

G-Force 850 b/g Broadband Wireless Base Station

User's Manual

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Introduction

The G-Force 850 b/g Broadband Wireless Base Station from 5G Wireless Solutions, Inc. creates cellular-style wireless networks for coverage across a large area. The base station provides many attractive features, including:

- IEEE 802.11b/g support
- Indoor and outdoor coverage
- Maximum NLOS (Non-Line-of-Sight) coverage from a single base station
- Minimum hardware and cable runs for the lowest TCO (Total Cost of Ownership)
- Easy installation—deploys right alongside existing cellular equipment
- Support for WEP, WPA-Personal, and WPA-Enterprise encryption standards
- Latest security technology enabling different security levels for different users
- Simple web-based configuration interface allowing remote management and maintenance

This manual describes the necessary hardware connections (Hardware Connections on page 5) and the web-based configuration interface (Configuration Interface on page 7).

Hardware Connections

The base station needs to be connected to power, ground, one or more antennae, and a network. These connections are shown in Figure 1 on page 6 and described below.

To hook up the base station:

- 1. Connect an antenna to each antenna jack to be used on the base station.
- 2. Remove the cover from the protected Ethernet jack, then align and insert the protected end of the included Ethernet cable into the jack. Screw on the cap to secure it.
- 3. Insert the other end of the Ethernet cable into the DATA & PWR jack (J1) on the AC Power Adapter.
- 4. Connect the DATA jack (J2) on the AC Power Adapter to a network jack, such as on a DSL or cable modem, using a straight-through Ethernet cable (not included).
- 5. Ground the base station using the ground connector.
- 6. Plug the AC Power Adapter into a standard 110/120V power outlet.





Figure 1. Hardware Connection Diagram

Configuration Interface

The configuration interface for the G-Force 850 b/g Broadband Wireless Base Station is web-based, with an IP address that defaults to 10.0.0.1. To access the interface, point your web browser to the base station's configuration IP address. The default username and password are both "admin".

The first page that appears on access is the System Status page, as shown in Figure 2. The rest of the configuration pages are listed on the left-hand side of the page, and described below.

Note: After changing the device configuration, you must reboot the device before the changes will take effect. See Reboot on page 24 for the procedure.



Figure 2. Opening Configuration Screen



System

The System section allows you to save and restore device configurations, update the device firmware, and configure access to the configuration interface.

Configuration: Backing Up and Restoring Base Station Configurations

The Configuration page allows you to save and restore the device configuration.

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System Configuration Firmware	54	stem: Configuration Backup/Restore	
Web Interface Network	Factory Defaults	Click here to reset the configuration to factory defaults.	
IP Setup	Backup Configuration	Click here to download the current configuration.	
Nr Setup Wireless Networks SNMP Setup OoS Setup	Restore Configuration	Browse	
Status System Wireless Reboot SG Wir	eless Solutions 850AP © 2009	5 5G Wireless Solutions. All rights reserved.	
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Figure 3. System > Configuration

The options are as follows:

Factory Defaults	Restores the device configuration to factory defaults
Backup Configuration	Saves the current configuration to disk for later use. Click to save, then navigate to the desired location.
Restore Configuration	Restores the device configuration to a backed up configuration. Enter the filename or browse to select the file, then click Send File to restore.



Firmware

The Firmware page allows you to update the firmware from a file.

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55G	5G Wireless Solutions 850 AP		
System Configuration Firmware	System: Firmware Ungrade		
Web Interface Network IP Setup RF Setup	File Name Select the firmware image to upload to this base station. The upgrade process will take about 90 seconds.		
Wireless Networks SNMP Setup QoS Setup	Upload		
Status System Wireless			
Reboot			
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Figure 4. System > Firmware

Enter the name of the firmware update file or browse to select it, then click **Upload** to update the device firmware.



Web Interface: Changing Configuration Interface Access Parameters

The Web Interface page allows you to change the access parameters for the configuration interface (though not the IP address).

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System			
Configuration Eirmware		System: Web Interface Setup	
Web Interface Network	User ID	admin To change the user ID for the system, enter it here.	
IP Setup RF Setup Wireless Networks SNMP Setup	Password	To change the password for the system, enter it here.	
Status System Wireless	HTTP Port	Enter a port number between 1 - 65534 for the HTTP server to run on. The default is 80.	
Reboot		Save	
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Figure 5. System > Web Interface

The options are as follows:

User ID	Changes the user ID required to access the interface
Password	Changes the password required to access the interface. Enter the password twice, once in each box.
HTTP Port	Sets the HTTP port used by the configuration interface

When you have entered the desired options, click **Save** to set them.



Network

The Network section configures network options and connectivity, including IP address, RF settings, SNMP, and wireless networks connected to the base station.

IP Setup: Changing the Configuration Interface IP Address

The IP Setup page allows you to configure the IP address used by the base station for the web-based configuration interface.

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Address http://10.0.0.1/index.cgi?view=	ip		
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System Configuration		Network: IP Configuration	
Firmware Web Interface Network	Configuration Method	O DHCP O Static IP Select either DHCP or static IP configuration.	
IP Setup RF Setup Wireless Networks SNMP Setun	IP Address	10.0.0.1 Assign an IP address to this device in order to access the web-based configuration interface.	
QoS Setup Status Svstem	Subnet Mask	255.255.255.0 (e.g. 255.255.255.0)	
Wireless Reboot	Gateway	Set the IP address of the default gatway.	
	DHCP Host Name	Enter the DHCP host name to send with the DHCP request.	
		Save	
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Figure 6. Network > IP Setup

The options are as follows:

Configuration Method	Sets the method used to determine the device IP address: DHCP or Static IP
IP Address	When Static IP is selected, sets the device IP address
Subnet Mask	When Static IP is selected, sets the subnet mask used by the device
Gateway	When Static IP is selected, sets the gateway used by the device
DHCP	When DHCP is selected, sets the host name to be sent with the DHCP request

When you have entered the desired options, click **Save** to set them.



RF Setup: Configuring the Wireless Transceiver

The RF Setup page allows you to change the wireless transceiver settings.



Figure 7. Network > RF Setup

The options are as follows:

Wireless Mode	Sets the IEEE wireless mode used by the base station: 802.11b/g, 802.11b only, or 802.11g only
Channel	Sets the frequency channel used by the transceiver. The options range from 2.412GHz to 2.462GHz in increments of 0.005GHz.
Beacon Interval	Sets the interval on which the device transmits a beacon signal in milliseconds. The recommended interval is 100ms, but may be set anywhere between 25ms and 500ms.
Rate Selection	Sets the rate selection algorithm used by the base station: Once or Single. Select Once for clean signal environments, and Single for noisy signal environments.



RTS/CTS

Turns RTS/CTS flow control on and sets its buffer threshold

When you have entered the desired options, click **Save** to set them.

Wireless Networks

The Wireless Networks page allows you to view the status of the virtual networks connected to the base station and change their settings. There may be up to four virtual networks.



Figure 8. Network > Wireless Networks

Each network listing shows the network's name, status, SSID, vLAN tag, and encryption mode. To change the settings for a wireless network, click **Modify** to the right of the network's listing and the network's setup page will appear.



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System Configuration	Ne	stwork: Wireless Network Properties	
Firmware Web Interface Network IP Setup	Network Description	Primary Network Image: Construction of the second secon	
RF Setup Wireless Networks SNMP Setup QoS Setup Status	SSID	5G Wireless 850 Hide SSID Enter the SSID for this wireless network. Hiding the SSID will remove it from beacon packets.	
System Wireless Reboot	vLAN Tag	0 Enter a vLAN tag between 1 and 4095. A value of 0 will disable vLAN tagging for this network.	
	Encryption Type	Open (No Encryption) Select the type of encryption to use for this network.	
		Save	
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Figure 9. Network > Wireless Networks > Setup (Encryption: Open)

The options available on the setup page vary depending on the type of encryption used. The basic options are as follows:

Network Description	Sets the name used to identify the network, and enables/disables the network
SSID	Sets the SSID used for the network, and hides/shows the SSID. When the SSID is hidden, it will be removed from the beacon packets and will not be visible as a network.
vLAN Tag	Sets the vLAN tag for the network, which may be between 1 and 4095. A value of 0 will turn off vLAN tagging for the network.
Encryption Type	Sets the encryption method used by the network: Open (no encryption), WEP, WPA-Personal, or WPA-Enterprise

When you have entered the desired options, click **Save** to set them.

The rest of the available network options vary depending on the encryption method selected, as shown in Figure 10 on page 15 to Figure 12 on page 17.



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System Configuration	N	letwork: Wireless Network Properties	
Firmware Web Interface Network IP Setup	Network Description	Primary Network Primary Network Enabled Enter a name to identify this network.	
KF Setup Wireless Networks SIMP Setup QoS Setup Status	SSID	5G Wireless 850 Hide SSID Enter the SSID for this wireless network. Hiding the SSID will remove it from beacon packets.	
System Wireless Reboot	vLAN Tag	0 Enter a vLAN tag between 1 and 4095. A value of 0 will disable vLAN tagging for this network.	
	Encryption Type	WEP Select the type of encryption to use for this network.	
	WEP Settings	1: ASCII HEX C 2: ASCII HEX C 3: ASCII HEX C 4: ASCII HEX C 4: ASCII HEX C Default Tx Key: I HEX C C Allow non-WEP enabled clients to connect? To enable WEP encryption, enter up to 4 WEP	
		keys and select the default key for transmission. You can also allow or deny non-WEP authenticated clients.	
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Figure 10. Network > Wireless Networks > Setup (Encryption: WEP)

The **WEP Settings** section of the page sets up to four ASCII or hexadecimal keys to access the network, as well as the default key. Select **Allow non-WEP enabled clients to connect** to allow clients on the network that do not support WEP.

When you have entered the desired options, click **Save** to set them.



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System Configuration	N	etwork: Wireless Network Properties	
Firmware Web Interface Network IP Setup	Network Description	Primary Network Enabled Enter a name to identify this network.	
RF Setup Wireless Networks SNMP Setup QoS Setup Status	SSID	5G Wireless 850 Hide SSID Enter the SSID for this wireless network. Hiding the SSID will remove it from beacon packets.	
System Wireless Reboot	vLAN Tag	0 Enter a vLAN tag between 1 and 4095. A value of 0 will disable vLAN tagging for this network.	
	Encryption Type	WPA-Personal Select the type of encryption to use for this network.	
	Encryption Method	TKIP Select the encryption method required to access this network.	
	WPA-PSK Phrase	Enter a secret phrase between 8 and 32 characters.	
		Save	
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Figure 11. Network > Wireless Networks > Setup (Encryption: WPA-Personal)

The options available for WPA-Personal encryption are as follows:

Encryption Method Sets the encryption method required to access the network. At this point, the only method available is TKIP.

WPA-PSK PhraseSets the passphrase required to access the networkWhen you have entered the desired options, click Save to set them.



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System Configuration	Ne	etwork: Wireless Network Pronerties	
Firmware Web Interface	Network Description	Primary Network	
Network IP Setup		Enabled Enter a name to identify this network.	
Wireless Networks	SSID	5G Wireless 850	
SNMP Setup QoS Setup Status		Hide SSID Enter the SSID for this wireless network. Hiding the SSID will remove it from beacon packets.	
System Wireless Reboot	vLAN Tag	0 Enter a vLAN tag between 1 and 4095. A value of 0 will disable vLAN tagging for this network.	
	Encryption Type	WPA-Enterprise Select the type of encryption to use for this network.	
	Encryption Method	TKIP Select the encryption method required to access this network.	
	802.1×	✓ Enable 802.1× Check this box to enable 802.1× port authentication for this wireless network.	
	EAP Message	5G Wireless AP <i>(Optional)</i> Enter an EAP message to be sent with EAP Request- Identity.	
	NAS Identifier	[<i>coptional</i>) Enter the NAS identifier for the RADIUS server (i.e. wireless.example.com).	
	Authentication Radius Server	IP Address: Port:	
		Enter the RADUIS server information to use for authorization of 802.1× clients.	
	Accounting Radius Server	IP Address: Port:1645 Secret: Enter the RADUIS server information to use for accounting of 802.1x clients.	
		Save	
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Figure 12. *Network > Wireless Networks > Setup (Encryption: WPA-Enterprise)*



The options available for WPA-Enterprise encryption are as follows:

Encryption Method	Sets the encryption method required to access the network. At this point, the only method available is TKIP.
802.1x	Enables/disables 802.1x port authentication on the network
EAP Message	Sets an EAP message to be sent out with the EAP-Request/Identity frame (optional)
NAS Identifier	Sets the NAS identifier for the RADIUS server (optional)
Authentication Radius Server	Sets the RADIUS server (IP address, port, and secret) used for client authentication
Accounting Radius Server	Sets the RADIUS server (IP address, port, and secret) used for client accounting

When you have entered the desired options, click **Save** to set them.

SNMP Setup

The SNMP Setup page allows you to enable and configure SNMP support.



Figure 13. Network > SNMP Setup

The SNMP options are as follows:

Enable SNMP	Enables/disables SNMP support
Community String	Sets the community string required to access the base station
System Location	Sets a string used to identify the location of the base station
System Contact	Sets the email contact for this base station (that is, the network administrator)

When you have entered the desired options, click **Save** to set them.

QoS Setup

The QoS Setup page allows you to turn on and configure the base station's WMM QoS support.

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Sustem		5G Wireless Solutions 850 AP	
Configuration			
Firmware		Network: QoS/WMM Setup	
Web Interface Network	Enable WMM	Check here to enable WMM QoS support.	
RF Setup Wireless Networks SNMP Setup QoS Setup Status System Wireless Reboot	WMM Settings	QueueCw MINCw MAXAIFSTxOp LimitAEKWMM Voice2311504WMM Video3413008Best Effort31020Background41072048	
		Save	
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Figure 14. *Network* > QoS Setup



The QoS options are as follows:

Enable WMM WMM Settings	 Enables/disables WMM QoS support Configures how the base station treats WMM traffic, divided into four categories: WMM Voice, WMM Video, Best Effort, and Background. You can change the following options for each category: Cw MIN—Contention Window Minimum; sets the minimum backoff interval, in bytes, for collision avoidance. Set this value lower for higher-priority traffic.
	 Cw MAX—Contention Window Maximum; sets the maximum backoff interval, in bytes, for collision avoidance
	 AIFS—Arbitration Inter-Frame Space; sets the wait interval, in milliseconds, for channel access negotiation after the channel becomes idle
	 TxOp Limit—Transmission Opportunity Limit; sets the maximum length, in microseconds, that a station can transmit
	 ACK—Turns data acknowledgement on and off. Acknowledgements can be turned off to reduce latency for traffic that can withstand some packet loss.

When you have entered the desired options, click **Save** to set them.



Status

The Status section displays the current status of the base station and all wireless networks connected to it.

System

The System page displays information regarding the base station.



Figure 15. Status > System

The information displayed is as follows:

Version	The firmware version installed on the base station
Model	The base station model number
Uptime	The current system uptime

The current system uptime



Wireless

The Wireless page displays the network name, SSID, and vLAN tag for all wireless networks currently enabled and managed by the base station.



Figure 16. *Status > Wireless*



To show all clients connected to a network, click View Clients to the right of the listing.



Figure 17. Status > Wireless > View Clients

The Clients page shows the MAC address, signal strength, and connection quality for each client connected to the selected network.



Reboot: Rebooting the Base Station

The Reboot page allows you to reboot the base station. You must reboot the base station after making any configuration changes before the changes will take effect.

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55G WIRELESS	5G Wireless Solutions 850 AP	
System Configuration Firmware	Euclass Babaat	
Web Interface Network IP Setup RF Setup Wireless Networks	WARNING Reboot Rebooting the system may take up to 90 seconds. If you have changed the IP settings, be sure to enter the new IP address in the web browser. Reboot Reboot	
QoS Setup Status System Wireless Reboot		
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Figure 18. Reboot

Click **Reboot** to reboot the base station. The reboot process may take up to 90 seconds.

Note: If you have changed the base station's configuration IP address, be sure to use the new address the next time you access the configuration interface.



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