Gridless Wireless Network:
User Manual

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Introduction

The Gridless Wireless Network (G.W.N) provides open network access to civilians in areas that have been recently affected by a natural disaster or another calamity. Network access in these locations are disabled due to power grid failure or destruction of the network infrastructure itself. Our solution provides a means of deploying a digital communication network that will connect victims with rescuers, saving more lives as well as improving coordination during recovering operations.

The system transmits a wireless fidelity (Wi-Fi) network in the surrounding area where the G.W.Ns are deployed. This is accomplished by using a data connection from a functional network and transmitting it through multiple G.W.Ns to the designated location. The G.W.N located at the data center or internet connection source transmits the signal via a long range antenna to another G.W.N of the device takes a data connection and relays the signal to another G.W.N or retransmit the signal in an omnidirectional coverage area pattern that individuals may connect wirelessly to in order to access the internet. The various configurations allow for a robust decentralized network to be generated by using just G.W.Ns and a network connection.

This manual will guide you on how to use and configure these devices to create the long range wireless network offered by these devices.

*G.W.N refers to device that is the Gridless Wireless Network

Setup

To setup the G.W.N do the following steps:

1. Press the PWR button (it is marked with the ⏻ symbol). The display should turn on and the PWR light next to the PWR button should turn green to signify that the device is powered on.
2. Press the COM button to setup the device to transmit the network. The G.W.N will automatically operate in the the mode selected on the MODE switch and configure itself to transmit the network.

The setup is successful when the display presents the mode it is in and other important data such as battery status, number of devices connected, and time since deployment (which should increase over time). Additionally, the COM light should both be green while the PWR

LED should emit a color that corresponds to the amount of charge that the battery has (Green for 66+, yellow for 66-33, orange for 32-15, red for 14-5, blinking red for less than 5).

Modes of Operation

The G.W.N has different modes of operations which determine which of the three antennas the device will use depending on certain circumstances or what option is selected on the MODE switch. The different modes are listed in the table below.

Mode	Conditions	Antennas Used	Description
Link	G.W.N is connected to a network via the ethernet port	Long Range	The G.W.N becomes a wireless router for the wired network it is connected to and transmits data to the next G.W.N. This mode overrides the mode selected on the switch
Base	MODE switch set to Base mode	Long Range (x2)	The G.W.N uses its two mono-directional antennas to transmit the Wi-Fi signal long distances
Bridge	MODE switch set to Bridge mode	Long Range Omnidirectional	The G.W.N transmits the Wi-Fi network in a omnidirectional coverage area with a radius of up to 1km for devices to connect.

Troubleshooting

The setup LED will glow orange if it is not connected to a network or red if an internal error or problem occurs. To fix this try one of the following options:

1. Press the setup button again to restart the device which will attempt to reconnect to a network.
2. Turn off the device by pressing the PWR button, wait for at least one minute, then press the PWR button again to turn it back on then press the COM again to deploy to the network.

Disclaimer

The 72 hours duration assumes that the battery has a full or nearly full charge so the actual battery life will vary depending on battery charge at deployment.

While the device can generate network signal with a 1 Km or 5 Km range (depending on antenna used), the actual range will possibly be reduced due to weather, terrain, and other conditions of the region it is deployed in.