light indicates either:

- The AUTO/OFF/MANUAL button on the generator is in the OFF mode
- A generator alarm is present.

If a generator alarm is present, the generator will not start and run in the event of a utility loss or will be automatically shut down if the engine is already running.

When active, the red light will flash once every five (5) seconds.

The internal buzzer will sound once every hour for five (5) seconds when the Red light is on. During a period of inactivity, the buzzer can be silenced by briefly pressing and releasing the Test button; the buzzer will pulse twice to indicate it has been silenced. The buzzer will not reactivate until a new alarm has been detected.

NOTE: If the button is pressed while the buzzer is sounding, it may not be silenced.

Low Battery Indicator

The battery status indicator will flash every five (5) seconds, and the buzzer will sound every 15 minutes when a low battery is detected. The batteries should be replaced immediately.

Once the batteries are replaced, check the status of the generator by pressing the Test button to verify operation.

During a period of inactivity, the buzzer can be silenced by briefly pressing and releasing the Test button; the buzzer will pulse twice to indicate it has been silenced. The buzzer will not reactivate until a new alarm has been detected.

Troubleshooting

Problem	Possible Causes	Possible Corrective Actions
Generator transceiver light not illuminated	The transceiver is not receiving power. Connection to generator transceiver may not be made.	Check for proper harness transceiver connection at the transceiver and controller.
	The transceiver is not receiving power. Fuse has failed, been damaged or is removed from generator controller.	Check and replace fuse.
	The transceiver is not receiving power. Generator battery is disconnected.	Check generator battery connections.
Generator transceiver light flashing	The transceiver is not in communication with the display unit.	Install or replace batteries. Display unit may be out of range.
Display unit – Yellow and Red lights are flashing	The generator transceiver is not communicating with the generator.	Check the wiring harness and connections between the Generator control panel and the transceiver.
Problem	**Possible Causes**	**Possible Corrective Actions**
Display Unit – All lights flashing (Communication lost between Generator Transceiver and Display unit)	Display unit is out of range with generator transceiver.	Check range status by performing Signal Strength Test – move display unit closer to generator until range is acceptable.
	Generator transceiver is not communicating with generator controller or is not receiving power.	Check for proper connection to transceiver.
		Check for proper connection to controller.
	The transceiver is not receiving power. Fuse has failed, been damaged or is removed from generator controller.	Check and replace fuse.
	The transceiver is not receiving power. Generator battery is disconnected.	Check generator battery connections.
Display Unit – No lights illuminate when button pressed	Dead batteries.	Check and replace batteries.
Battery – Battery life is less than expected	Low signal strength.	Perform Signal Strength Test and relocate to a location with higher signal strength, if necessary.
Low signal strength	Signal reduced due to travel through various mediums, such as, metal siding, tinted or filtered windows, brick, multiple walls or atmospheric conditions.	Perform Signal Strength Test and relocate to a location with higher signal strength, if necessary.

Quick Reference Chart

Green Light	Yellow Light	Red Light	Battery Status Indicator	Buzzer	Meaning
—	—	—	Flash every 5 seconds	1 second every 15 minutes	Replace batteries in display unit. Remove batteries to silence buzzer.
OFF	OFF	Flash every 5 seconds	—	5 seconds every hour	Generator will not run. Alarm condition reported. Press Test button to silence buzzer. Buzzer will re-activate with new warning.
Flash every 5 seconds	Flash every 5 seconds	OFF	—	1 second every 4 hours	Generator is running with warning. Press Test button to silence buzzer. Buzzer will re-activate with new warning.
OFF	Flash every 5 seconds	OFF	—	1 second every 4 hours	Generator is not running, but will if needed. Generator warning reported. Press Test button to silence buzzer. Buzzer will re-activate with new warning.
OFF	Flash every 5 seconds	Flash every 5 seconds	—	OFF	The generator transceiver is not communicating with the generator controller.
Flash every 5 seconds	OFF	OFF	—	OFF	Generator running normally.
ON	OFF	OFF	—	OFF	Generator is standing by, ready to run. No issues reported.*
Flash every 3 seconds	Flash every 3 seconds	Flash every 3 seconds	—	OFF	Display unit has lost contact with transceiver unit.
* Display unit button must be pressed to obtain this status.					

Section 2 Mobile Link™ Wi-Fi Module

The Wi-Fi module is provided as standard equipment on 2018 home standby units. Before the generator is delivered to the installation site, perform the ***Pre-Installation Signal Strength Test*** to determine if the existing Wi-Fi signal is sufficient for use or if it must be boosted.

Pre-Installation Signal Strength Test

NOTE: Most network routers automatically broadcast their Wi-Fi network name every few seconds. Network owners may choose to disable broadcasting, making the home network invisible.

1. See ***Figure 1-1***. Position a mobile device in the proposed generator installation location.

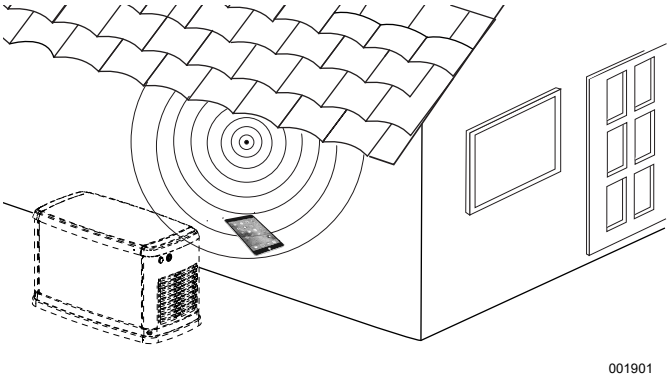


Figure 1-1. Test Wi-Fi Signal Strength

2. Set up a mobile device (smartphone, tablet, or laptop) to detect Wi-Fi networks.
3. See ***Figure 1-2***. Verify the home Wi-Fi network is being detected by the mobile device. Observe the Wi-Fi signal strength.

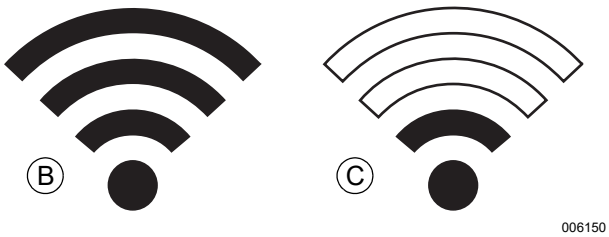


Figure 1-2. Signal Strength Display

- If the Wi-Fi signal is strong (B), the existing network setup is acceptable. The Wi-Fi module will operate from its location on the generator.
- If the Wi-Fi signal is weak (C) or fluctuating, or the network is not available, the homeowner may need to consider upgrading their wireless router. Any signal boosters present in the system (e.g. a repeater) should also be tested and upgraded if necessary.
- If the Wi-Fi signal is weak and the network cannot be upgraded, the homeowner should consider using the cellular based Mobile Link accessory.

Connect to Home Network

Successful connection to the home network must occur before the user can access any of the features in the Mobile Link application. and communicate with the Mobile Link servers.

NOTE:

- The connection process requires the installer (or user) to be comfortable navigating various menus and functions on the generator controller. If necessary, refer to the Owner's Manual for instructions on operating the keypad.
- For reference, a ***Wi-Fi Menu Map*** is provided at the end of this section.

Before Starting

Verify the generator is registered and activated. To activate the generator, visit ***www.activategen.com*** and follow the prompts as directed.

Wi-Fi Setup at Generator Controller

Connect to Home Network When Internet is Available on the Mobile Device

The Wi-Fi connection process varies depending on when it is performed:

- during initial setup and configuration of a newly-installed generator, or
- on a previously installed and operating generator.

As part of the generator installation process, it is recommended to connect Wi-Fi during the initial generator setup and power-up. The activation code will automatically be communicated to the generator controller through Wi-Fi communication, provided the generator has been registered and activated at ***www.activategen.com*** prior to making the Wi-Fi connection. It also allows the user to select the operating time zone immediately, keeping exercise time on track and adjusting for Daylight Savings Time as needed.

Begin the connection process by following the applicable steps in the following table.

Newly Installed Generator

1. After the controller is powered up, the “Install Wizard” screen will appear, followed by a prompt to select the desired language (***Figure 1-3***).

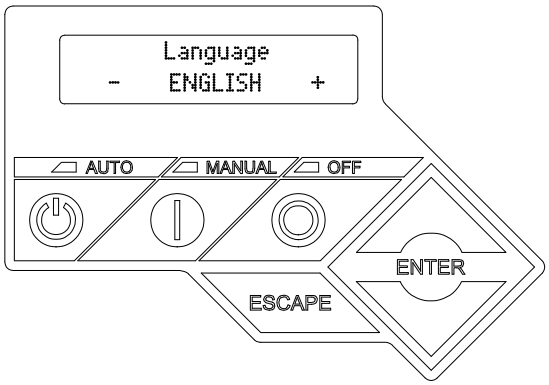


Figure 1-3. Select Language

2. Select the desired language, press ENTER, and proceed to the “Setup Wi-fi” prompt (***Figure 1-4***).

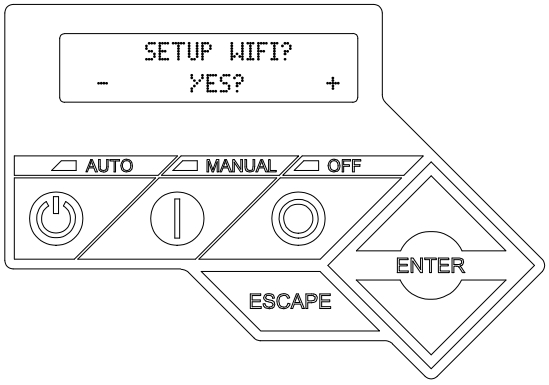


Figure 1-4. Setup Wi-Fi Prompt

3. Proceed to ***Continue Connection Process*** .

Previously Installed Generator

1. See ***Figure 1-5***. On the controller, press ESCAPE to access the first level options menu. Select “Setup Wifi?” and press ENTER.

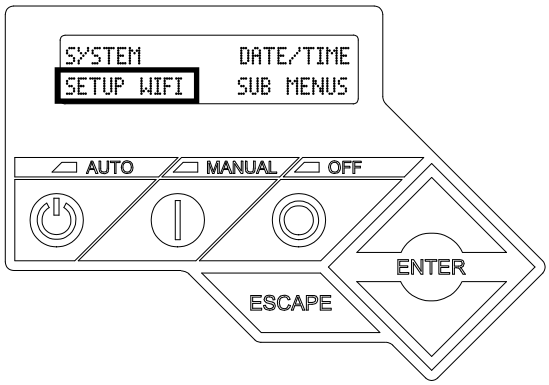


Figure 1-5. First Level Options Menu

2. See ***Figure 1-6***. Select “Yes?” and press ENTER.

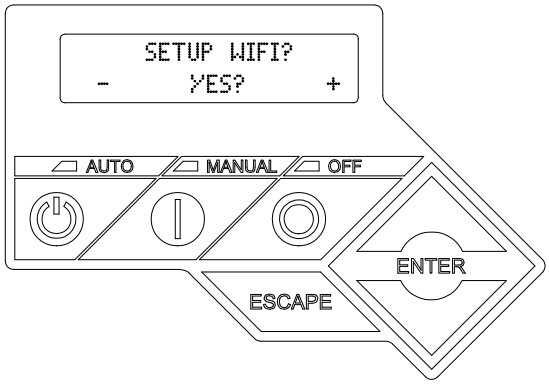


Figure 1-6. Setup Wi-Fi Prompt

3. Proceed to ***Continue Connection Process*** .

Continue Connection Process

1. See ***Figure 1-7***. The controller display will change to **SETUP WIFI NOW!** along with a timer. You have 30 minutes to connect the Wi-Fi.

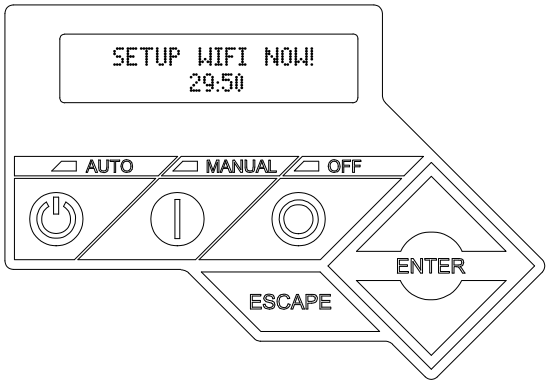


Figure 1-7. Wi-Fi Setup Screen

NOTE: After 30 minutes, the controller will time out. **SETUP WIFI?** will reappear on the controller display. If YES is selected, the 30 minute countdown timer will restart. If NO is selected, Wi-Fi setup will be bypassed.

2. See ***Figure 1-8***. Using a browser on a mobile device with Internet connectivity, go to ***installml.com.*** Click “Let’s Go” to proceed.

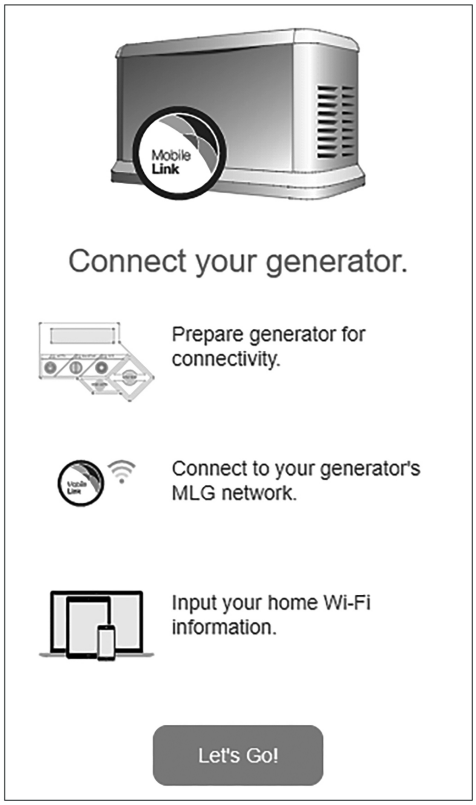


Figure 1-8. InstallmI Home Page

3. See ***Figure 1-9***. Click "Continue" when the preparation screen appears.

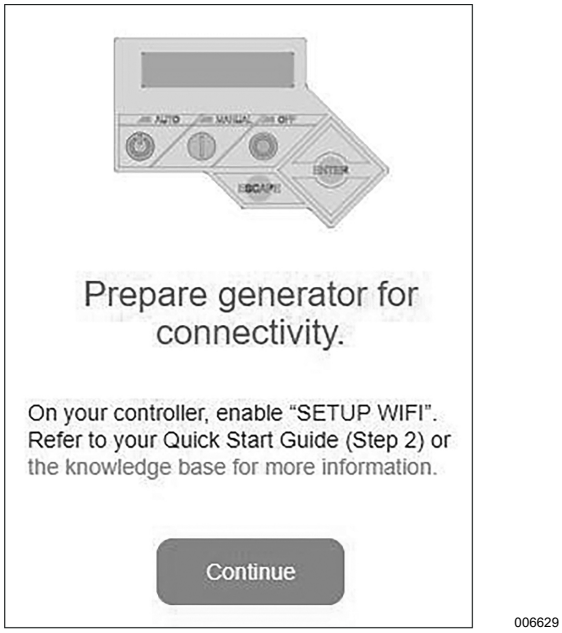


Figure 1-9. Preparation Screen

4. See ***Figure 1-10***. Connect to the generator Wi-Fi network (MLGXXXX) using a Wi-Fi enabled mobile device. **Then, return to the browser** and click "I'm ready."

Figure 1-10. Connection Screen

5. See ***Figure 1-11***. Select your country and time zone.

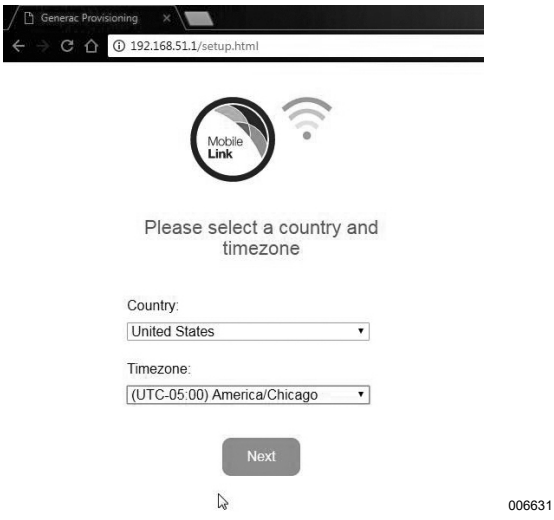


Figure 1-11. Select Country and Time Zone

6. See ***Figure 1-12***. Select the homeowner's network name from the drop-down list.

NOTE: If the homeowner's network is invisible, select "Manual Configuration" from the drop-down list and enter the network credentials.

Figure 1-12. Select Homeowner's Network

7. See ***Figure 1-13***. Enter the homeowner's network password and click CONNECT.

Figure 1-13. Enter Password

8. See ***Figure 1-14***. The generator will attempt to connect to the server.

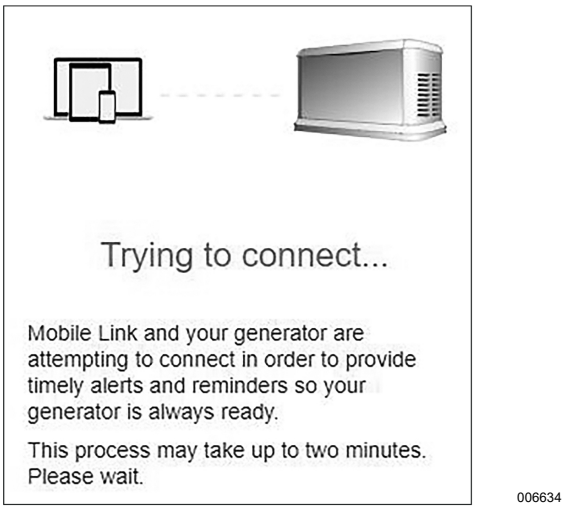


Figure 1-14. Establishing Server Connection

9. See ***Figure 1-15***. Once a successful connection is made to the network, the controller display will show the homeowner's network name.

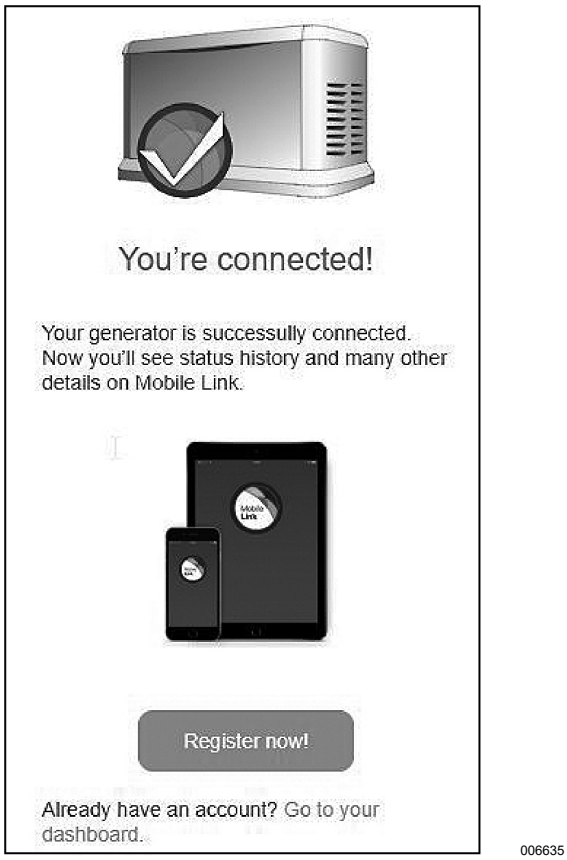


Figure 1-15. Successful Connection

10. Return to the generator controller and continue generator setup through the Install Wizard.
11. Verify controller firmware is up to date by selecting **Update From: WiFi**. Any updates will be automatically loaded.

This completes the connection process. Proceed to ***Download Mobile Link and Complete Registration*** .

Unsuccessful Network Connection

If the connection attempt fails:

- The “You’re Connected!” page will not appear.
- See ***Figure 1-16***. The controller displays “Setup Failed...Retry?”

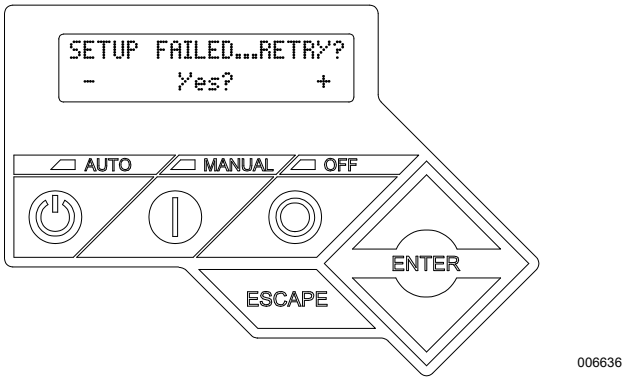


Figure 1-16. Wi-Fi Setup Failure Screen

Proceed to ***Retry Network Connection*** if either condition exists.

Connect to Home Network When Internet is NOT Available on the Mobile Device

The Wi-Fi connection process varies depending on when it is performed:

- during initial setup and configuration of a newly-installed generator, or
- on a previously installed and operating generator.

As part of the generator installation process, it is recommended to connect Wi-Fi during the initial generator setup and power-up. The activation code will automatically be communicated to the generator controller through Wi-Fi communication, provided the generator has been registered and activated at ***www.activategen.com*** prior to making the Wi-Fi connection. It also allows the user to select the operating time zone immediately, keeping exercise time on track and adjusting for Daylight Savings Time as needed.

Begin the connection process by following the applicable steps in the following table.

Newly Installed Generator

1. After the controller is powered up, the “Install Wizard” screen will appear, followed by a prompt to select the desired language (***Figure 1-17***).

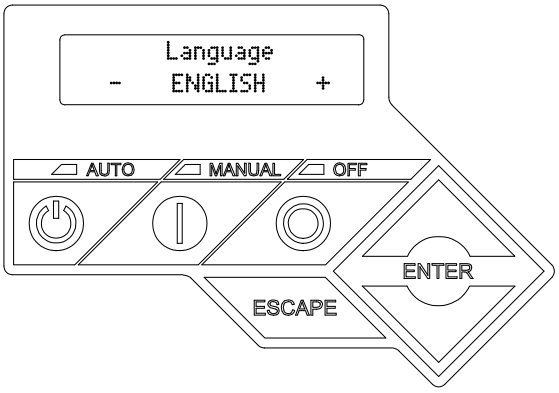


Figure 1-17. Select Language

2. Select the desired language, press ENTER, and proceed to the “Setup Wi-fi” prompt (***Figure 1-18***).

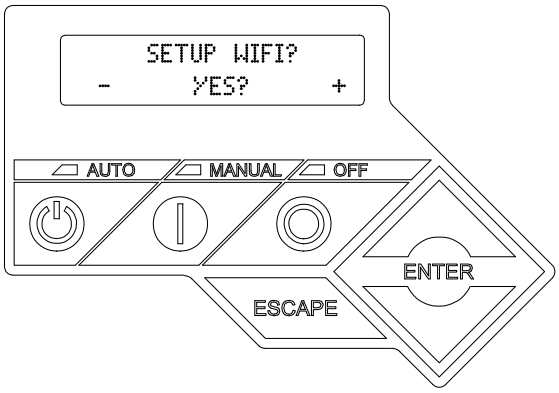


Figure 1-18. Setup Wi-Fi Prompt

3. Proceed to ***Continue Connection Process*** .

Previously Installed Generator

1. See ***Figure 1-19***. On the controller, press ESCAPE to access the first level options menu. Select “Setup Wifi?” and press ENTER.

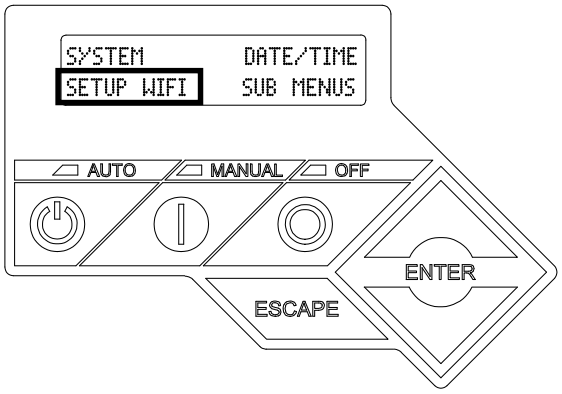


Figure 1-19. First Level Options Menu

2. See ***Figure 1-20***. Select “Yes?” and press ENTER.

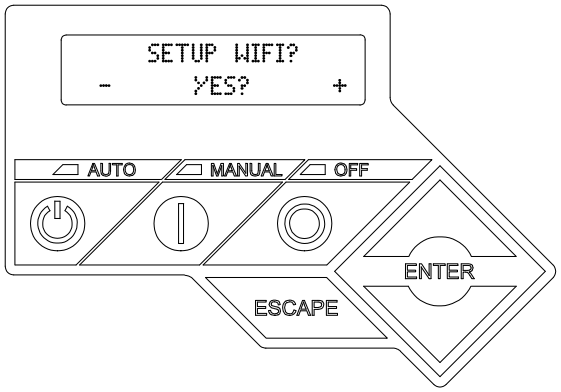


Figure 1-20. Setup Wi-Fi Prompt

3. Proceed to ***Continue Connection Process*** .

Continue Connection Process

1. See ***Figure 1-21***. The controller display will change to **SETUP WIFI NOW!** along with a timer. You have 30 minutes to connect the Wi-Fi.

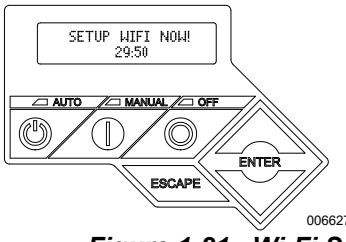


Figure 1-21. Wi-Fi Setup Screen

NOTE: After 30 minutes, the controller will time out. **SETUP WIFI?** will reappear on the controller display. If YES is selected, the 30 minute countdown timer will restart. If NO is selected, Wi-Fi setup will be bypassed.

2. Connect to the generator Wi-Fi network (MLGXXXX) using a Wi-Fi enabled mobile device.
3. After the connection is established, open a web browser and type **192.168.51.1** in the address bar.

NOTE: The setup page can also be launched by scanning the Quick Response (QR) Code on the Wi-Fi data label with your mobile device if so equipped.

4. See ***Figure 1-22***. Select your country and time zone.

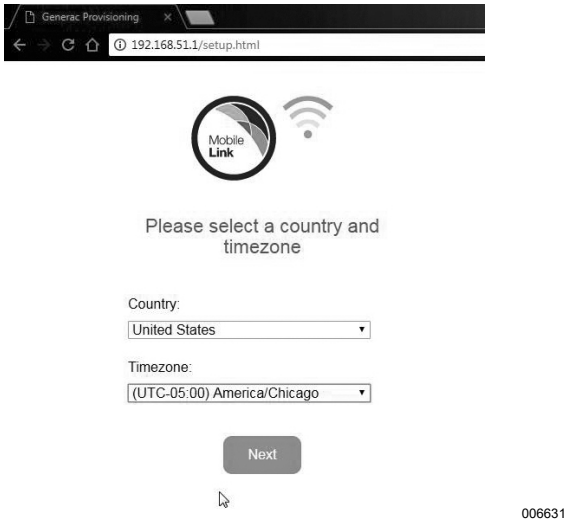


Figure 1-22. Select Country and Time Zone

5. See ***Figure 1-23***. Select the homeowner's network name from the drop-down list.

NOTE: If the homeowner's network is invisible, select "Manual Configuration" from the drop-down list and enter the network credentials.

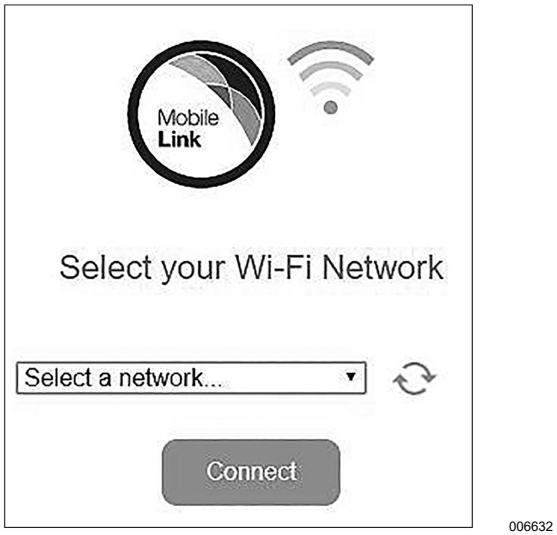


Figure 1-23. Select Homeowner's Network

6. See ***Figure 1-24***. Enter the homeowner's network password and click CONNECT.

Figure 1-24. Enter Password

7. See ***Figure 1-25***. The generator will attempt to connect to the server.

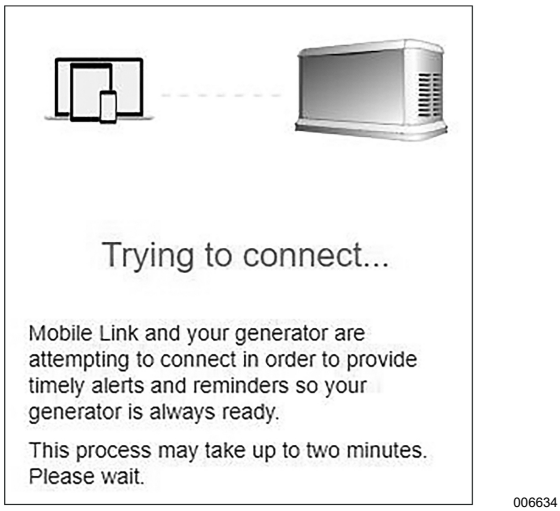


Figure 1-25. Establishing Server Connection

8. See ***Figure 1-26***. Once a successful connection is made to the network, the controller display will show the homeowner's network name.

Figure 1-26. Successful Connection

9. Return to the generator controller and continue generator setup through the Install Wizard.
10. Verify controller firmware is up to date by selecting **Update From: WiFi**. Any updates will be automatically loaded.

This completes the connection process. Proceed to ***Download Mobile Link and Complete Registration*** .

Unsuccessful Network Connection

See ***Figure 1-27***. If the connection attempt fails, the controller displays "Setup Failed...Retry?"

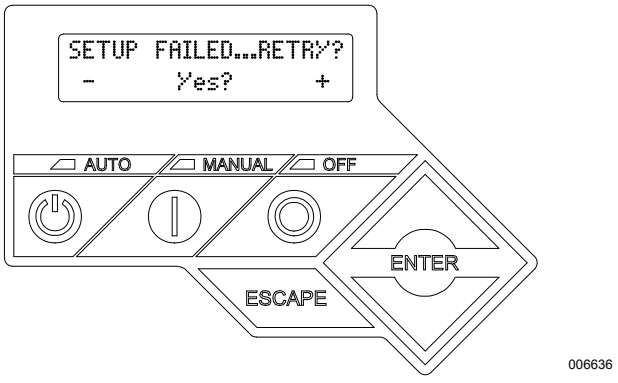


Figure 1-27. Wi-Fi Setup Failure Screen

Proceed to ***Retry Network Connection*** if either condition exists.

Retry Network Connection

See ***Figure 1-28***. Wi-Fi network connection may fail if incorrect information is entered during setup, such as a wrong network SSID or password. If "Setup Failed" displays on the controller, press "Yes" and follow the Wi-Fi setup process from the beginning.

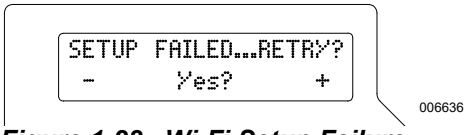


Figure 1-28. Wi-Fi Setup Failure

Reconnection

Reconnection to Wi-Fi will be required if there are any changes to the homeowner's network; for example, a new router or ISP, a new password, etc. To reconnect to the network:

1. See ***Figure 1-29***. From the main controller display, navigate to the Wi-Fi menu and press ENTER.

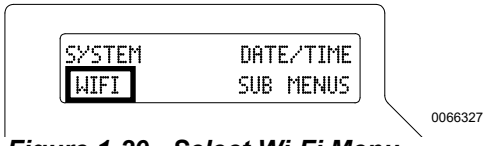


Figure 1-29. Select Wi-Fi Menu

2. See ***Figure 1-30***. Use Up/Down and ENTER buttons to scroll to the **REDO WIFI SETUP?** page. Select YES.

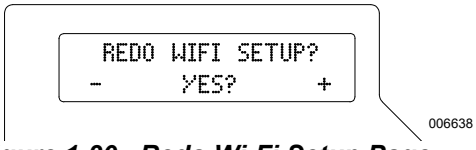


Figure 1-30. Redo Wi-Fi Setup Page

3. See ***Figure 1-31***. The controller will display **SETUP WIFI NOW!** with a timer. You have 30 minutes to connect Wi-Fi. Return to the Wi-Fi Setup process.

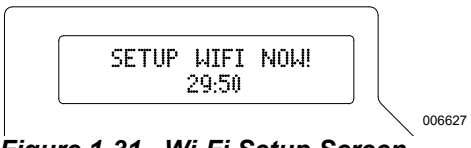


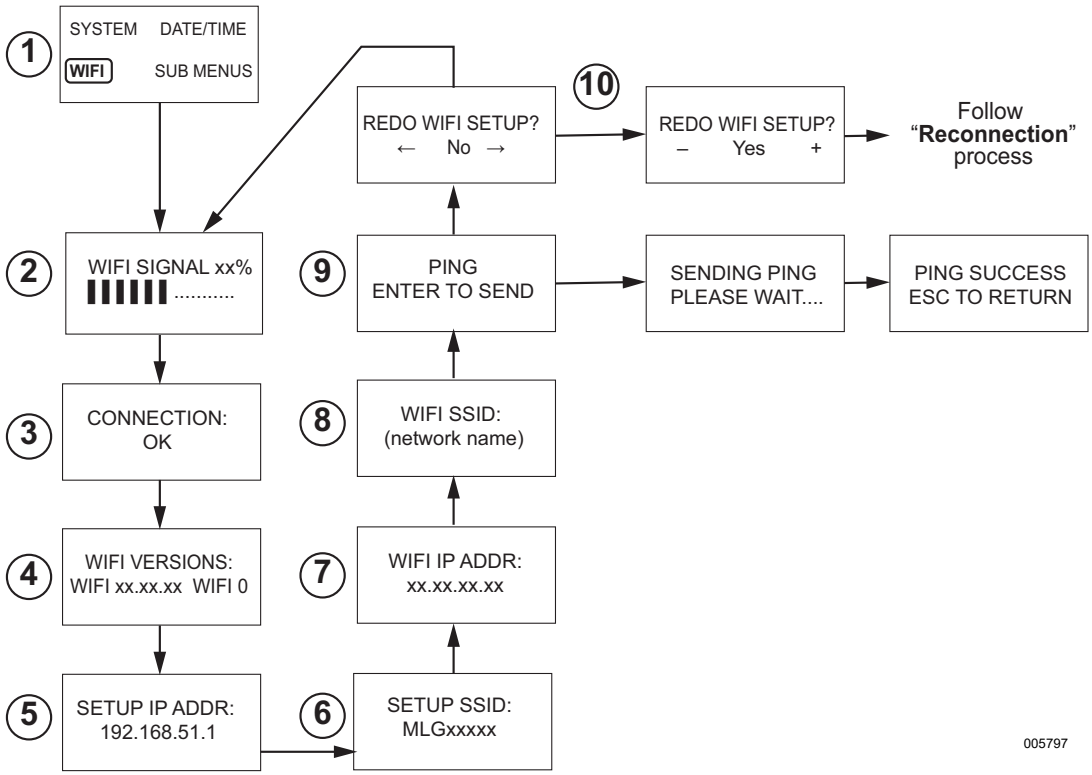
Figure 1-31. Wi-Fi Setup Screen

NOTE: Reconnection may take a few minutes. Observe the controller screens closely and follow display instructions when prompted.

Wi-Fi Menu Map

Wi-Fi configuration and setup screens are accessed through a series of menu options on the generator control panel. To enter the Wi-Fi menu, select “WIFI” at the lower left of the control panel screen and press ENTER.

Figure 1-32 is a sequential map of Wi-Fi menu screens. Descriptions are provided in the accompanying table.



1	Generator Main Menu Page	Allows the operator to navigate to other pages or sub-menus by using the arrow keys and the ENTER button.
2	Wi-Fi Signal Strength	Displays home network connection strength from zero to 100%
3	Connection Status	“OK” indicates a successful connection to the home network. Display alternately cycles between “OK” and the home network name.
4	Wi-FI Versions	Displays Wi-Fi firmware and hardware versions
5	Setup IP Address	This displays the IP address used to set up Wi-Fi. Refer to ***Connect to Home Network When Internet is NOT Available on the Mobile Device*** if no IP address is present.
6	Setup SSID	The network name broadcast by the Wi-Fi module while the unit is in AP mode. The name begins with MLG, indicating “Mobile Link Generator.”
7	Wi-FI IP ADDR	Displays the IP address that the generator is using to connect to the homeowner’s network
8	WI-FI SSID	The network name to which the generator is connected
9	PING	Pressing ENTER launches a multi-step check to verify a successful connection to the home network.
10	REDO Wi-FI Setup	Allows the user to restart the Wi-Fi connection process. Refer to ***Reconnection*** if selecting “Yes.”

Figure 1-32. Wi-Fi Menu Map

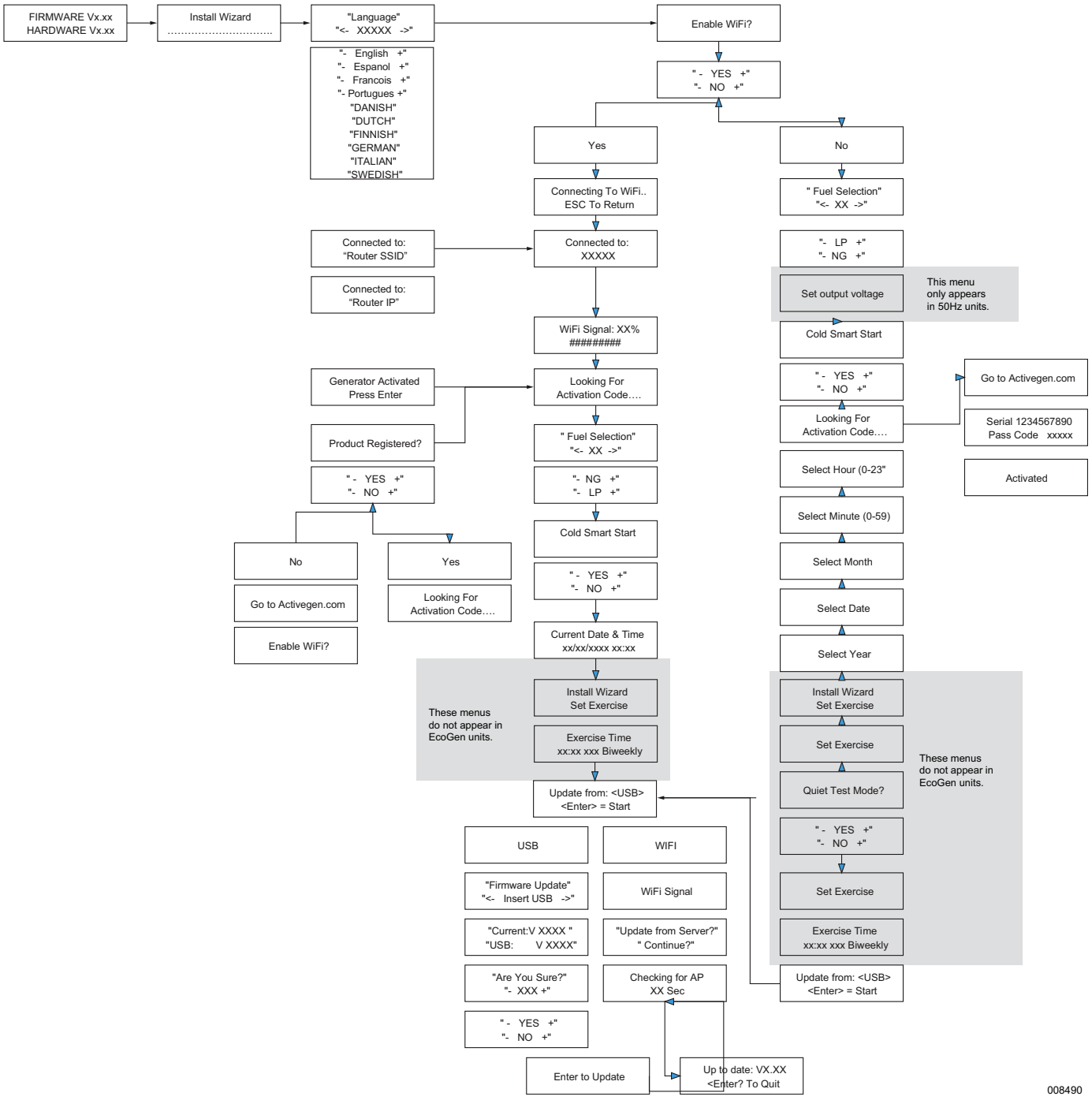


Figure 1-33. Wi-Fi Install Wizard Menu Map

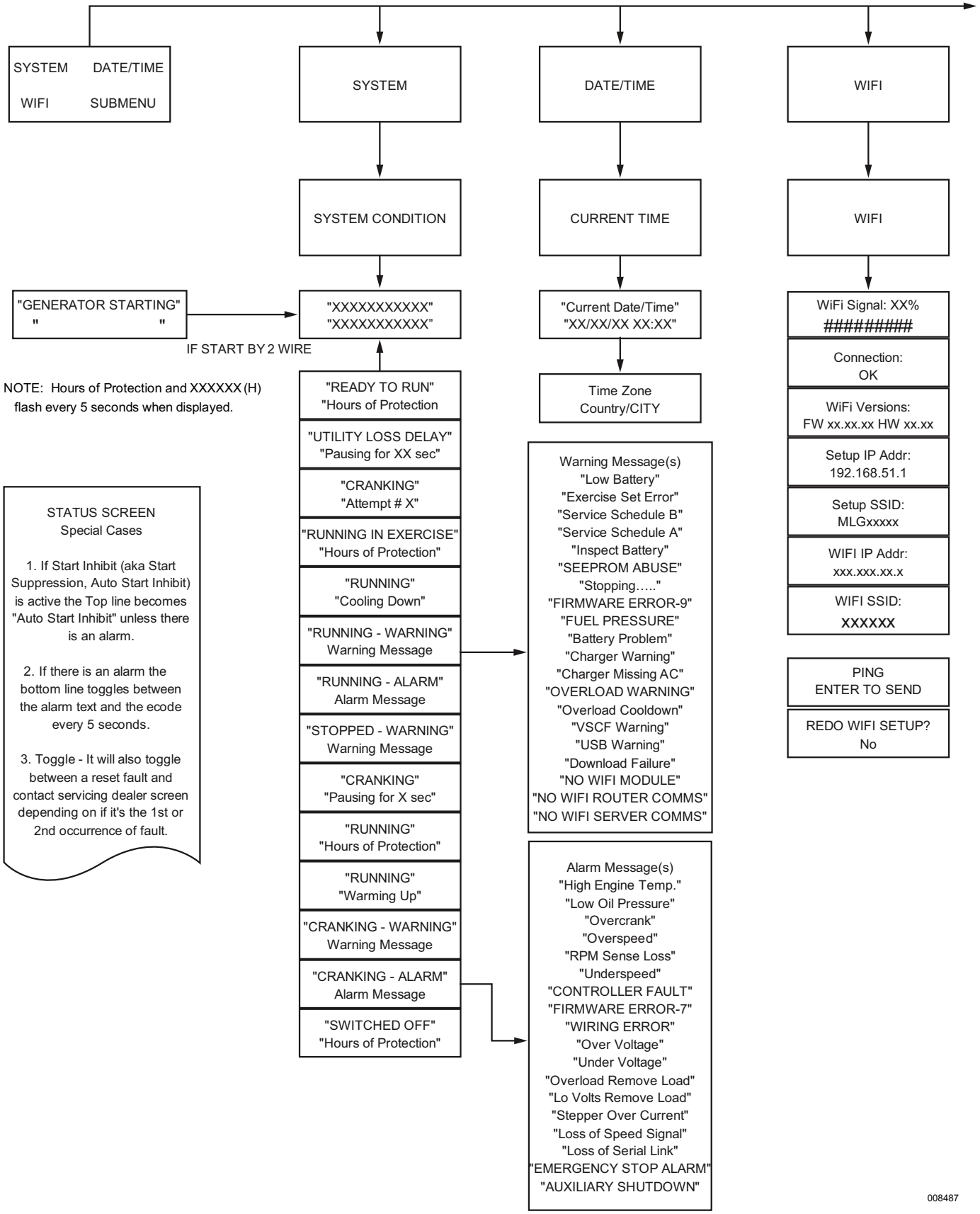


Figure 1-34. Wi-Fi System, Date/Time and Wi-Fi Menu Map

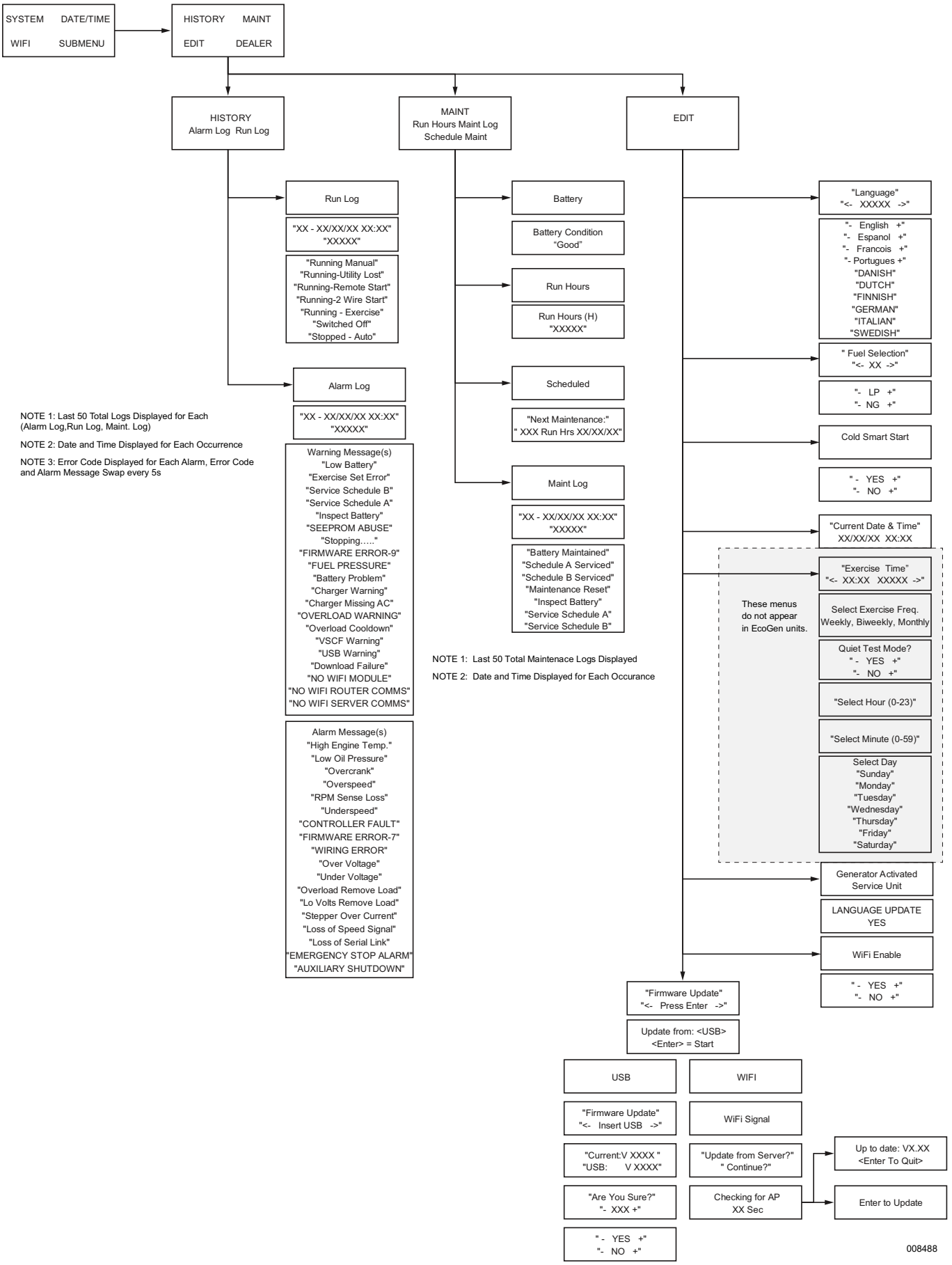


Figure 1-35. Wi-Fi Sub Menu Map

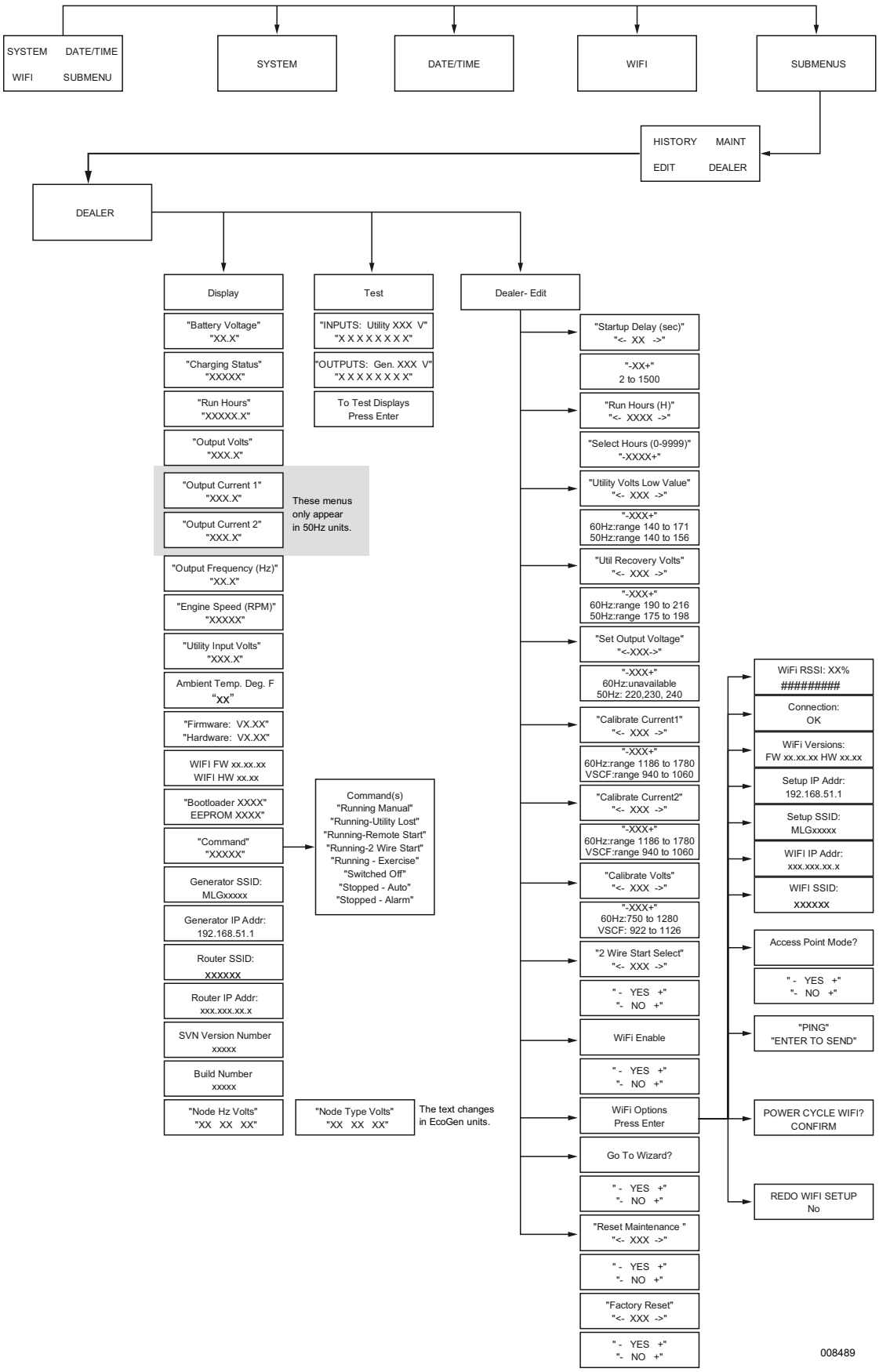


Figure 1-36. Wi-Fi DealerMenu Map

Download Mobile Link and Complete Registration

To complete Wi-Fi installation:

4. Go to ***www.mobilelinkgen.com***.
5. Follow the on-screen prompts to create a Mobile Link account.
6. Enter generator serial number to associate the unit with the Mobile Link account.
7. Choose a service plan level.
8. Download the free Mobile Link application (app) from either of the following providers:

Figure 1-37. Mobile Link App Providers

9. Launch the app, complete the online form, and click “Sign Up.”

Disable Wi-Fi

Use of the generator Wi-Fi module is optional. If the owner does not wish to use Wi-Fi to monitor the generator, the installer may disable the system.

NOTE: Disabling Wi-Fi is a step in the Installation Wizard and typically performed during initial start-up of the unit. However, the option remains available after installation within the controller “Edit” menu.

Reset Wi-Fi to Factory Default Settings

Contact an IASD if the Wi-Fi must be reset for any reason. Factory default settings can only be restored by a dealer.

Wi-Fi Troubleshooting

General Troubleshooting

Problem	Cause	Correction
Wi-Fi module not connecting to home network	ISP has changed	Follow reconnection process.
	Power outage has occurred	Wait for utility or backup power source to return.
	Network router has been replaced	Follow reconnection process.
Server Status Messages—see Wi-Fi Menu		
Server Status OK		Connection established
Time Server Denied		Connection to router established, but cannot detect server
Router Timeout		Not connected to router
Wi-Fi Module Missing/Disconnected		Wi-Fi module missing or disconnected
Checking Internet		Checking status of Internet connection

IASD Troubleshooting

The Wi-Fi module is equipped with an internal (green) LED accessible only by an Independent Authorized Service Dealer (IASD). The LED is located inside the customer connection panel and provides a visual indicator of Wi-Fi operating status and network trouble.

⚠DANGER

Electrocution. Only an authorized electrician or IASD is permitted to access customer connection area. Contact with live wires or terminals will result in death or serious injury. (000369)

IMPORTANT NOTE: The LED is not visible outside the generator enclosure. The side panel and customer connection panel must be removed to view the LED. Only an IASD is permitted access to the customer connection area.

Problem	Cause	Correction
LED flashing (approximately 2-3 times per second)	RSSI is too low	Check signal strength; boost network signal as needed.
	Wireless password is incorrect	Restart connection process after verifying the information.
	SSID incorrectly entered from the advanced sub menu.	Restart connection process after verifying the information.
LED blinking (approximately once per second)	Successful connection	Wi-Fi successfully connected to router
LED off	No power to Wi-Fi module	Check 5 Amp fuse located on yellow harness wire.
	Loose harness connection at controller	Verify connector on Wi-Fi module harness is properly seated in socket on controller.
	No Wi-Fi network connection	Check Wi-Fi router--reset if necessary
	Poor connection	Add a repeater to boost signal. See ***Pre-Installation Signal Strength Test***.
	Unit not activated	Activate unit at ***www.ActivateGen.com***
LED steadily on	Wi-Fi module locked up	Navigate to [Sub Menus]–[Edit]–[WiFi]–ENABLE WIFI. Select NO, then YES, to restart the Wi-Fi module.

Diagnosing Wi-Fi Communication to Controller

The Wi-Fi module plugs directly into the Evolution 2 controller. 5 VDC is supplied to the Wi-Fi module from the controller via red (+) wire J6 -1 and black (-) wire J6-2.

Communication between the Wi-Fi module and controller is done via RS485 communication protocol on blue wire J6-5 and a white wire J6-6.

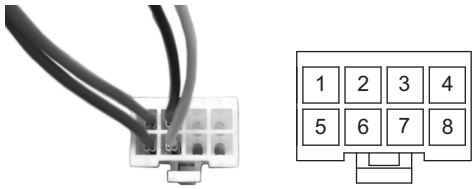


Figure 1-38. Wi-Fi Connector

Power

Power is initially supplied to the Wi-Fi module during the controller power up and activation process. When “Yes” is selected at the screen prompt “Setup Wi-Fi” the power will remain ON. A green LED light on the back side of the Wi-Fi module will begin to flash approximately 1 second ON and 1 second OFF. If the user selects “No” the controller will turn OFF the power to the Wi-Fi module.

NOTE: Remove the customer connection cover plate to inspect the Wi-Fi module.

To turn on an inactive Wi-Fi module use the MENU system to select “Wi-Fi Setup” and use the Wi-Fi install manual to activate the Wi-Fi module.

Communication

During communication 0 to 1.0 Volts should be measured on RS485 Pin 5 and Pin 6 using a DMM set to AC Volts.

Troubleshooting

1. **No flashing green LED light on WI-FI module:**
   a. Verify Wi-Fi has been setup in the controller.
   b. Verify the 5 VDC supply via red wire J6-1 and black wire J6-2.
2. **Evolution controller blank screen:**
   a. Disconnect Wi-Fi module and reboot controller. If controller responds replace the Wi-Fi module.
   b. Reload firmware via USB with Wi-Fi module disconnected.
   c. Reconnect Wi-Fi module and verify proper operation.
3. **NO communication:**
   a. Verify resistance values (blue and white wires) per chart.
   b. Measure voltage values during communication. Example—perform a firmware update to see if varying AC voltage is observed.
   c. If no communication reboot controller and Wi-Fi module and re-verify.
   d. If still not responsive replace Wi-Fi Module.

WiFi Module Voltage Tests

Wi-Fi Not Setup No Flashing Green Light On Wi-FI Module All readings within +/- 0.2		
	DMM -	DMM -
DMM +	Battery +	Battery -
Red	12 VDC	0 VDC
Black	12 VDC	0 VDC
White	11.5 VDC	1.3 to 1.5 VDC
Blue	12 VDC	1.3 to 1.5 VDC

DMM leads	DMM +	DMM -	
Power	Red	Black	0 volts
Communication	Blue	White	0 volts

Wi-Fi Active Green LED Flashing		
	DMM -	DMM -
DMM +	Battery +	Battery -
Red	8 VDC	5 VDC
Black	12 VDC	0 VDC
White	10.5 VDC	2 VDC
Blue	10.8 VDC	2 VDC

DMM leads	DMM +	DMM -	
Power	Red	Black	5 VDC Min 4.3 Max 6.2
Communication	Blue	White	varies 0 to 1 VAC during comms

Resistance Values

Back Probe Harness Connector – Wi-Fi Module Disconnected			
DMM leads	DMM +	DMM -	
Power	Red	Black	56.7 kΩ
Communication	Blue	White	120Ω +/- 5Ω

Evolution 2 Controller With Wi-fi Module Disconnected Carefully touch tips of pins to get values			
DMM leads	DMM +	DMM -	
Power	Red	Black	1.63 kΩ +/- 100Ω
Communication	Blue	White	120Ω +/- 5Ω

Additional diagnostics and testing can be found in the Mobile Link Wi-Fi Remote Monitoring Installation and User manual P/N 10000008140 Rev B or higher.

Terms and Acronyms

The following is a limited glossary of terms and acronyms that define the technology used with Mobile Link Wi-Fi enabled modules and controllers. Understanding these terms is important for proper and successful diagnosis of connectivity issues.

Term / Acronym	Description
Access Point (AP)	A networking hardware device that allows a Wi-Fi device to connect to a wired network. AP mode means the generator Wi-Fi is in broadcasting mode. System is ready to be connected to a home network.
Application (App)	A computer program that operates on a mobile device such as a tablet or smart phone. Some apps are free, while others must be purchased. Each mobile device manufacturer operates an “app store” where customers can browse, purchase, and download apps.
Connecting	Establishing a wireless communication link between two electronic devices.
Firmware	Permanent software embedded in a computerized device; typically used as the operating system. Firmware is read-only (non-editable) and can only be installed or updated by someone with specialized knowledge and system access. Firmware can also be automatically updated via Wi-Fi if connected to the home network.
Hardware	The electronics, wires, and devices that form the physical structure of a computer-based system.
Internet Service Provider (ISP)	A third-party company supplying customers with the hardware, software, and data plans needed to connect computers and / or mobile devices to the Internet.
Internet Protocol (IP) Address	A unique number assigned to any device accessing the Internet. A typical IP address is in the form of a dotted decimal number like: 01.234.567.90.
LAN (Local Area Network)	A network of computers and peripheral devices that share a common communication line or file server. LANs can be wired or wireless.
MAC (Media Access Control) address	The unique identifier or hardware address of each device on a computer network. It is also referred to as the physical address and takes the form: xx:xx:xx:xx:xx:xx
Mobile Device	A computer, laptop, smart phone, or tablet, frequently used by consumers to access the Internet.
Ping	A test signal transmitted to check if a network component, such as a Wi-Fi module, is connected to and communicating with the network.
Quick Response (QR) Code	A two-dimensional bar code consisting of small black squares arranged in a square grid on a white background. QR codes contain embedded information about a product or links to websites.They are scanned by optical readers, or cameras on mobile devices.
Radio frequency (RF)	The section of the electromagnetic spectrum between 3000 Hz and 300 GHz—typically used for communication or signaling.
RS-485	A standard defining the electrical characteristics of drivers and receivers for use in serial communications systems, including Wi-Fi.
Received Signal Strength Indication (RSSI)	A measurement of how well a device can receive a signal from an access point or router.
Service Set Identifier (SSID)	An alphanumeric character string which uniquely identifies a wireless local area network (WLAN). SSID is also referred to as the “Network Name” and can be broadcast or hidden.
Smart Phone	A handheld computer primarily intended for use as a cellular phone, but with other features such as Internet browsers, clock/timer, camera, voice recorder, apps, text messaging capability, and e-mail.
Software	Computer programs that perform specific tasks on a computer-based system. Software is loaded onto the system and (with certain limitations) can be removed, upgraded, changed, or modified to suit user needs and preferences.
Wi-Fi Channel	A given radio frequency spectrum is divided into channels; each centered on a target frequency. The minimum or maximum frequency range occupied by a given channel, such as Wi-Fi, depends upon the frequency width (usually 20Mhz or 40Mhz). Channels One (1), Six (6), or Eleven (11) are recommended for Wi-Fi networks to avoid signal interference caused by channel overlap.
Wireless Fidelity (Wi-Fi®)	A type of wireless network technology used for connecting to the Internet. Wi-Fi network frequencies are located at 2.4Ghz or 5Ghz. These frequencies prevent transmission interference with cellphones, broadcast radio, TV antennas, or two-way radios.
Wired Equivalent Privacy (WEP)	An optional authentication and/or encryption mechanism defined in the IEEE 802.11 standard designed to prevent casual network eavesdropping. WEP is considered a weak and compromised legacy form of wireless security.

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