COAX GENIUS
INTELLIGENT MAPPING

USER MANUAL
OPERATING INSTRUCTIONS

1p2p3p4p5p6p7p8E
Genius↔Scan

COAX
GENIUS
INTELLIGENT MAPPING

MODE   ACTIVITY   5V CHARGE

Shielding & False Readings

Shielding: The Coax Genius Scan mode uses a bi-directional technology that requires the Receiver and Remotes communicate with one another prior to displaying the Remote as found. This means it is impossible for the Coax Genius Receiver to display false readings.
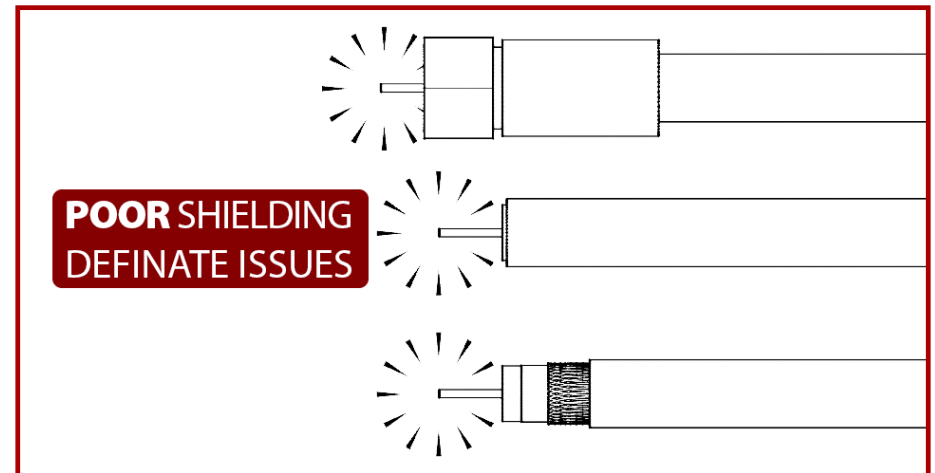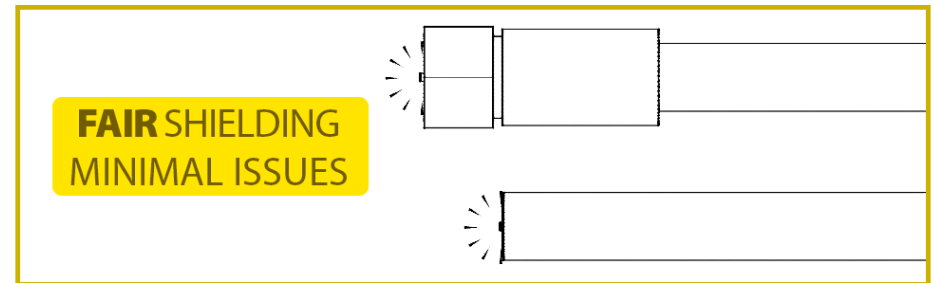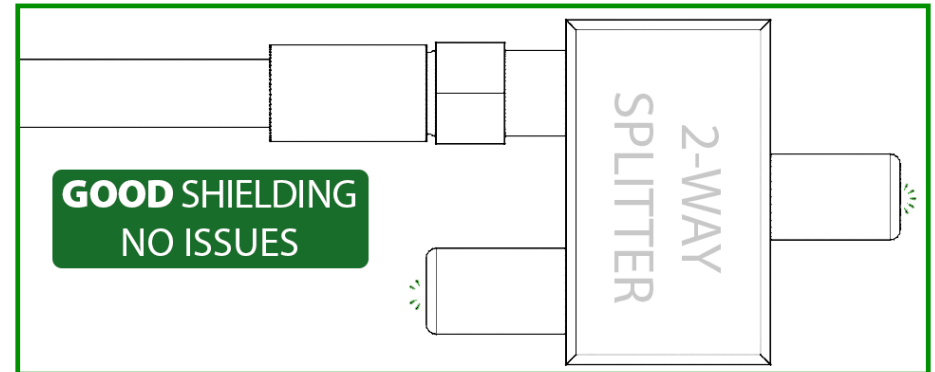
The Coax Genius is designed to be used on systems with properly shielded coaxial cable and connections. Both the Receiver and Remotes use extremely powerful radio frequencies to communicate through high attenuation systems and over long distances of coaxial cable. Any system that has shielding defects can contribute to adverse effects when mapping with the Coax Genius. Faulty shielding acts like an antenna and allows the Coax Genius Remotes and Receivers to communicate with each other wirelessly. These effects include, but are not limited to, finding Remotes on different (non-connected) cables and showing powered Remotes not connected at all. In short, if you are receiving false positives on the Coax Genius, it is most likely due to a defect in the tested system's shielding.
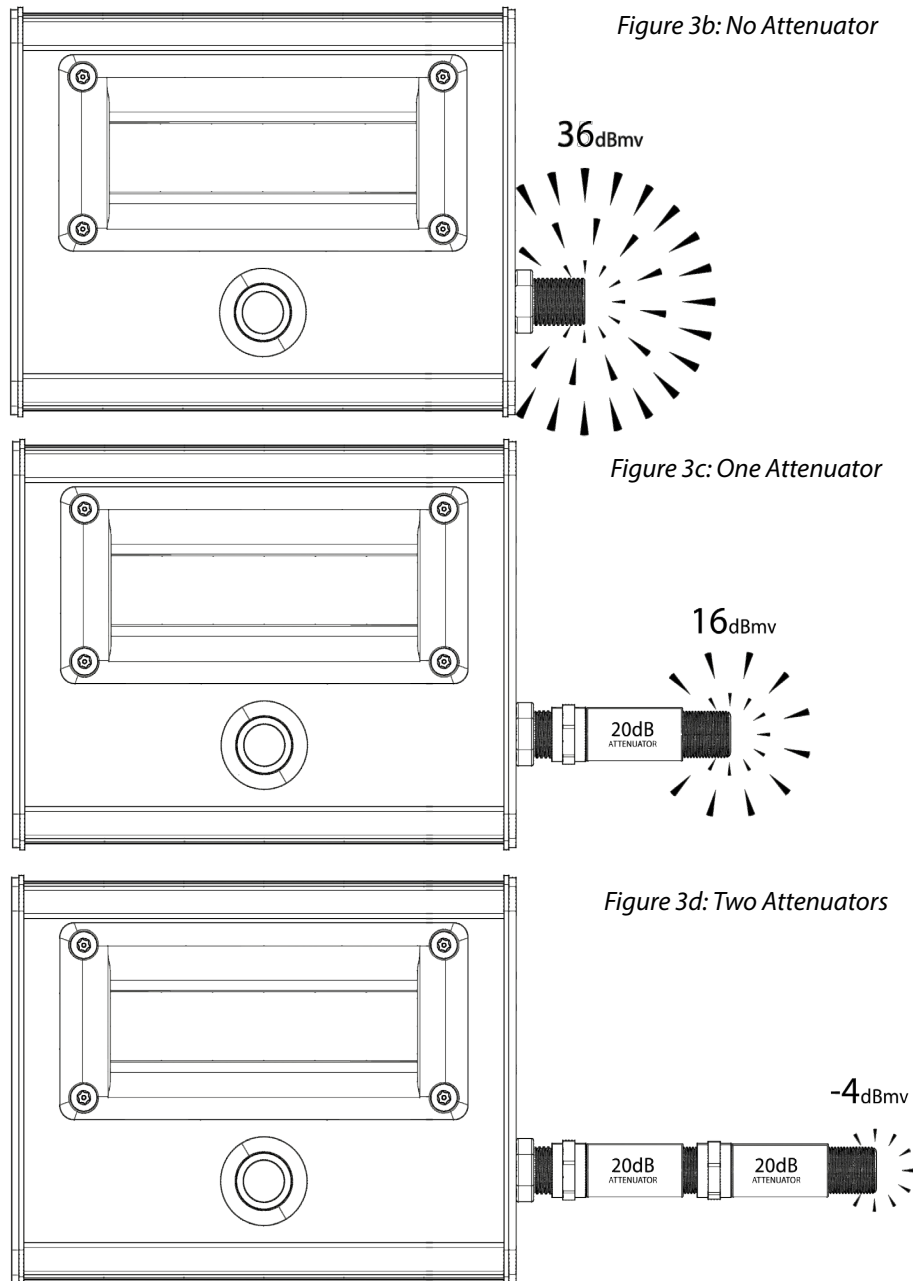
Examples: Poorly shielded systems include (but are not limited to):
- Unterminated coaxial cables with long center conductors
- Terminated cables with long center conductors
- Systems with set top antennas connected (Rabbit Ears)
- Systems with off-air antennas connected (ie Roof top or Attic)
- Systems with damaged coaxial cable
- Systems with unshielded AC / DC power supplies
- Defective RF components installed

Finding Faulty Shielding: If the Coax Genius Receiver is continually detecting Remotes that are not connected to the same system, this is an indicator that the RF distribution system's shielding has issues and needs repair. The Coax Genius can be used to narrow down which part of the system has faulty shielding by disconnecting drops and components until the Coax Genius Receiver no longer detects the unconnected Remotes. From there, the Receiver can be used to work its way towards the Remotes and find the exact location of the faulty shielding.

IMPORTANT! Faulty or poor shielding on RF distribution systems can act as an antenna and allow the Coax Genius Remotes and Receiver to communicate wirelessly with each other. If you are getting false readings, there is most likely an issue with your system's shielding.

GOOD SHIELDING
NO ISSUES

2-WAY SPLITTER

FAIR SHIELDING
MINIMAL ISSUES

POOR SHIELDING
DEFINATE ISSUES

Figure 3b: No Attenuator

36_{dBmv}

Figure 3c: One Attenuator

16_{dBmv}

20dB
ATTENUATOR

Figure 3d: Two Attenuators

-4_{dBmv}

20dB
ATTENUATOR

20dB
ATTENUATOR

Signal Power: The Coax Genius is designed to communicate through long lengths of coaxial cable and numerous RF distribution components. In order to achieve this, the Coax Genius Receiver and Remote use an extremely high output signal. As described earlier in the manual, this higher signal power can create false readings on poorly shielded systems and unterminated systems such as new construction pre-wires. In situations like these, we can use attenuators to reduce the Coax Genius output power and minimize false readings.

Attenuation: The Coax Genius kit comes equipped with two 20dB attenuators. An attenuator is a component that is designed specifically for reducing signal power by a predefined amount; in this case 20dB. The default Coax Genius signal output is 36dBmv (Fig. 3b). By adding one 20dB attenuator, the Coax Genius signal output is reduced to 16dBmv (Fig. 3c). Adding another 20dB attenuator reduces the Coax Genius signal output to -4dBmv (Fig. 3d).

What Causes False Readings? Think about how a TV broadcast tower works. The TV station sends a powerful signal to their tower which transmits their signal over the air to be received by a TV antenna and routed via coaxial cable to your TV.

If your system has an extra long center conductor on an F-Connector or on an unterminated piece of coax, the power of the Coax Genius Receiver will turn that small conductor into a small broadcast tower. Like a TV broadcast tower, the center conductor will transmit and communicate over the air with the Coax Genius Remotes creating the appearance of false readings (Fig. 3a).
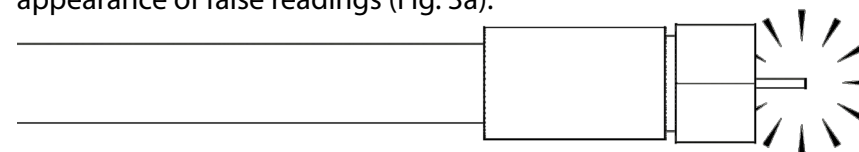
Figure 3a: Center Conductor Broadcasting Like Antenna

Adding one or two of the included attenuators to the Coax Genius Receiver's F-Port minimizes false readings by drastically reducing the signal level. By reducing the signal level, the distance any center conductor can broadcast is minimized.

ATTENUATORS

Batteries & Charging

The Coax Genius Receiver and Remotes come equipped with an internal rechargeable lithium polymer Battery (Li-Poly). These batteries can be charged by connecting the mini USB port on the Receiver or Remote directly to the USB port on the Coax Genius 4-Port Smart Charger.

When to Charge the Receiver: During boot up the Receiver will indicate the current battery level in the lower right corner (Fig. 4a). The level will be represented as a percentage. When the battery gets too low to operate, the Receiver will indicate the battery needs to be charged and then shut down.

Charging the Receiver: When the USB charger is connected and the Receiver's battery is charging, the Receiver's display will flash "Charging" and will increment the elapsed timer. The elapsed timer indicates the total amount of time the Receiver has been charging (Fig. 4b). Charging time on the Receiver can be up to 6 hours depending on the battery's level when charging.

Once fully charged, the Receiver's display will show "Charged!" Additionally the display's elapsed timer will stop and indicate the total amount of time it took to charge the battery (Fig. 4c).

Please note that during charging, the backlight on the Receiver will turn off after 15 seconds. Pressing the Receiver's button during charging will turn the display's backlight back on.

When to Charge the Remote: When the Remote is powered on, the activity LED will indicate the internal battery's charge level. Green indicates a good battery level. Yellow indicates the battery is getting low and will need charging soon. Red indicates the battery needs immediate charging. If the activity LED flashes red four times upon powering, the battery level is too low to operate and needs to be recharged immediately.

Charging the Remote: When the USB charger is connected and the battery in the Remote is charging, the Remote's Activity LED will illuminate red (Fig. 4d). Charging time on the Remotes can be up to 6 Hours depending on how low the battery level is.

When the battery in the Remote is fully charged, the Remote's Activity LED will illuminate green (Fig. 4e).

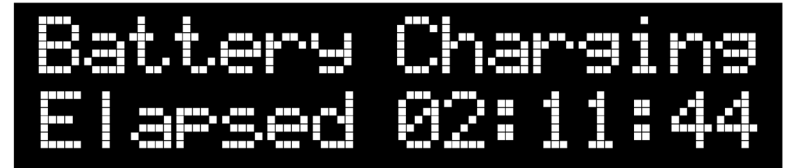*Figure 4a: 100% Indicates Battery Level Upon Powering*

Figure 4b: Receiver Display While Charging

Figure 4c: Receiver Display When Charged

Figure 4d: Activity LED Red When Charging

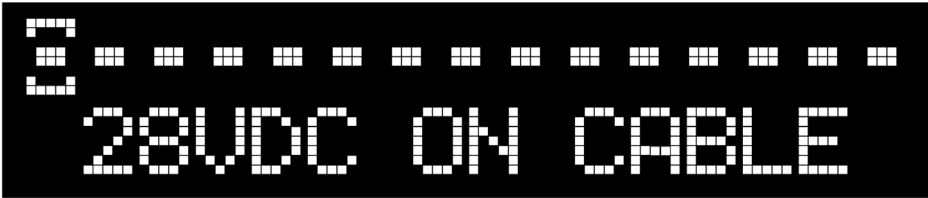*Figure 4e: Activity LED Green When Charged*
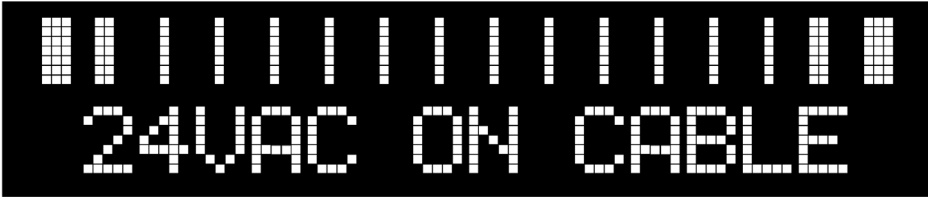
Figure 5a: 28VDC Detected During Scan Mode

Figure 5b: 24VAC Detected During Tone Mode

Figure 5c: Dangerous AC Detected

Figure 5d: Dangerous AC Detected

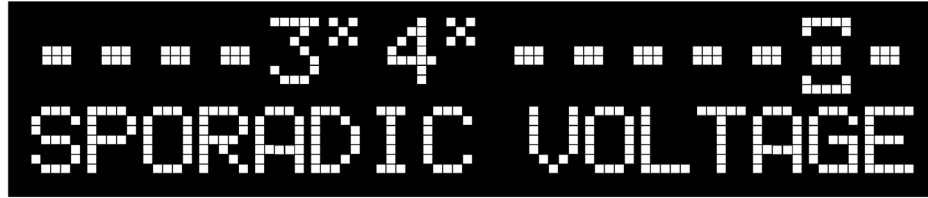*Figure 5e: Sporadic Voltage*

In order for the Receiver to be able to communicate with the Remotes, all connected Remotes will need to be powered ON.

To Power ON Remotes: Press and hold the blue Mode button for 2 seconds. The Activity light will illuminate green, yellow, or red indicating the battery level. Following battery level, the Activity LED will momentarily flash blue if sleep is enabled or purple if sleep is disabled.

To Power OFF Remotes: Press and hold the blue Mode button for 2 seconds. The Activity LED will illuminate red for several seconds, and then power off.

To Power On Receiver: A quick single button press on the Receiver will power the unit on. By default, the Receiver will immediately boot in Genius Scan. A 2 second button press from the off position will start the Receiver in Tone mode.

To Power Off Receiver: While in any of the Receivers three modes, a quick double press of the button will power the unit off.

Scan Mode Connection: Power and connect up to 8 Remotes in locations needing to be mapped. Next, connect the Receiver to the suspected demarcation point and power on the Receiver; default mode is Scan.

Tone Mode Connection: Connect the Receiver to the head-end or key location and hold the power button for 2 seconds (from the off position). Additionally, the Tone mode can be reached with a single button press while in Scan Mode. Next, power one or more remotes and use the remotes to locate cable and devices connected to the Receiver's location.

Sporadic Voltage: During the Scan or Tone mode, if the Coax Genius detects AC or DC voltage and then it is no longer detected, a "SPORADIC VOLTAGE" message (Fig. 5e) will be displayed.

High Voltage: The Coax Genius is not protected against electrical shock. If the "RISK OF SHOCK" (Fig. 5c / 5d) message is displayed, let go of the Receiver immediately and contact a licensed Electrician.

POWERING

Genius Scan

The default mode on the Coax Genius is Scan. From the off position a single button press will start the Coax Genius in the Scan mode.

Upon powering the Receiver the Genius Scan mode immediately starts searching for connected Remotes. If a Remote is found, The Receiver and Remote will work together to determine if the path between them is voltage passive. The Receiver's display will indicate both the number of the Remote, followed by either a "b" a "p" or an "x" (Fig. 6a). If the display shows a "b" the path between the Remote and Receiver is VDC blocked. If the Remote shows a "p" the path from the Remote to the Receiver is VDC passive.

Voltage Found: If the Coax Genius detects either AC or DC voltage during Genius Scan mode (Fig. 5a), either the detected voltage or a warning will be displayed. Additionally, the Receiver and Remote will not be able to test if the path between them passes voltage. If AC or DC is detected on the system, the Receiver will display an "x" next to the found remotes (Fig. 6b).

Search End Results: After the Genius Scan completes, the Coax Genius will display the results of the search. The Coax Genius will attempt to use the search results to determine if there is a splitter or a tap present on the system (Fig. 6c). If the Receiver is unable to communicate with any Remotes, the Receiver will not display any Remote ID numbers (Fig. 6f).

Quick Re-Scan: The Coax Genius offers a shortcut for quickly restarting the Genius Scan on the current or new connection. Simply press the button for 2 seconds and the Receiver will restart the Genius Scan.

Genius Seek: The Genius Scan has a hidden mode that allows a continuous scan for a predetermined amount of time (up to 10min). During this time the Receiver will continuously search for any Remotes that have not been located. This feature is useful on RF systems with live signal or noise on them. To access the Genius Seek mode, press the button for 4 seconds at any point during the Genius Scan. The Genius Seek time can be increased by holding the button for 2 seconds during the Genius Seek mode (Fig. 6d).

Recharge Remote's Battery: During the Genius Scan the Receiver will indicate if a Remote's battery needs to be recharged with an alternating "!" character (Fig. 6e).

Figure 6a: Receiver Indicates Remote ID and Path Voltage Test Result

Figure 6b: Receiver Indicates Remote ID and Voltage on the Line

Figure 6c: Genius Scan Search End Results

Figure 6d: Genius Seek Mode Continuously Searches

Figure 6e: Alternating "!" Indicates the Remote Needs to be Recharged

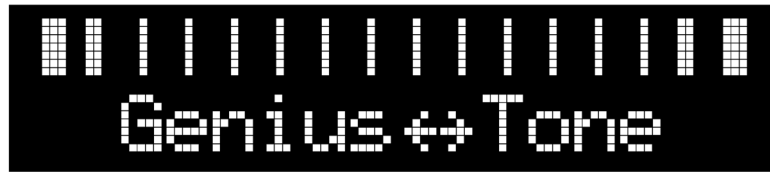*Figure 6f: Genius Scan Search Results No Remotes Found*
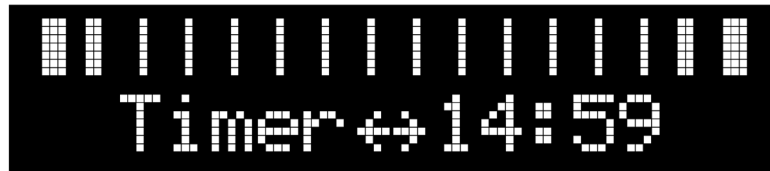
Figure 7a: Coax Genius Tone Mode

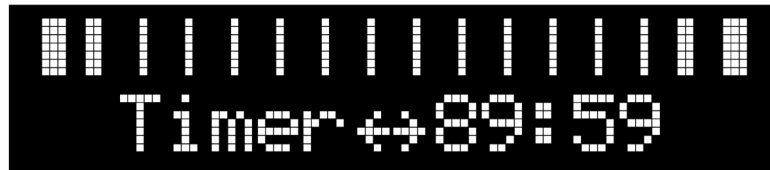*Figure 7b: Sleep Timer Remaining Time*

Figure 7c: Sleep Timer Remaining Time

Figure 7d: Tone Mode DC on F-Port

Figure 7e: Tone Mode AC on F-Port

Figure 7f: Tone Mode Dangerous Voltage on F-Port

The Genius Tone (Fig. 7a) is the second mode when cycling through modes on the Coax Genius. It can also be accessed from the off position by holding the power button for 2 seconds.

Unlike the Scan mode which uses the Receiver to map connected Remotes, the Tone mode uses the Remotes to detect a connected Receiver. The Tone mode works similar to a conventional Toner Tracker set, with the exception that it is designed specifically for coaxial cable and RF distribution systems.

Operation: The Receiver is placed in a head-end or other key location. A remote, or multiple Remotes, are then used to trace which cables and devices are connected to that location. Unlike conventional Toner Tracker sets, the Remotes can detect the Receiver through splitters, taps, amplifiers, line extenders, and virtually any other passive or active RF component. While in Tone mode, all Remotes will detect the Receiver regardless of their ID number.

Detection: In order to detect the signal with the Remote, the center conductor of the Remote must make contact with the center conductor of the cable or device the Receiver is connected to. When a Remote detects the Receiver, it will flash the LED blue to white and play two audible tones. For example, when toning out unterminated coaxial cables, the center conductor must make contact with the Remotes center pin.

Troubleshooting Tip: If the Remote is finding the Receiver when it is not connected to the same system, the included attenuators can be used at the Receiver to reduce its output power. For more information, please see page 3 of this manual on "Attenuators."

Sleep Timer: While in Tone mode the Coax Genius Receiver has a default sleep timer set for 15 minutes (Fig. 7b). The sleep timer can be incremented 15 minutes at a time, up to 90 minutes (Fig. 7c). When the sleep timer reaches zero, the Receiver will power itself down.
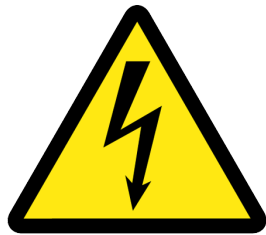
Voltage Found: During the Tone mode, if AC or DC voltage is found on the F-port, the Receiver will display the voltage or a warning (Fig 7d, 7e, & 7f). Please see the Voltage Detection section on page 5 of this manual for more information.

Genius Volt

The Genius Volt mode on the Receiver is, as the name suggests, a volt meter. The Volt mode scans for both AC and DC voltages on RF distribution systems connected to the Receiver's F-Port.

DC Voltage: The Coax Genius detects DC voltages between .5-110VDC. An audible beep relative to the voltage level sounds whenever DC is detected. Voltages over 100VDC will trigger a warning message. If you are connected to a voltage greater than 110VDC, the button on the Coax Genius Receiver will be disabled until the voltage is removed.

AC Voltage: The Coax Genius detects AC voltages between .5-240VAC. If the voltage is less than 80VAC, the actual voltage will be displayed (Fig. 8b). Voltages over 50VAC trigger a "RISK OF SHOCK" warning (Fig. 8c). Licensed electricians can bypass the message with a long button hold.

SHOCK WARNING! If the Receiver displays a High Voltage message (Fig. 8d) indicating a RISK OF SHOCK, let go of the Coax Genius Receiver immediately! The Coax Genius Receiver and Remotes are not insulated for High Voltage and will not protect against electrical shock. Locate the electrical panel and turn off breakers (or main) until the Coax Genius Receiver's audible alarm and High Voltage message stop. This indicates you have found the breaker associated with the AC on the coaxial cable system. It is recommended a licensed electrician be contacted immediately.

If the Receiver detects AC voltage, it will ping all powered and connected Remotes to display either a Yellow/White (>50VAC) or Red /White (>80VAC) flashing sequence. If a Remote is flashing a Yellow/White or Red/White sequence do NOT touch the Receivers or Remotes. There is a high level of AC or DC detected on the system.
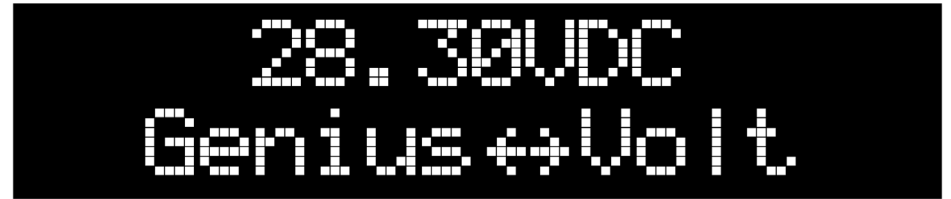
Figure 8a: 28.30 VDC Detected in Volt Mode

Figure 8b: 24.29 VAC Detected in Volt Mode

Figure 8c: Volt Mode Dangerous Voltage on F-Port

Figure 8d: Dangerous AC Detected

MODE   ACTIVITY   5V CHARGE

HEARTBEAT

🔵 **Sleep Enabled & Battery Normal**

🔴 **Sleep Enabled & Battery Low**

🟣 **Sleep Disabled & Battery Normal**

🟡 **Sleep Disabled & Battery Low**

PINGED BY RECEIVER

Genius Tone Ping

Receiver Detected >50VAC

Receiver Detected >80VAC

ID Specific Genius Scan Ping

MODE BUTTON

🔵 **Sleep Enabled**

🟣 **Sleep Disabled**

🟢 **Sound Enabled**

🔴 **Sound Disabled**

BOOT UP

🟢 **Battery Good**

🟡 **Battery Getting Low**

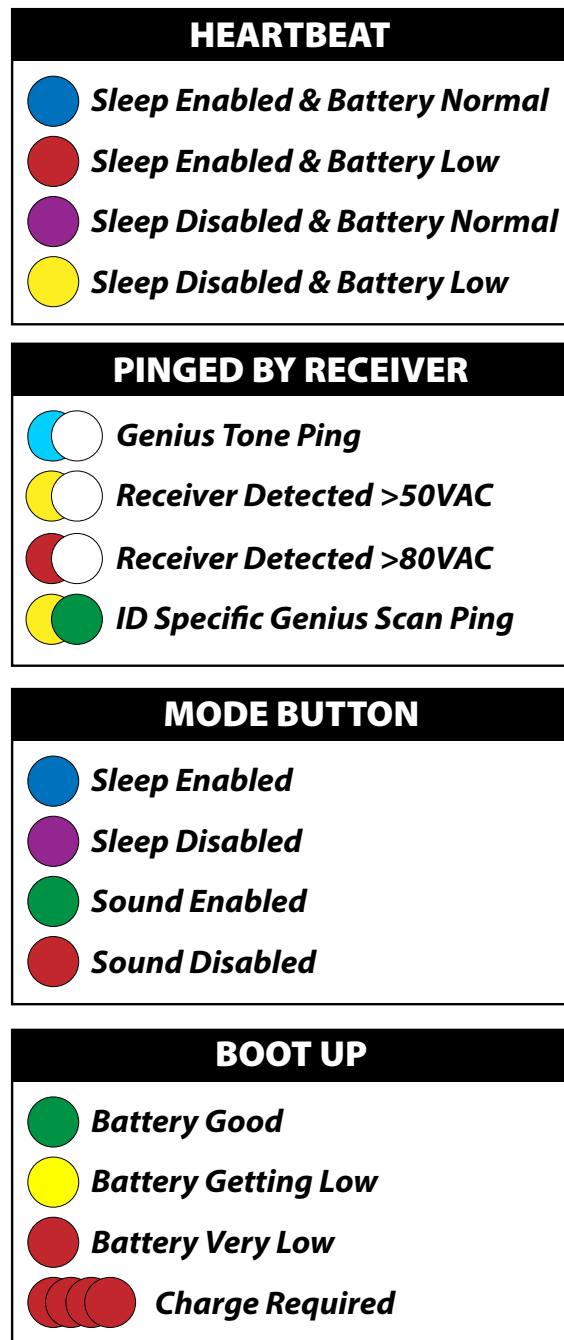🔴 **Battery Very Low**

Charge Required

Figure 9a: Activity LED Chart

While powered on, the Remote's mode button can be used to enable or disable the sleep timer and sound. These changes in the Remote's settings will be stored even after the Remotes are turned off.

Activity Heartbeat: While powered on, the Remote's activity LED will flash a specific color every 3 seconds. The color of this activity LED flash indicates the Remote's current status (Fig. 9a).

Enabling / Disabling Sound: All Coax Genius Remotes have a small speaker inside of them. When sound is enabled, the speaker will make an audible chirp when the Remote's ID is specifically pinged by the Receiver or when it is connected to a Receiver in Tone mode. If sound is enabled, a single button press disables it. If sound is disabled, a single button press enables it. A red activity LED flash indicates sound is disabled, a green activity led flash with 2 chirps indicates sound is enabled (Fig. 9a). The sound status does not change the Heartbeat color.

Enabling/Disabling Sleep: By default, the Remote's sleep timer is set for 30 minutes. When the sleep timer is enabled, Remotes will power themselves off after 30 minutes of inactivity. If sleep is enabled, a double button press disables it. If sleep is disabled, a double button press enables it. A purple activity LED flash indicates sleep is disabled, a blue activity LED flash indicates sleep is enabled (Fig. 9a). If sound is enabled the Remote will chirp 2 times when the sleep mode is changed. When the sleep timer is disabled, Remotes will run until the battery gets too low to power the that Remote.

Sleep Enabled Heartbeat: When sleep is enabled and the battery level is normal, the Remote's Heartbeat will flash blue. When sleep is enabled and the battery needs to be recharged, the Remote's Heartbeat will flash red (Fig. 9a).

Sleep Disabled Heartbeat: When sleep is disabled and the battery level is normal, the Remote's Heartbeat will flash purple. When sleep is disabled and the battery needs to be recharged, the Remote's Heartbeat will flash yellow (Fig. 9a).

Sleep Timer Inactivity: Remotes only power themselves off after there is no activity for over 30 minutes. If Remotes receive an ID specific ping, are connected to a Receiver in Tone mode, or have their mode buttons pressed, the sleep timer will reset to 30 minutes.

Receiver Pings: When the Receiver is communicating with the Remotes, the Remote's activity LED will indicate the ping type by quickly flashing different color sequences. For example, if the Receiver detects a dangerous level of AC, all connected Remotes will quickly alternate their activity LED yellow to white (Fig. 9a). Please see Figure 9a for more information on how the Activity LED responds to the Receiver.

REMOTES

Receiver Settings

The Coax Genius has a settings menu that allows for disabling the boot up message, changing the boot up mode, disabling sound, viewing battery status, and testing Remotes.

Accessing Settings Menu: The Settings Menu is accessed from the Volt mode (Fig. 10a). While in Volt mode, press the button for 4 seconds.

Navigating Settings Menu: While in the Settings Menu (Fig. 10b), a quick button press moves to the next setting and a 2 second button press changes or activates the setting.

Bootup Message: Enables or disables the boot up message with battery level (Fig. 10b).

Boot Mode: Indicates which mode to boot to when powered on (Scan, Tone, or Volt).

Sound Enabled: Enables or disables the Receiver's sound.

Battery Status: Displays the current voltage on the battery and its percentage level (Fig. 10c).

Remote Checker: Tests to see if a connected and powered Remote is 100% operational. If a Remote seems problematic, this will test the Remote and display a PASS or FAIL diagnosis (Fig. 10d & 10e). It is recommended this test be ran with the two included 20dB attenuators between the Remote and the Receiver. Attenuators will allow for testing the Remote's signal output power.

Remote Checker Test Results: If the test result shows "140/140 100%FAIL", this indicates the communication portion is working properly, however the voltage pings are not. If you receive any failed results, please contact Coax Genius Tech Support for help.

Hold to Exit: The final option in the Settings menu is Hold to Exit. A 2 second button press will exit the settings menu back to the Scan mode.

Figure 10a: Genius Volt Mode

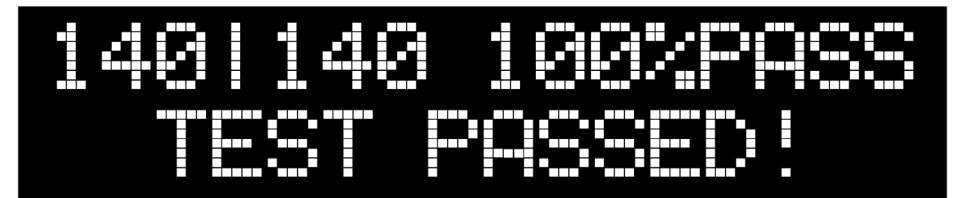*Figure 10b: Settings Menu Boot Up Message*

Figure 10c: Battery Status Displayed
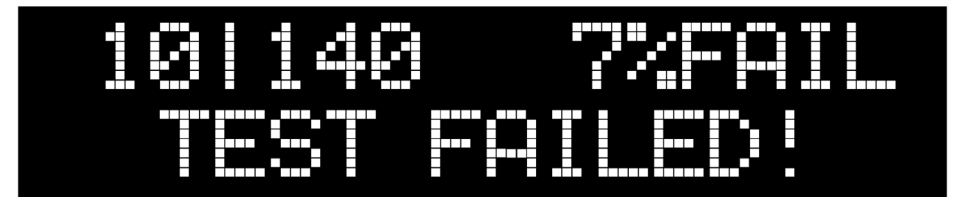
Figure 10d: Remote Checker Passed Test

Figure 10e: Remote Checker Failed Test

Receiver Specifications:

• Maximum Detectable Loss: -50dBmv

• Transmission Frequency: 434MHz

• Output Power: 36dBmv ±5%

• Max VDC on F-Port: 110VDC

• Max VAC on F-Port: 240VAC

• Max VDC Read on F-Port: 110VDC

• Max VAC Read on F-Port: 80VAC

• Housing Material: Anodized Aluminum

• Battery: 3.7V 1200mAh Li-Polymer

• Battery Life: 14 Hours

• Rechargeable via 5VDC Mini USB

• F-Port: Male (Replaceable F-81)

• Dimensions: 4.13in x 3.19in x 1.40in

• Weight: 9.4oz

• Warranty: One Year Limited

Remote Specifications:

• Maximum Detectable Loss: -50dBmv

• Transmission Frequency: 315MHz

• Output Power: 36dBmv ±5%

• Max VDC on F-Port: 110VDC

• Max VAC on F-Port: 240VAC

• Ping Voltage: 2.5VDC ±10%

• Housing Material: Anodized Aluminum

• Battery: 3.7V 1200mAh Li-Polymer

• Battery Life: 24 Hours

• Available ID Numbers: 1-8

• Rechargeable via 5VDC Mini USB

• F-Port: Male (Replaceable F-81)

• Dimensions: 2.76in x 2.5in x .95in

• Weight: 3.5oz

• Warranty: One Year Limited

ONE YEAR LIMITED WARRANTY: Coax Genius warrants that the product you have purchased from Coax Genius or a Coax Genius authorized reseller is free from defects in materials and workmanship under normal use during the one year warranty period. The one year warranty period begins on the day of purchase from Coax Genius or a Coax Genius authorized reseller.

The warranty extends only to the original purchaser. It is not transferable to anyone who subsequently purchases the product from the original purchaser. It excludes all expendable parts. During the one year warranty period, Coax Genius will repair or replace defective parts with new parts or, at the option of Coax Genius, serviceable used parts that are equivalent or superior to new parts in performance. Purchaser is responsible for associated shipping costs.

This One Year Limited Warranty extends only to products purchased from Coax Genius or a Coax Genius authorized reseller. This Limited Warranty does not extend to any product that has been damaged or rendered defective (a) as a result of accident, misuse or abuse; (b) as a result of an act of God; (c) by operation outside the usage parameters stated herein; (d) by the use of parts not manufactured or sold by Coax Genius; (e) by modification of the product; or (f) as a result of disassembling or service by anyone other than Coax Genius or a Coax Genius authorized reseller or authorized agent.

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WARRANTY

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