



# ANTENNA GENIUS

## User Manual

Version 3.1.4 rev 12

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## 1. WELCOME

Congratulations on your purchase of an Antenna Genius™ 8x2 v2 Plus Network-Enabled (TCP/IP) High-Isolation Antenna Switch, a member of the 4O3A Genius System™ advanced station automation line including Power Genius™, Rotator Genius™, Station Genius™, and Interface Genius™. More information on these products can be found at:

<https://4o3a.com/products/genius-family>

**GENIUS TIP!** Antenna Genius™ is sometimes abbreviated as “AG” in this document.

AG is at home in all types of ham shacks: contest stations extravagant and modest, from single op to SO2R to full blown Multi-Multi, DXers, remote operators controlling their station from their living room via LAN or over the Internet from a hotel room thousands of miles away, to anyone wanting a better organized and more efficient station.

## 2. SPECS & FEATURES

Manufacturer	403A Signature™ by Sky Sat d.o.o.
Model	Antenna Genius™ 8x2 Plus v2
Functionality	8 antenna 2 radio RF matrix switch controlled via TCP/IP (LAN or WAN), BCD, or +12 VDC Pin-To-Port
RF connectors	UHF female (SO-239) standard, N female available by special order
Power handling	→ 3,000 Watts ICAS (SSB/CW) for 5 minutes @ 1.5:1 VSWR @ 30 MHz → 3,000 Watts ICAS (SSB/CW) for 3 minutes @ 1.5:1 VSWR @ 50 MHz
Ports	→ RJ-45 (LAN) → two DE-15 VGA-type (BCD band data or +12 VDC pin-to-port)
Network	100Base-T Fast Ethernet (100-Mbps), DHCP or manually-assigned network address, TCP/IP
Power consumption	300 mA @ 13.8 VDC
Frequency range	DC through 55 MHz
Port-to-port isolation	→ 90dB between ports worst case @ 14 MHz → 80dB between ports worst case @ 30 MHz → 70dB between ports worst case @ 50 MHz
CPU	Microchip Technology 32-bit PIC processor
Automation	Windows App, FlexRadio Systems SmartSDR API, Genius System devices, BCD, Pin-to-Port
Features	→ hardware interlock prevents two radios connecting to same antenna → unselected antenna ports grounded → LEDs indicate antenna ports in use → firmware updates via LAN
Case	rugged stainless steel chassis with wall mount flanges top and bottom
Dimensions	6.75" W x 13.25" H x 3.25" D including mounting flanges (21 x 17 x 6 cm)
Net weight	approx. 4.4 lbs. (approx. 2 kg)

### 3. LEGAL

#### 3.1. Radio & Television interference

(FCC Part 15 - §15.21 and §15.105)



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

You may also find the following FCC booklet helpful: *"How to Identify and Resolve Radio-TV Interference Problems"* available from the U.S. Government Printing Office, Washington D.C. 20402. Info also available online at FCC.gov:

<https://www.fcc.gov/guides/interference-defining-source>

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

#### 3.2. European Community CE conformity



Sky Sat d.o.o. declares Antenna Genius™ 8x2 complies with the European Community EMC standards:

ETSI EN 300 330-1  
ETSI EN 300 489-1  
ETSI EN 300 489-15

CE compliance reports are available upon written request to Sky Sat d.o.o.

### 3.3. Product updates

Sky Sat d.o.o. reserves the right to make hardware and/or software product improvement or manufacturing changes without notice or any obligation to update units previously sold.

### 3.4. Limited warranty

This product is warranted to be free of defects in materials and workmanship for one year from the date of purchase. Sky Sat d.o.o. will repair or replace, at our option, any equipment proven to be defective within the warranty period. Warranty F.O.B. Sky Sat d.o.o., Ratiševina bb, Igalo 85347, Montenegro. Please contact the appropriate party for your region and obtain a return authorization (RA) number before returning any product for warranty service. RA number must be indicated on box used to return product for service.

**What is covered:** During the first year after date of purchase, 403A Signature will replace defective parts free of charge (post-paid) for AG components only. Any replacement hardware parts will be warranted for the remainder of the original warranty period or ninety (90) calendar days from the date of installation or repair, whichever is longer. 403A Signature will also correct any failure caused by defective parts and materials. The complete unit must be sent to 403A Signature at your expense in the original shipping container or other packaging sufficient to prevent damage in transit. 403A Signature is not responsible for damage or lost shipments from the customer. 403A Signature will insure the package and pay return shipping.

**What is not covered:** This Limited Warranty as it pertains to the Antenna Genius or components does not cover repair or damage caused by (1) misuse, negligence or user modifications; (2) any performance malfunctions involving non-403A Signature equipment; (3) connection to improper or unstable voltage supply; (4) the incorrect installation of any and all cables connected to the radio by the user; (5) the use of third-party software applications or hardware that directly or indirectly controls AG functions and/or operating state by utilizing a communication or control protocol, such as, but not limited to CAT or I2C commands, or (6) random acts of nature such as flood, fire, water, weather related storm, lightning or electrostatic discharge damage.

**Limitation of Incidental or Consequential Damages:** This warranty does not extend to non-403A Signature equipment or components used in conjunction with our products. Any such repair or replacement is the responsibility of the customer. 403A Signature will not be liable or

responsible for reimbursement for any special, indirect, incidental or consequential damages, including but not limited to any loss of business or profits, loss of property, loss of revenue, loss of use, loss of data, inconvenience or cost of unauthorized service.

### **3.5. Trademarks**

403A Signature™, Antenna Genius™, Rotator Genius™, Station Genius™, Interface Genius™, and 403A Genius System™ are trademarks of Sky Sat d.o.o.

FlexRadio Systems™ and SmartSDR™ are trademarks of Bronze Bear Communications, Inc. d/b/a FlexRadio Systems

PIC32™ is a trademark of Microchip Technology Inc.

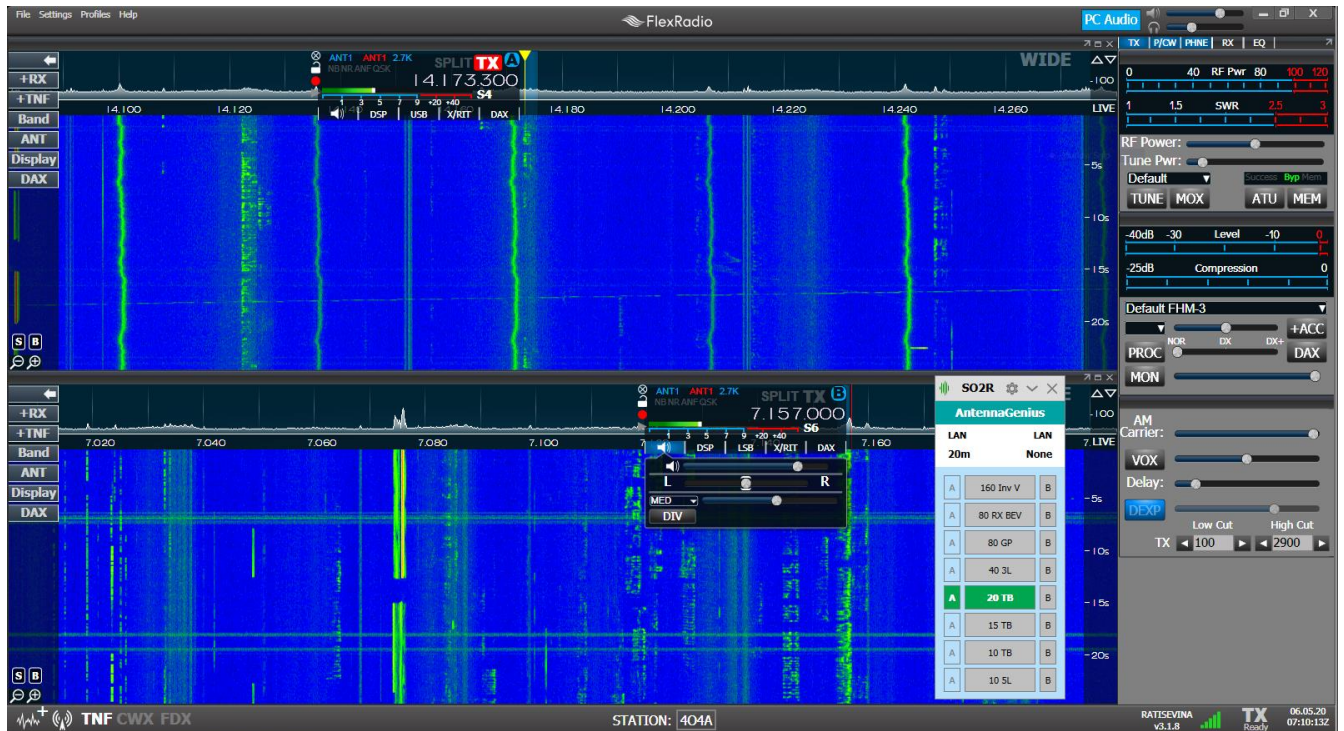
All other products, company names, brand names, and trademarks are the property of their respective owners.

### **3.6. Copyright**

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#### 4. WHAT CAN ANTENNA GENIUS™ DO?

Antenna Genius™ 8x2 v2 Plus is a matrix antenna switch which can route eight antennas to two radios using a variety of control methods. Software and hardware interlocks - double protection - prevent the same antenna from being connected to both radios. This, along with AG's ultra-high port-to-port isolation help protect your radios from front end damage.



*AG in action with SmartSDR @ 403A (AG Always on top option engaged)*

#### 4.1. Multiple control options

You have five ways to control your AG:

1. FlexRadio over your TCP/IP network; AG will automatically follow two different Slice band selections and obtain band data from them
2. Manual band switching from the AG Windows app connected via your network
3. Interface Genius™ (IG) connected to your radio(s) via a USB or serial port and connected to AG via LAN; IG will connect to pretty much any modern radio via its serial or USB CAT port
4. BCD (Binary-Coded Decimal) signals via the DE-15 VGA-style connector
5. +12 VDC “Pin-to-Port” via the DE-15 VGA-style connector

## 4.2. SO2R and multi-op with a single FLEX-6000

AG's extreme port-to-port isolation is perfect for SO2R (Single Operator 2 Radio) contesting with a single Flex rig! With AG, you can operate SO2R with one radio using a single FLEX-6600 or FLEX-6700 transceiver in full duplex mode. In other words, the 'two radios' in SO2R are both



inside your single Flex rig!

**GENIUS TIP!** All 4O3A Genius System™ products use standard TCP/IP protocols to communicate with each other and with other suitably-equipped devices. The 4O3A Signature team believes in open standards in ham radio and makes its APIs (library of commands) available freely to other manufacturers and software authors.

## **5. HOW IT WORKS**

Antenna Genius brings together a powerful CPU, fast network interface, rugged, high power relays and a programming/control App that runs in all supported versions of Windows. We are confident AG is the best antenna switch you can buy.

### **5.1. Tech**

AG is powered by a Microchip Technology PIC32 microprocessor, a 32-bit device. Why so much horsepower in an antenna switch? Advanced technology radios demand high-horsepower accessories! Also, the extra computing power enables the addition of new features via firmware updates in the future.

AG has 100BASE-T networking built-in. Based on the Ethernet standard, but ten times faster than 10BASE-T, it is often referred to as Fast Ethernet. Officially, the 100BASE-T standard is IEEE 802.3u. 100BASE-T devices will also work fine on older 10BASE-T networks albeit at slower speeds.

### **5.2. Hardware**

AG uses high quality 16 Amp relays rated at 12,800 W DC and conservatively rated for 3,000 W RF at up to 50 MHz. AG's relays are used for RF switching and also for the hardware lockout that prevents two radios from being connected to the same antenna (there is also a software lockout for redundant protection). The design priority was maximum port-to-port isolation coupled with power handling 'headroom' - twice legal limit at high duty cycle - to enable reliable, long term operation.

### **5.3. Software**

The AG App runs on all Microsoft-supported versions of Windows and is an integral part of the AG system. You will use the AG App for initial set up and programming of your AG and also for alternate antenna selection when you have more than antenna available for a particular band. The AG App can also serve as your AG control interface if you don't want automatic band selection controlled by FlexRadio Slice band changes.

### **5.4. FlexRadio Ecosystem**

In the "FLEX-6000 Signature Series Ecosystem," the AG App collects frequency and other data directly from the SmartSDR (SSDR) API, a software-to-software connection performed inside your PC or over your LAN at very high speed. No RS-232 cables to set up, no "stop bits," nor lethargic baud rates. It is a truly modern, intelligent, and high-speed solution.

AG will monitor any two SSDR Slices to determine the bands in use and use this data to select the appropriate antenna(s) for each Slice.

## 6. ONLINE RESOURCES

403A Genius System™ owners have many online resources available to help them fully realize the capability of their Antenna Genius™, Rotator Genius™, Station Genius™ and Interface Genius™ and more.

**403A Web Site Downloads:** current owners manuals, white papers, Apps, firmware, and changelog are available at:

<https://4o3a.com/support/downloads>

**403A Web Site Forum:**

<https://4o3a.com/support/forum>

**FlexRadio Systems Community:** a great resource for anything related to FLEX-6000 Signature Series™, SmartSDR™ and Maestro™:

<https://community.flexradio.com/flexradio/>

**EXPERT TIP!** Join the 403A Signature Web Site Forum 403A or 403A Genius Products Google Group or to stay up-to-date, network with other users, and get helpful tips:  
Google Group: or  
403A Signature Web Site Forum:

## 7. WHAT COMES IN THE BOX?

When you unpack your AG box you should have:

- Antenna Genius
- DC power connectors
- Quick-start Guide
- Other items, such as **LAN**, **DC** and **coax cables**, are user supplied
- **Owner's Manual** (this document) and other documentation is available for free download from:

<https://4o3a.com/support/downloads>

## 8. HARDWARE

**EXPERT TIP!** Read this and the following Software section carefully before changing any DIP switches or software settings.

### 8.1. Front panel

Front panel features:

- SO-239 (or N-female) connector for Port A
- SO-239 (or N-female) connector for Port B
- 8 SO-239 (or N-female) connectors for antenna inputs
- LEDs: red LEDs indicate which A port antenna has been selected and green LEDs indicate which B port antenna is selected

### 8.2. Bottom panel

Bottom panel features:

- LAN: RJ-45 jack connects to your home/shack network (assumes you are using the network control option as most Flex users will be)
- Two DE-15 VGA-type for users opting for BCD or +12 VDC pin-to-port control in lieu of network control, these are left unconnected if you are using network control (most FlexRadio equipped stations won't use these ports)
- 12-15VDC: connect your shack 13.8 VDC power supply here paying attention to proper polarity, anywhere from 12 to 15 VDC with at least 300 mA will be OK
- OM module: enables connecting the 16 relay Output Module for station automation
- DIP Switches: The side panel has 8 DIP switches for setting the operating mode configuration.

AG can be controlled four different ways: (1) LAN, (2) BCD, (3) Pin-to-Port, and (4) 403A Interface Genius™. The control mode is set independently for Port A (Radio A) and Port B (Radio B) by the DIP switches. For example, Port A could be controlled over the network and Port B could be controlled by BCD signals.



### 8.3. Top panel

The top panel features:

- A DC power connector for stacking multiple AG units. This enables a single switch to switching between 16, 24 or 32 antennas.
- Two pairs of dedicated PTT input and output RCA ports for hotswitching protection. There are independent ports for both A and B radio.
- Red LED for indication that Port A protection is engaged. Green LED for indication that Port B protection is engaged.

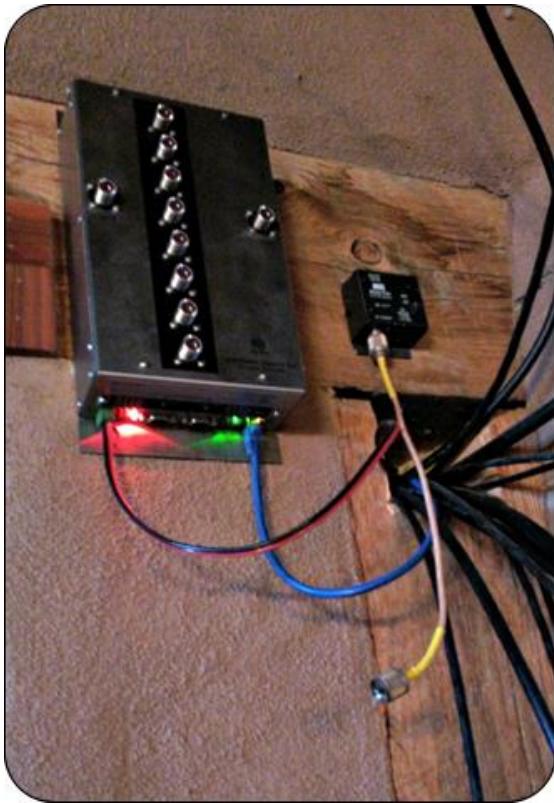


### 8.4. Where to put it?

Most users will install AG near their station bulkhead, the location where their antenna feed lines, AC mains, DSL, cable TV, and/or other cables enter the shack and where the single point ground system nexus is located (you do have a single point ground system, don't you?). Locating AG at your bulkhead or other remote location means only three cables need to be run to the station operating position, coax for the A and B radios and a Cat5e (or higher) Ethernet cable for the LAN (if not using LAN, you will need a pair of control lines, one for Port A and for Port B).

At the left side is the bulkhead-sited AG @ WOLFA prior to connection of coax lines and ground

connection:



AG can also be installed at the operating position or outdoors. If the later, install AG in an outdoor NEMA-rated enclosure and make sure it has a ‘weep hole’ at the bottom to allow air circulation and to let moisture out.

The picture on the right is an AG installed outdoors in very unfriendly conditions (temperatures down to -28 °C (-17.6 °F) in Minnesota @ W0AD.

**EXPERT TIP!** Reduce station clutter by mounting your AG near your station cable entrance “bulkhead.” Slots for such mounting are provided on the top of the AG case.

AG is a 100BASE-T network device using standard TCP/IP protocols, it is therefore subject to the usual 328-foot (100m) LAN cable run limitations per TIA/EIA 568-5-A. If longer runs are required, the use of intermediate active hardware such as a repeater or switch will be necessary. Cat5e cable is recommended, and higher-rated cables such as Cat6 are also OK.

**EXPERT TIP!** For outdoor UTP (Ethernet) cable runs, be sure to use outdoor-rated cable including UV-resistance properties if located in direct sunlight.

403A Signature encourages all amateur radio operators to employ single point ground systems for both protection from lightning induced power surges and also for RFI mitigation. A good

source for information on this topic is the ARRL Handbook, updated annually and available from the ARRL Bookstore:

<https://arrl.org>

Another excellent resource for station grounding information and RFI mitigation are several documents written by Jim Brown, K9YC, available for free download at:

<http://www.audiosystemsgroup.com/K9YC/K9YC-old>

AG is a computer and thus its electronics will generate some heat. Also, the relays and other components will generate heat when under load. Make sure there is adequate clearance and airflow around the AG cabinet sides and top in its installation position.

### **8.5. DC power connection**

Connect a DC power cable from your station 13.8 VDC power supply (anywhere from 12 to 15 VDC is OK, your shack DC power supply is likely 13.8 VDC) to the outlet marked 12-15VDC on the bottom panel. Center pin is + pole. We recommend using a DC fuse such as those provided on the popular RIGrunner and similar DC power distribution units (you can use the 1 Amp blade fuse that comes with RIGrunners). If you don't have a RIGrunner, we strongly suggest you place a 1 Amp DC fuse in series with the hot side of your DC power cable.

Make sure your power supply can supply at least 300 mA @ 13.8 VDC. We strongly advise using a clean, high-quality DC power source for AG and all your other station equipment. Many cheap switch mode power supplies and "wall warts" are unstable and can generate surprising amounts of RFI well into the VHF spectrum.

### **8.6. Network cabling**

Most home networks (LAN) operate at Ethernet (10 Mb/s), Fast Ethernet (100 Mb/s) or Gigabit Ethernet (1000 Mb/s) speeds. All of these networks work fine over Category 5 UTP or better rated cable such as Cat5e, which is widely available, or Cat6. It's likely the cable you are already using for your home network will work great with AG.

If you are unfamiliar with or need a refresher on home networks, a good primer from PC World is online here:

[http://www.pcworld.com/article/196049/the\\_ultimate\\_guide\\_to\\_home\\_networking.html](http://www.pcworld.com/article/196049/the_ultimate_guide_to_home_networking.html)

100BASE-T networking has 328-foot (100 m) limitation between active devices (such as Ethernet switches). Keep this in mind when locating your AG.

Use a Cat5e, Cat6 or Cat6a UTP cable (not supplied, please don't use a cheap cable here; poor-quality high-speed data cables are never a good idea!) between the Ethernet port on your AG and your station LAN switch or hub (switches preferred over hubs). This should be the same place where your FLEX-6000 Signature Series radio connects to your LAN. Note this LAN connection can be as simple as a port on a DSL router or as fancy as a standalone Gigabit switch.

AG can be controlled by PCs connected over WiFi to your LAN as long as AG itself is connected directly to your LAN via a wired connection to an Ethernet switch or hub (switch recommended; Ethernet hubs will slow down your LAN).

## 8.7. DIP Switch configurations

DIP 1 and DIP 2 set PORT A (which will typically be connected to Flex ANT1 or Radio A in non-Flex installations):

DIP 1	DIP 2	CONTROL MODE
OFF	OFF	LAN control - FlexRadio
OFF	ON	BCD control
ON	OFF	Pin-to-Port control
ON	ON	Genius Series Device

DIP 3 and DIP 4 set PORT B (which will typically be connected to Flex ANT2 or Radio B in non-Flex installations)

DIP 3	DIP 4	CONTROL MODE
OFF	OFF	LAN control - FlexRadio
OFF	ON	BCD control
ON	OFF	Pin-to-Port control
ON	ON	Genius Series Device

If you want to stack more than one AG into single system, you need to assign unique ID numbers. You can use DIP5 and DIP6 to achieve this. For more info see chapters [11.4](#), or [11.5](#).

DIP 5	DIP 6	NETWORK ID
-------	-------	------------



OFF	OFF	ID = 0
ON	OFF	ID = 1
OFF	ON	ID = 2
ON	ON	ID = 3

DIP 7 is used to reset your AG network settings to default and **sets the IP setting to DHCP** (see Section 9.2 below).

IP: 192.168.1.140  
 Subnet: 255.255.255.0  
 Gateway: 192.168.1.1

DIP 7	
ON	restore factory settings on next power cycle
OFF	normal operation

DIP 8 is used to delete your AG antenna/port configuration settings.

DIP 8	
ON	restore factory settings on next power cycle
OFF	normal operation

To delete AG configuration to factory presets follow these steps in order:

1. remove DC power from AG
2. move DIP 8 to ON position
3. turn DC power back on
4. move DIP8 back to OFF position

To reset AG network configuration and enable DHCP follow these steps in order:

1. remove DC power from AG
2. move DIP 7 to ON position
3. turn DC power back on
4. move DIP 7 back to OFF position

5. remove the DC power from AG
6. turn DC power back on

DIPs 7 and/or 8 ON have no effect on the device in normal working mode without cycling DC power. After a successful configuration reset, make sure to set DIP 7 and/or 8 to OFF, otherwise you will reset your configuration on every power up.

## 8.8. LAN Control Mode

LAN Control Mode is used if you want to obtain band data from a FlexRadio. In this mode AG gets band data from a FlexRadio using the TCP/IP network.

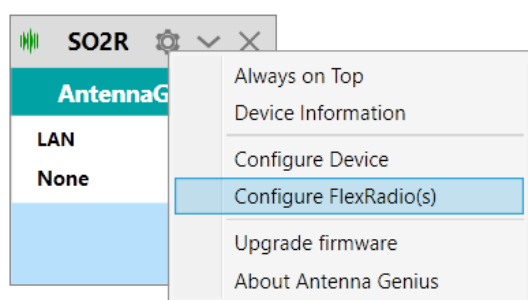
Set DIP 1 and DIP 2 to OFF to set PORT A to LAN control:

DIP 1	DIP 2	CONTROL MODE
OFF	OFF	LAN control: FlexRadio

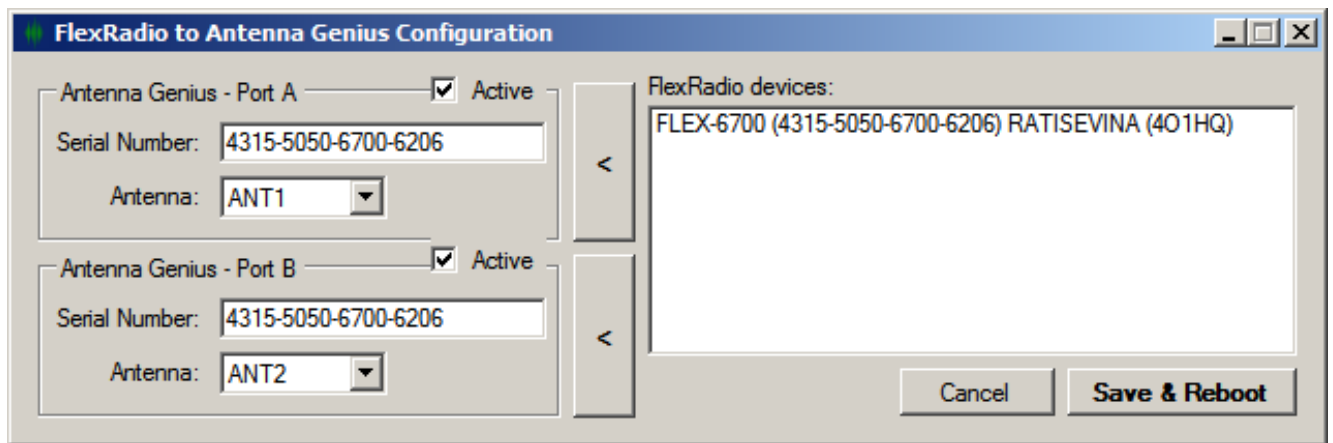
Switch DIP 3 and DIP 4 to FF to set PORT B to LAN control:

DIP 3	DIP 4	CONTROL MODE
OFF	OFF	LAN control: FlexRadio

You can now connect your FlexRadio using the app. Click the configuration icon (gear icon) on top and choose Configure Radio(s):



Your FlexRadio will be discovered automatically and listed on the right:



Click on a radio from the list and use the **arrow buttons** to assign the radio to Slice A and Slice B.

Set **Antenna:** option to assign the desired Flex antenna port to Port A and Port B, respectively.

Click **Save & Reboot**.

## 8.9. 403A Genius Series Devices Control

In this mode AG gets band data from various Genius Series device (GSD), using the TCP/IP network.

403A designs and manufactures high-quality accessories and TCP/IP controlled devices for your shack. Genius Series devices capable of forwarding Band Data can be used as a band data source for Antenna Genius.

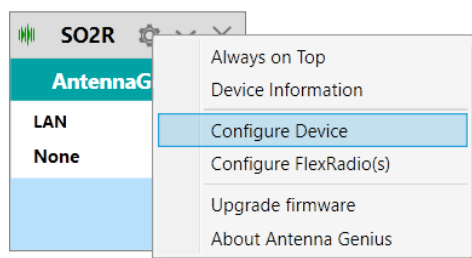
Switch on DIP 1 and DIP 2 to set PORT A to GSD control:

DIP 1	DIP 2	CONTROL MODE
ON	ON	GSD control

Switch on DIP 3 and DIP 4 to set PORT B to GSD control:

DIP 3	DIP 4	CONTROL MODE
ON	ON	GSD control

You can now connect to the FlexRadio using the app. Click the configuration icon (gear icon) on the top and select Configure Device:



Enter the Genius device's IP address for Slice A and Slice B and:

 A screenshot of the 'Antenna Genius Configuration' window. The 'Basic information' section shows 'G' as 0, 'ID' as 1, and 'Name' as 'AntennaGenius'. The 'Network configuration' section has 'DHCP' checked, with 'IP Address' set to 192.168.001.140, 'Subnet' to 255.255.255.000, and 'Gateway' to 192.168.001.001. The 'GSD Band data' section is highlighted with a red box; it shows 'Port A' selected, 'IP Address' as 192.168.001.130, 'Port' as 9000, and 'Selected radio' as 'Radio A'. The 'Output(s) Configuration' section lists 8 antennas with their respective bands. At the bottom, there are buttons for 'Reboot device', 'Cancel', and 'Save and Reboot'.
 

	Antenna name:	Bands:
1	160 inv V	160m
2	80 RX BEV	80m
3	80 GP	80m
4	40 3L	20m, 17m, 15m, 12m, 10m, 6m
5	7B ant	40m, 30m, 20m, 17m, 15m, 12m
6	Dipole 40M	40m
7	15M 5L	15m
8	10M 5L	10m

Leave the port at default 9000 unless you explicitly changed it on your Genius device.

Click **Save and Reboot**.

## 8.10. BCD control

In this mode AG gets band data from radios using the standard BCD protocol.

Typical radios using BCD band data include Yaesu FT-1000 MP, FT DX 5000, FT-1000D, Elecraft K3, Ten-Tec Omni V and Orion II and many more.

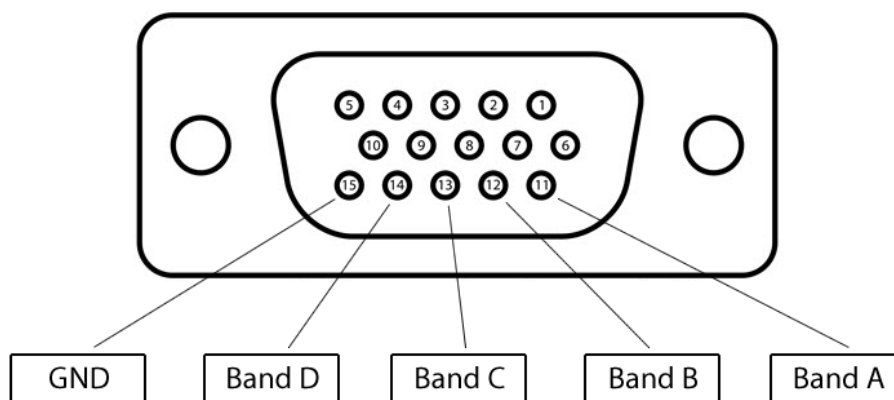
Switch DIP 1 off and DIP 2 on to set PORT A to BCD control:

DIP 1	DIP 2	CONTROL MODE
OFF	ON	BCD control

Switch DIP 3 off and DIP 4 on to set PORT B to BCD control:

DIP 3	DIP 4	CONTROL MODE
OFF	ON	BCD control

This is the pinout when looking at the device connector:



This is the BCD data table:

Band	160M	80M	40M	30M	20M	17M	15M	12M	10M	6M	None
Frequency	1.8	3.5	7	10	14	18	21	24	10	50	
Band A	H	L	H	L	H	L	H	L	H	L	L
Band B	L	H	H	L	L	H	H	L	L	H	L
Band C	L	L	L	H	H	H	H	L	L	L	L
Band D	L	L	L	L	L	L	L	H	H	H	L
HEX Code	1	2	3	4	5	6	7	8	9	A	0

Note that it is not possible to select 60M band through BCD.

Different radio models use different pinout for their BCD output:

PIN	Antenna Genius in	Yaesu FTD5k Band Data out	Elecraft K3 DB15 out	ICOM CI-V out	Kenwood out
GND	15	3	12	Connection through additional CI-V to BCD converter	Connection through additional IF-323C to BCD converter
Band A	11	4	13		
Band B	12	5	3		
Band C	13	6	9		
Band D	14	7	14		

### 8.11. Pin-to-Port Control Mode

In this mode you can use an external switch for manual switching.

Switch DIP 1 on and DIP 2 off to set PORT A to PTP control:

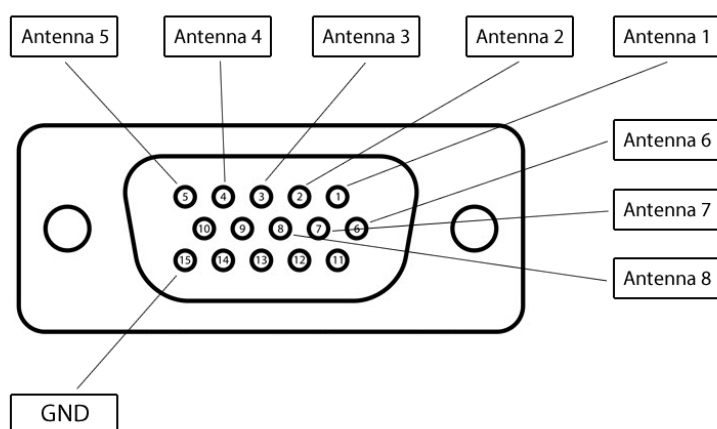
DIP 1	DIP 2	CONTROL MODE
ON	OFF	PTP control

Switch DIP 3 on and DIP 4 off to set PORT B to PTP control:

DIP 3	DIP 4	CONTROL MODE
ON	OFF	PTP control

You will be able to switch up to 8 different antennas per port.

This is the pinout when looking at the device connector:



**EXPERT TIP!** To see always list of available antennas, in device configuration assign each antenna port to “None”.

For this purpose, you can use the  
403A Manual Antenna Controller S8:



## 9. ANTENNA GENIUS™ APP

The AG App is used to perform six tasks:

1. Programming band-antenna assignments for automated operation: antenna selection driven by radio band data received directly from a FlexRadio, radio, via Genius Series device, or relayed through a logging software.
2. Secondary antenna selection when there is more than one antenna available for a band. AG will default to last antenna selected for a particular band in automatic mode after which operator can manually select an alternative antenna for that band. Note that you will be prohibited from switching to antennas which have not been programmed for the band in question (unless band is set to none, rendering the antenna as band independent).
3. Providing a Windows interface for manual antenna selection, an alternative to automated antenna selection.
4. Allowing multiple users to use one switch.
5. Allowing remote operation.
6. Updating AG with the latest firmware.

**EXPERT TIP!** AG will default to last antenna selected for a particular band in automatic mode after which operator can manually select an alternative antenna for that band. Note that you will be prohibited from switching to antennas which have not been programmed for the band in question.

### 9.1. Initial set-up

#### 9.1.1. Confirm DIP switches are configured as intended

First, make sure you've set the DIP switches to suit your installation (see Section 8.6 above) and you have connected DC power and the appropriate Port A and Port B control connections (LAN,

BCD, or Pin-to-Port) to AG.

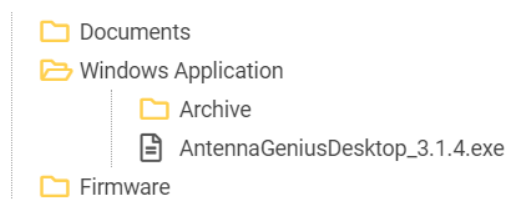
You can change DIP settings for band data sources while the device is powered on but it's not recommended if you have any RF cables connected to your switch.

### 9.1.2. Download and install the latest AG Windows App

The AG Windows App has been tested to run on Windows 7, 8.1 and 10, both Pro and Home and both 32 and 64-bit editions, and is available free from the Downloads page on 403A.com:

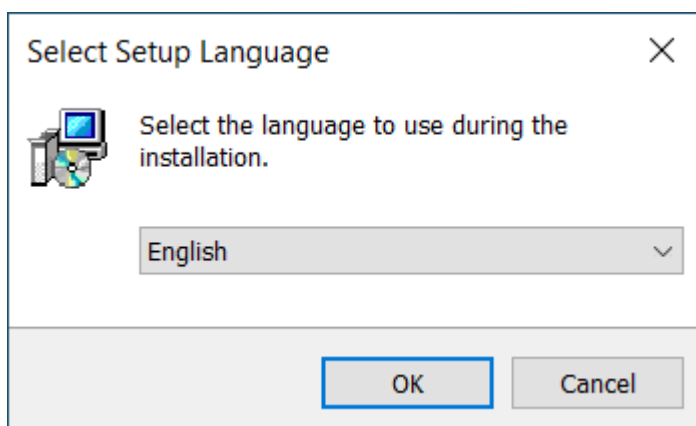
## Antenna Genius

The firmware file is now included in the app and there is no need to download it separately.



Download the AG Windows App to your PC's Downloads folder. You may see a warning message from your browser or security software for trying to download a Windows executable file (.exe file), you may override this warning if you are confident you have downloaded the file from 403A.com.

Select the installation language from the pull-down menu and select **OK**.



After closing all other applications, launch the Setup Wizard by selecting **Next**:





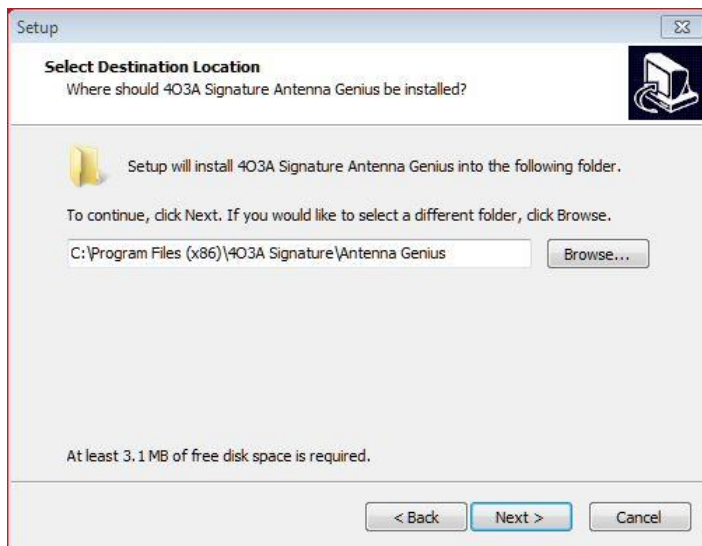
Fill in your User Information (Organization field is optional) and hit **Next**:

The screenshot shows the "User Information" screen of the setup wizard. The title bar says "Setup". The window has a header area with the title "User Information" and a sub-header "Please enter your information." on the left, and a small icon of a computer with a circular arrow on the right. Below the header are two text input fields: "User Name:" and "Organization:". At the bottom right are two buttons: "Next >" and "Cancel".

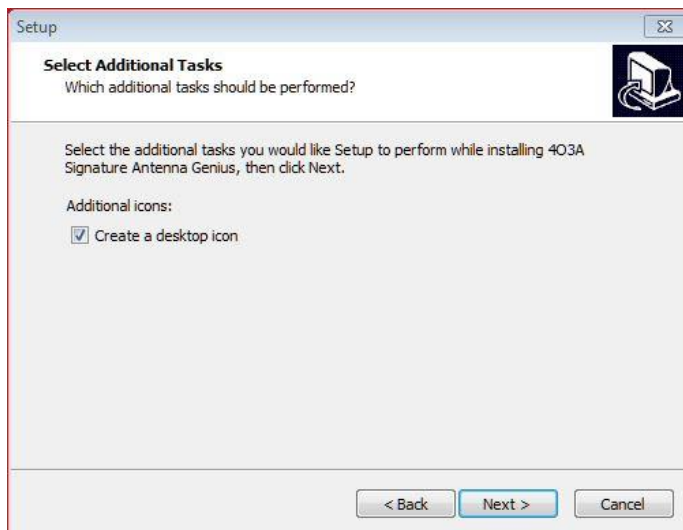
Select Destination Location, we recommend you keep the default location:

C:\Program Files (x86)\403A Signature\Antenna Genius

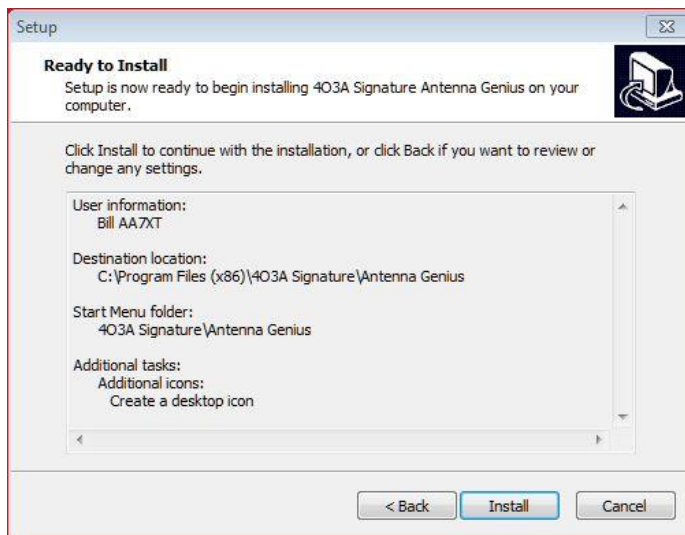
and hit **Next**:



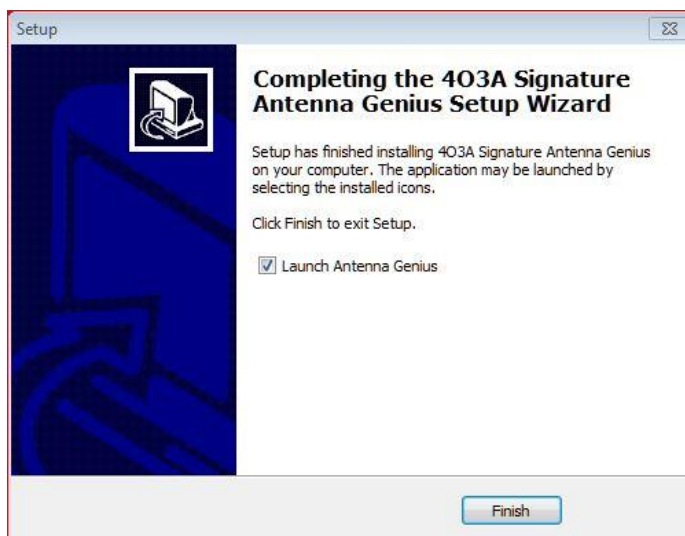
If you want a AG App desktop icon, leave “Create a desktop icon” selected and hit **Next**; otherwise, deselect “Create a desktop icon” and hit **Next**:



Now you should see the Ready to Install window. Double check the data, if correct, hit **Install**. If not correct, use the Back button to navigate to the applicable window and revise



Hit **Finish** to launch Antenna Genius Windows App:



### 9.1.3. Using DHCP to set the network address

AG comes factory preset for DHCP. If there's no DHCP server the fallback address is 192.168.1.140.

It is recommended to use your network's DHCP server (Dynamic Host Configuration Protocol), which is built into an Ethernet switch or DSL router on most home networks.

In case you are having problems getting an IP address, you can try resetting the network configuration on your AG:

1. make sure AG is connected to LAN with a DHCP server that will assign an IP address (in home networks, typically an Ethernet switch or DSL router)
2. remove DC power from AG

3. move DIP 7 to ON position
4. turn DC power on
5. move DIP 7 back to OFF position
6. remove DC power from AG
7. turn DC power on

If AG does not find a DHCP server on the LAN it is connected to, it will fallback to these network factory settings:

IP address	192.168.1.140
net mask	255.255.255.0
subnet	192.168.1.0
port:	9007

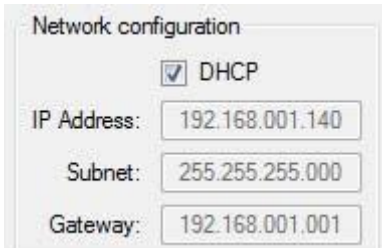
See Section 9.2 below for information on setting up a static IP address.

Take a look at the green and yellow LEDs on your AG LAN port. A lit green LED indicates network connection and a flashing yellow LED indicates network ‘traffic.’ It is normal for the yellow LED to flash even if you are not actively sending band change data to AG.

**EXPERT TIP!** The terms “LAN,” “home network,” and “network” are used interchangeably in this document, both referring to the small TCP/IP-based Ethernet networks many hams will have in their homes and shacks. “TCP/IP” is the basic set of protocols that runs the Internet and also powers most modern home networks. The router built into DSL or cable modems demarcates and routes data between the “Local Area Network” (LAN) in the home from the “Wide Area Network” (WAN) on the side, usually the Internet.

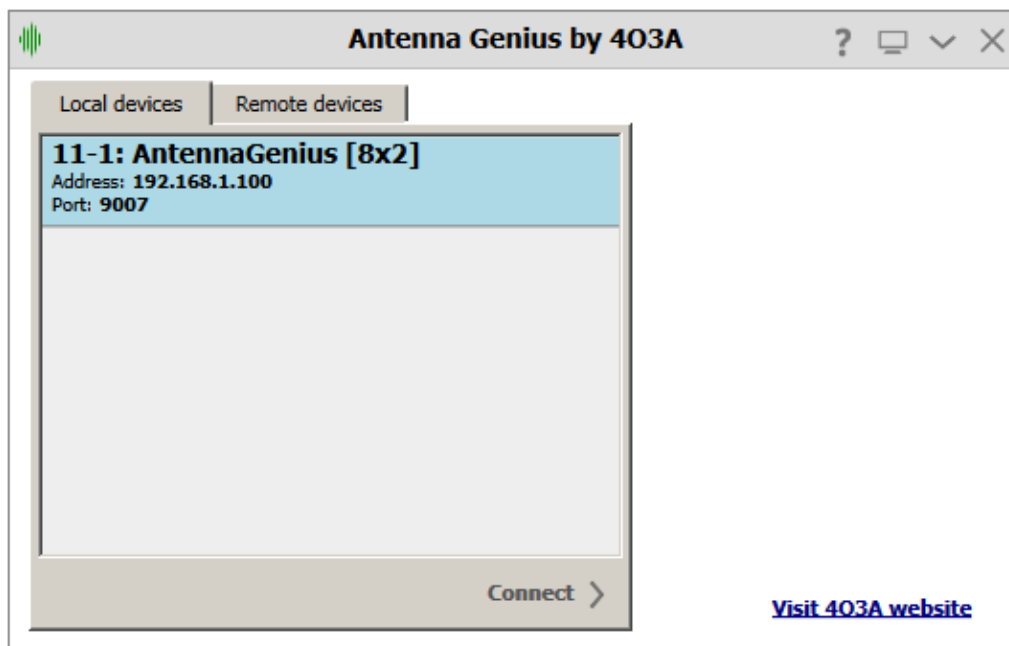
#### 9.1.4. Setting the network address manually

Select Configure Device in the AG Windows App Gear icon menu, uncheck DHCP, and enter your preferred network IP Address, Subnet and Gateway.



#### 9.1.5. Launch the Windows App

When you first run the AG Windows App, it will open the AG Launch window:



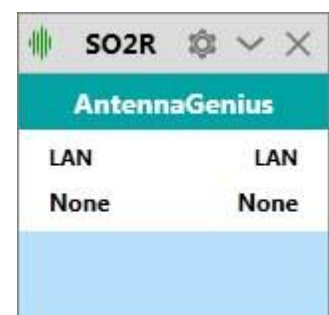
Your AG should be detected automatically by the app. If so, just click on Connect.

If you don't see your AG under local devices, it is possible your LAN subnet does not correspond with your AG device network settings. Try resetting the device IP address via DHCP.

In Mode Selection, choose Single port mode (A or B) or SO2R mode (both A and B ports are engaged)



You should see the AG Control window (Both - SO2R mode pictured)

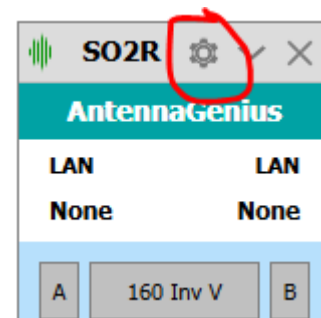


**EXPERT TIP!** You can select “Always on top” the AG App in Windows to make it easy to find and

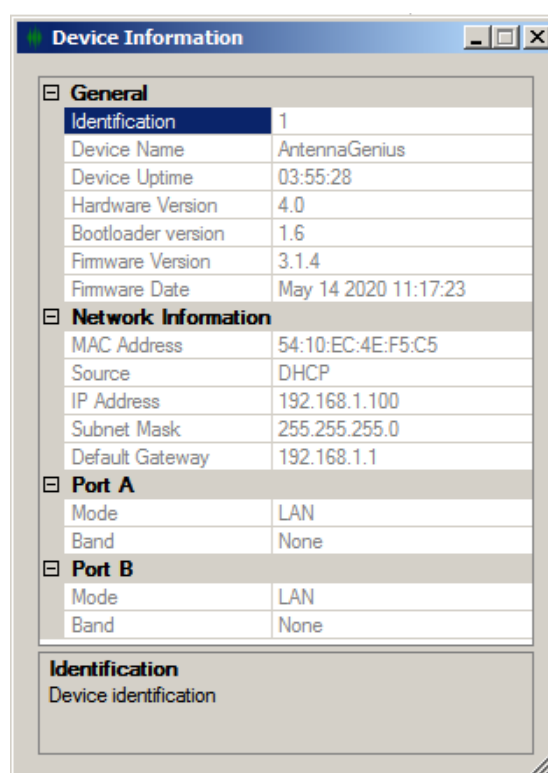
launch. Just click on configure and select **Always on Top**

## 9.2. Device Information

Click on the gear icon and select “Device Information”.



The Device Information selection in the Windows App Gear menu has comprehensive info on your Antenna Genius and its settings. You cannot change any settings in this window, it is for displaying device status only.



Identification	Device identification number between 0 - 3 set by DIP switches, if you only have one AG this can be any number; if you have multiple AGs on a single LAN, each number must be unique and you can have up to four AGs in one superswitch.
Device Name	Up to sixteen user selected alphanumeric characters

Device Uptime	Time since last device power cycle or reboot
Hardware Version	Self-explanatory
Firmware Version	AG firmware is upgradable so that new features can be added over time, see section 9.3 below for instructions on updating your AG firmware
Firmware Date	Date that corresponds to your AG's firmware revision
MAC Address	Media Access Control Address, also known as the physical address, a unique identifier assigned by the manufacturer to network interfaces, cannot be changed by user
Source	IP address assignment method: DHCP or manual
IP Address	Internet Protocol Address, a numerical label assigned to each device participating in a computer network that uses the Internet Protocol for communication, AG uses IPv4 addresses set by DHCP or manually
Subnet Mask	Set by DHCP or manually, usually 255.255.255.0
Default Gateway	The LAN address of the router, set either by DHCP or manually
Port A Mode	Control method for Radio Port A as set by DIP switches, either LAN, GSD, BCD or PTP.
Port A Band	Current band detected for Port A Radio
Port B Mode	Control method for Radio Port A as set by DIP switches, either LAN, GSD, BCD or PTP.
Port B Band	Current band detected for Port B Radio

### 9.3. Is your firmware up-to-date?

If the firmware on your AG is older than the latest AG firmware, you should update your AG before proceeding to the rest of the setup sets.

The firmware version should always match the app version.

Since version 3.03 the firmware file is included into the app. There is no need to download a separate file anymore.

Before updating the firmware, you should make sure you have the latest version of the AG Windows app by checking the 403A.com Downloads page. Updating the app is simple, just

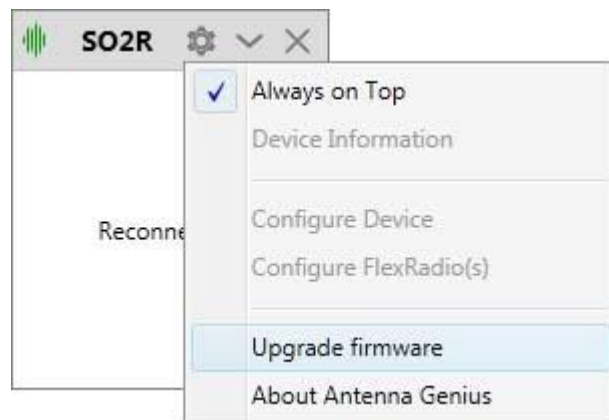
download and install using the same procedure as in an Initial Set-up described in 9.1 above. Don't worry, your current app user data will *not* be overwritten.

Connect to your AG using the new app. A message will appear to let you know you need to upgrade the firmware.

It will also attempt to reconnect; this is normal behavior.



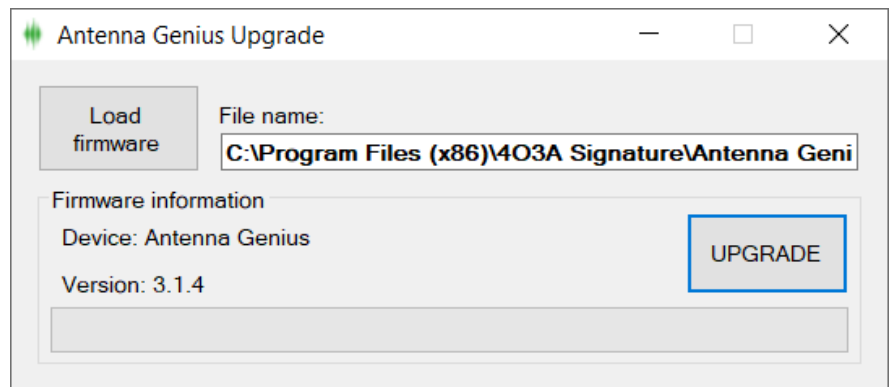
Click on the configure icon, and select load firmware. The corresponding firmware file will be preloaded.



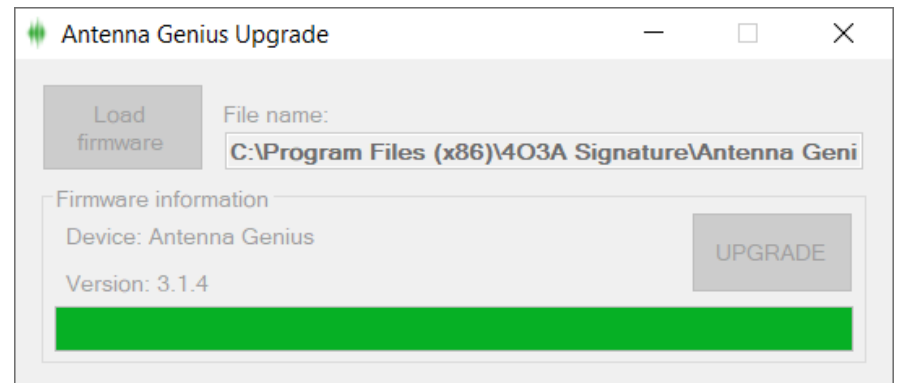
**IMPORTANT!** Make sure you are using a wired network connection between your computer and AG while upgrading. If you are using a wireless network you run the risk of bricking the device.



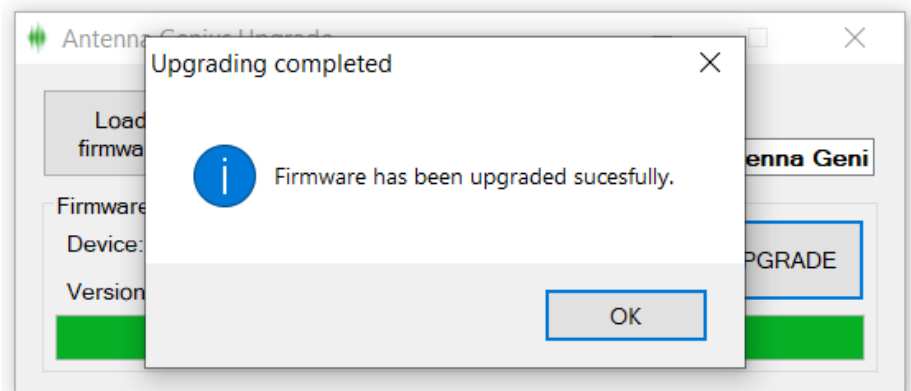
Click upgrade and wait for the process to finish.



The green progress bar will fill from left to right.



When the update is complete, you will see an Updating completed notice. Select OK.



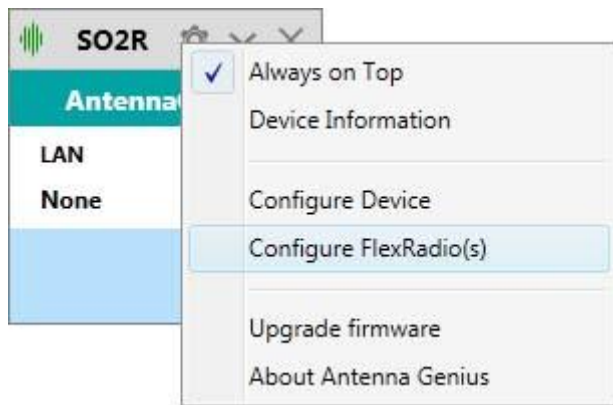
Your AG is now up-to-date!

#### 9.4. Initial Configuration

If you have selected Port A or Port B mode, your AG Control Window prior to initial antenna programming will look like this, in this example both Radio Port A and Radio Port B are using LAN mode:

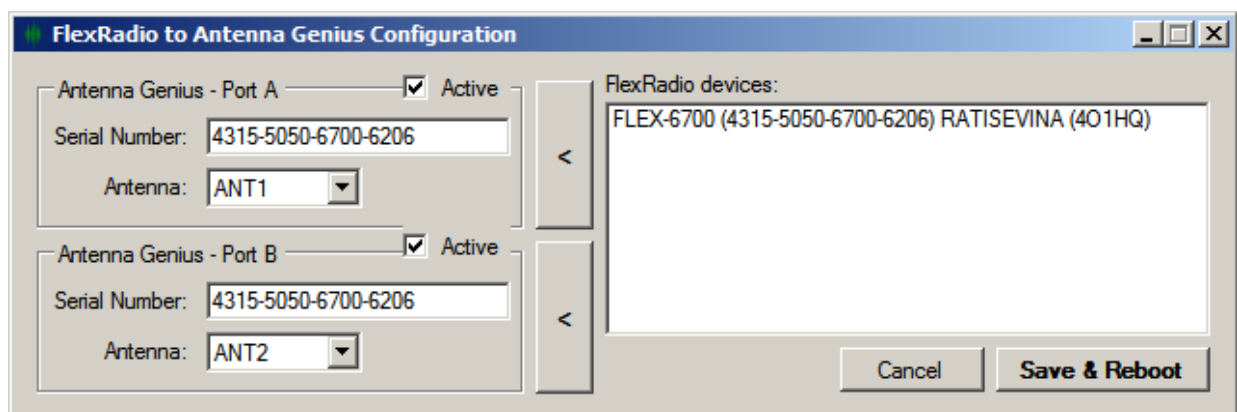


We will connect to a FlexRadio in this example. Select “Configure from the Gear icon menu.



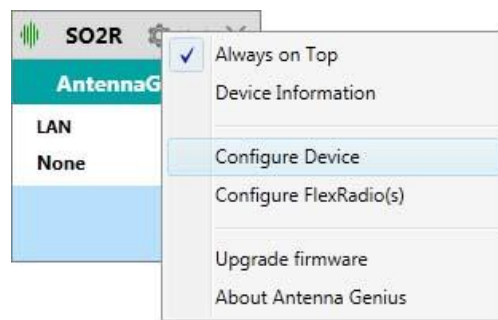
From version 3.0.3 you don't bind to slices, but to antenna ports instead. This allows you to utilize the slice concept to the maximum.

All the FLEX-6000 Signature Series radios on your LAN should appear under FlexRadio devices. If you have a single FLEX-6000 Signature Series radio on your network, as most users will, it's simple: select it and then select the < button for both Port A and Port B and then tick the Active box for both ports. The Serial Number reported here is from your radio.



If you have more than one FLEX-6000 Signature Series radio on your network, select the appropriate radio to link to this AG.

Click save and let's see the Antenna Genius settings:



Ignore the GSD Band Data info, it's not relevant for most FLEX-6000 Signature Series users. The Network configuration can also be ignored in this step if you are running in the default DHCP mode. See Section 9.1.4. for information on manually setting the AG network address.

**EXPERT TIP!** “network address” and “IP address” refer to the same thing and are used interchangeably in this document

Now it's time to program your antenna-band assignments. Select Configure Device from the Gear icon menu:

 A screenshot of the 'Antenna Genius Configuration' window. The window has several sections:
 

- Basic information:** Fields for G (1), ID (1), and Name (AntennaGenius). Buttons for 'Configure Bands' and 'Configure Stack'.
- Network configuration:** A checked 'DHCP' checkbox. Fields for IP Address (192.168.001.140), Subnet (255.255.255.000), and Gateway (192.168.001.001).
- GSD Band data:** Tabs for 'Port A' and 'Port B'. Fields for IP Address (192.168.001.130) and Port (9000). A 'Selected radio' dropdown menu set to 'Radio A'.
- Special features:** Checkboxes for '2xAG with OM control' and 'Disable Band Protection'.
- Output(s) Configuration:** A table with 8 rows. Each row has an index, an 'Antenna name', and 'Bands'.
 

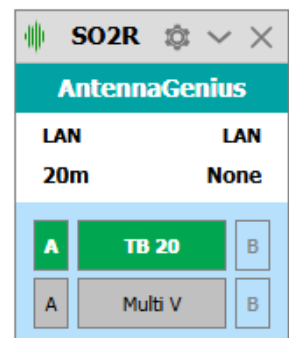
	Antenna name:	Bands:	
1	160 inv V	160m	[icon]
2	80 RX BEV	80m	[icon]
3	80 GP	80m	[icon]
4	40 3L	40m	[icon]
5	7B ant	40m, 30m, 20m, 17m, 15m, 12n	[icon]
6	Dipole 40M	40m	[icon]
7	15M 5L	15m	[icon]
8	10M 5L	10m	[icon]

 At the bottom are buttons for 'Reboot device', 'Cancel', and 'Save and Reboot'.

Fill in your antenna info giving each antenna a unique name up to ten alphanumeric characters long including spaces. For each antenna, select the applicable band or bands that are usable with that particular antenna.

You can have multiple antenna options for a particular band; for example, in the set-up above “Multi V” is a wideband vertical usable on 20 through 10 meters and can therefore be selected by clicking on the A or B buttons if not first automatically selected by AG.

When there is more than one antenna available for a particular band, AG will return to the last antenna used for that band when that band is selected.



The ‘None’ option in the Band selector allows selection of an antenna for use outside of the ham bands, for example, a long wire to be used to listen to WWV or shortwave broadcast stations.

After you’re done programming your antenna and band connections, select Save and Reset, AG App will write your antenna-band logic to your AG. The Reset device button re-sends the current antenna-band data to AG.

## 10. OPERATION

AG can operate both locally and remote.

Locally, it is the part of your own LAN and the most common

Remotely, AG is part of another network. It is up to you to choose how to access to that other network. The common way is to use VPN. Remote AG does not require remote PC.

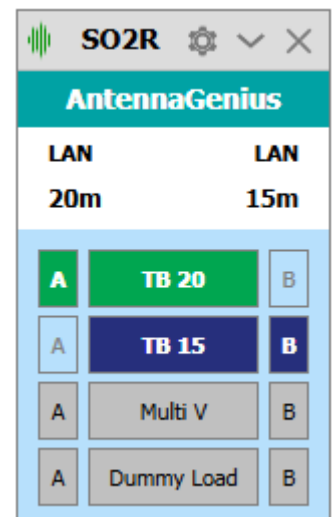
### 10.1. Local (LAN) operation

After programming your AG antenna-to-band associations, you are ready to go! If the FlexRadio is not running your Control window will look like this with no antennas selected for either port:



Turn on your FlexRadio and AG should read the current Slice band data.

In the example to the right, Antenna A is connected to AG Port A and Antenna B is connected to Port B. Slice A is on 20m thus AG identifies the three antennas that have been assigned to 20m: the currently selected antenna, a Tri-Bander for 20M, by filling the TB 20 **A** box in green. The two other 20m antenna options, a multi-band vertical Multi V and Dummy Load, are indicated by grey **A** boxes. You can move between the 20m antenna options by selecting the applicable **A** box. You cannot select antennas which have not been activated for the band in question.

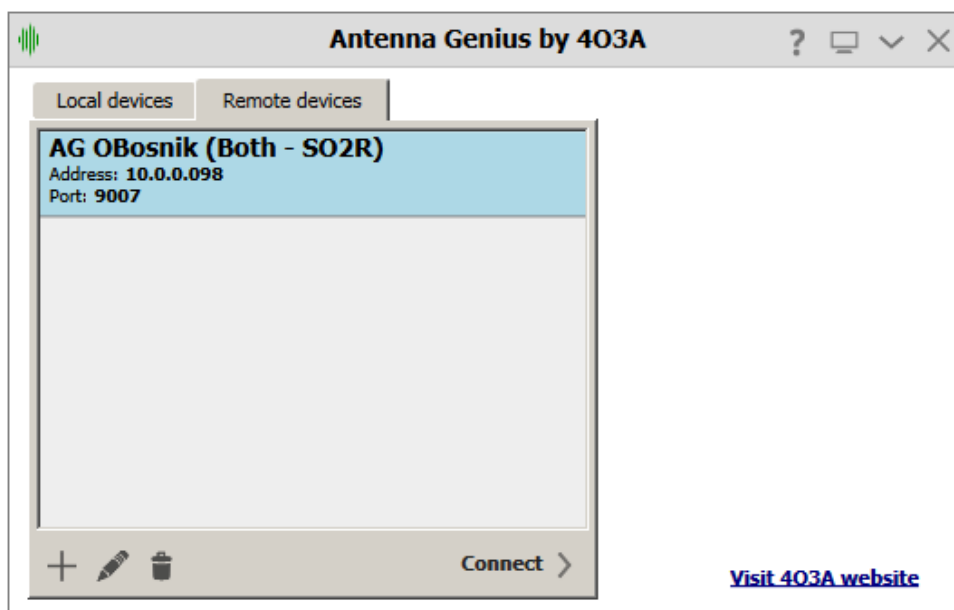


You also cannot select the antenna being used on the other port even if it is activated for the band you are using, this protects your radio from possible front-end damage. However, this protection can be overridden by settings in Special Features, see chapter 11.1 below.

## 10.2. Internet (WAN) remote operation

You can currently use AG over WAN by using a VPN (Virtual Private Network). Google “VPN” if you want more info on this topic.

Expanded support of WAN operation is planned for future AG firmware and software updates.



## 11. ADDITIONAL FEATURES

### 11.1. Custom Band Configuration

In the configuration window, click the **Configure Bands** button.

Band Configuration dialog will pop-up.

You can manually tweak and adjust any band frequency range. Four new custom bands reserved for non-standard bands.

If you have multiple overlapping frequency ranges, the first port will always be selected.

These settings are saved in the main configuration file. Press **Accept**, then **Save & Reboot** to apply changes.

Band	Frequency Range (MHz)	Start (MHz)	End (MHz)
1	None		
2	160m	1600000	2200000
3	80m	3300000	4000000
4	40m	6800000	7400000
5	30m	9900000	10350000
6	20m	13800000	14550000
7	17m	17868000	18368000
8	15m	20800000	21650000
9	12m	24690000	25190000
10	10m	27800000	29900000
11	6m	49800000	52200000
12	60m	5000000	6000000
13	Custom 1	0	0
14	Custom 2	0	0
15	Custom 3	0	0
16	Custom 4	0	0

Accept Cancel

### 11.2. Output Module Relay Control

You can now control our OM modules, originally designed for Station Genius. OM Module is actually a relay switching board, with 16 pairs of outputs.

#### 11.2.1 Output Module Hardware

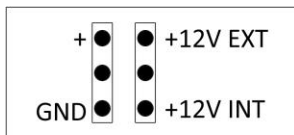
Outputs P1A and Outputs P1B are different contact of DPDT relays. Each port can be used **differently** to supply internal 12V (not recommended), any external voltage, or GND.

In other words:

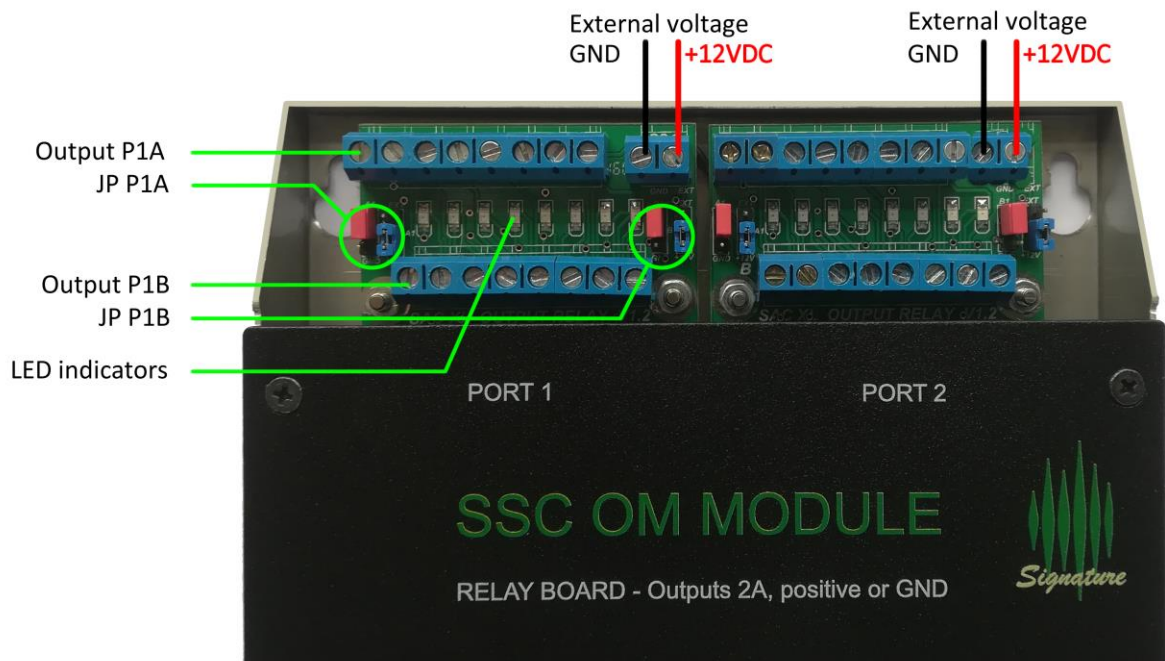
- Every logical output (Outputs labeled 1,2,3... in software/on the sticker) has two physical outputs (P1A, P1B).
- This is to enable switching of two separate independent devices.
- These two physical outputs can be configured differently.
- Either one of them can be set to internal +12V, external voltage or GND.

Port 2 outputs, pinout, jumpers are the same as for Port 1.

If you select GND as output control signal, position of EXT/INT jumper doesn't matter.



JP P1A, P1B, P2A, P2B settings



Internal voltage is used for testing and programming, and it is strongly recommended to use proper external power supply and set jumpers to EXT. Internal power supply in AG is 1A, which is on the margin if all relays are in use.

### 11.2.2 Output Module Connection

Connect your OM module to the OM module connector at the bottom panel of AG. Use a straight 9 pin RS232 cable.

### 11.2.3 Software configuration

Click on the OM configuration button next to one of the antennas.

**Antenna Genius Configuration**

**Basic information**

G:  ID:  Name:

**Network configuration**

☒ DHCP

IP Address:

Subnet:

Gateway:

**GSD Band data**

Port A  Port B

IP Address:  Port:

Selected radio:

**Special features**

☐ 2xAG with OM control

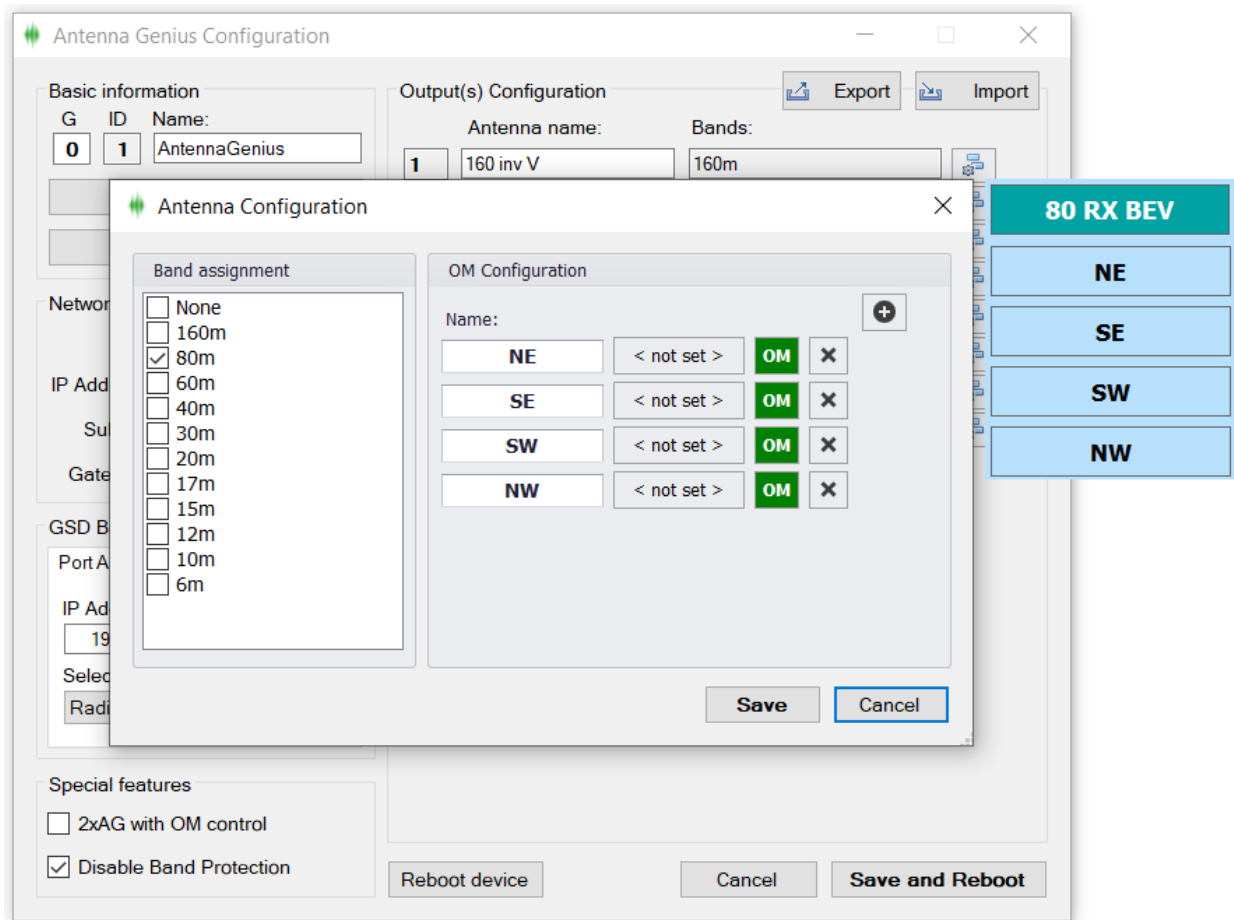
☒ Disable Band Protection

**Output(s) Configuration**

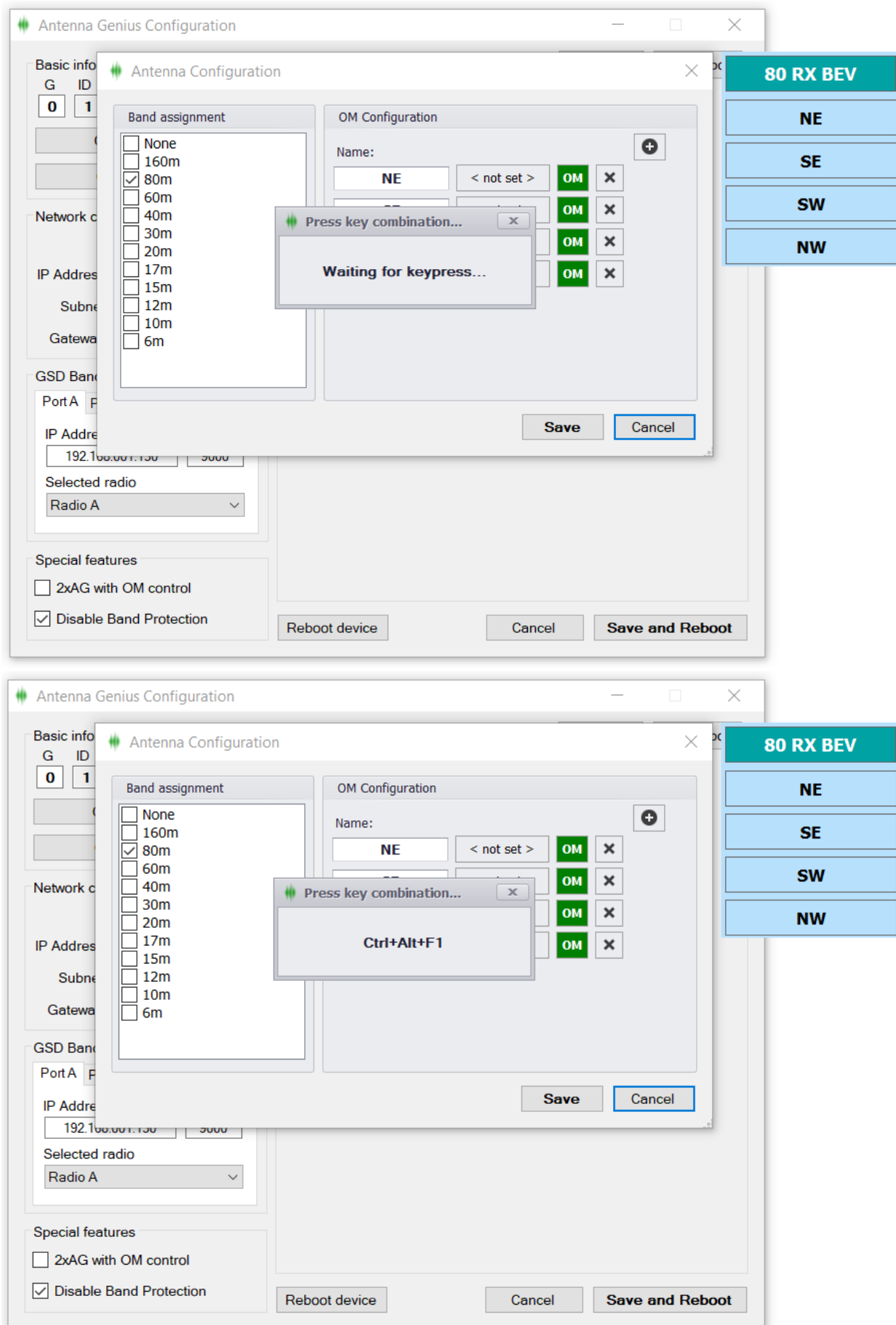
	Antenna name:	Bands:	
1	160 inv V	160m	
2	80 RX BEV	80m	
3	80 GP	80m	
4	40 3L	20m, 17m, 15m, 12m, 10m, 6m	
5	7B ant	40m, 30m, 20m, 17m, 15m, 12m	
6	Dipole 40M	40m	
7	15M 5L	15m	
8	10M 5L	10m	

You will enter a new menu. You can use the + button (top right corner) to add buttons, and x to remove buttons (right most button in the antenna entry). You can name your OM entries by typing them into the textbox.









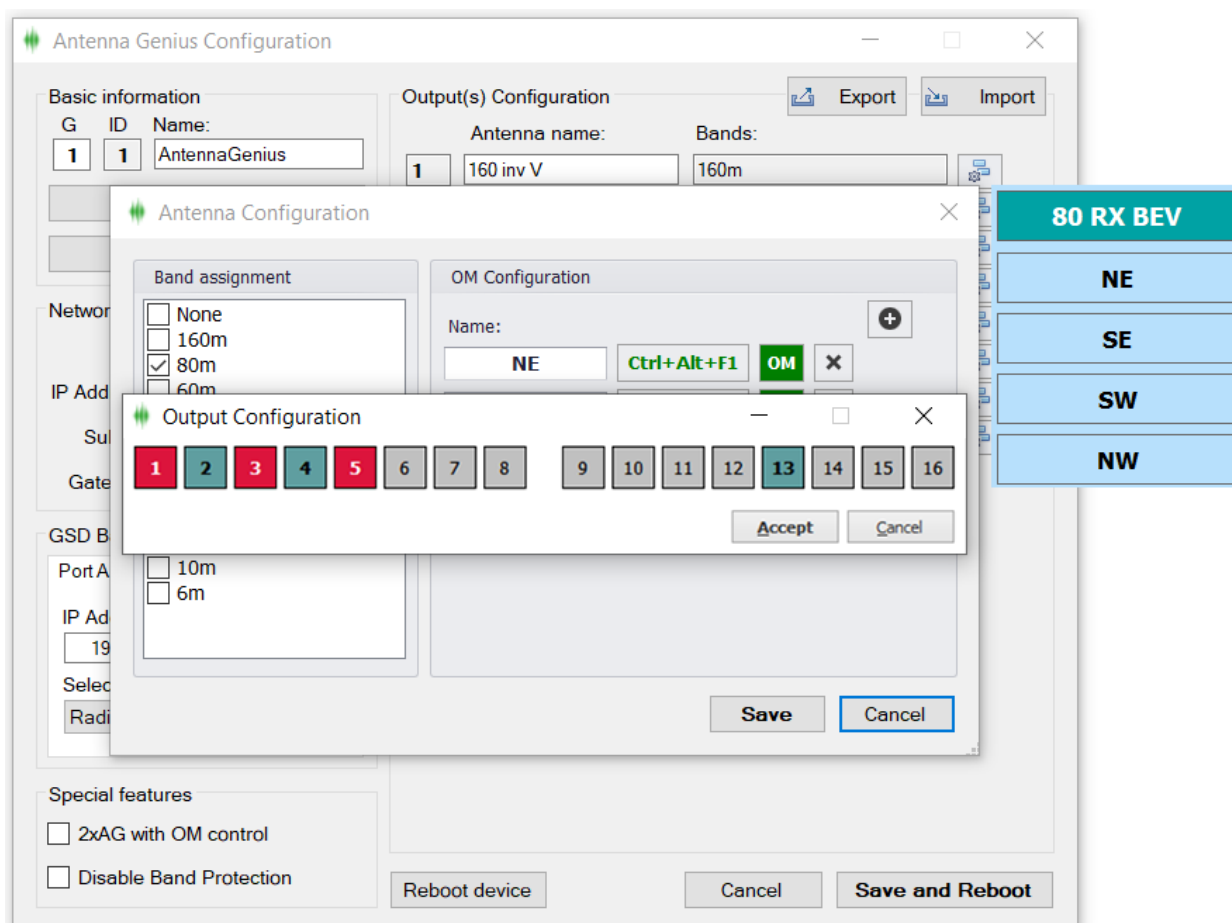
The < not set > field to the right is for the keyboard shortcut. Click to set. Set it, for example, to Ctrl + Alt + F1. Press Enter to confirm.



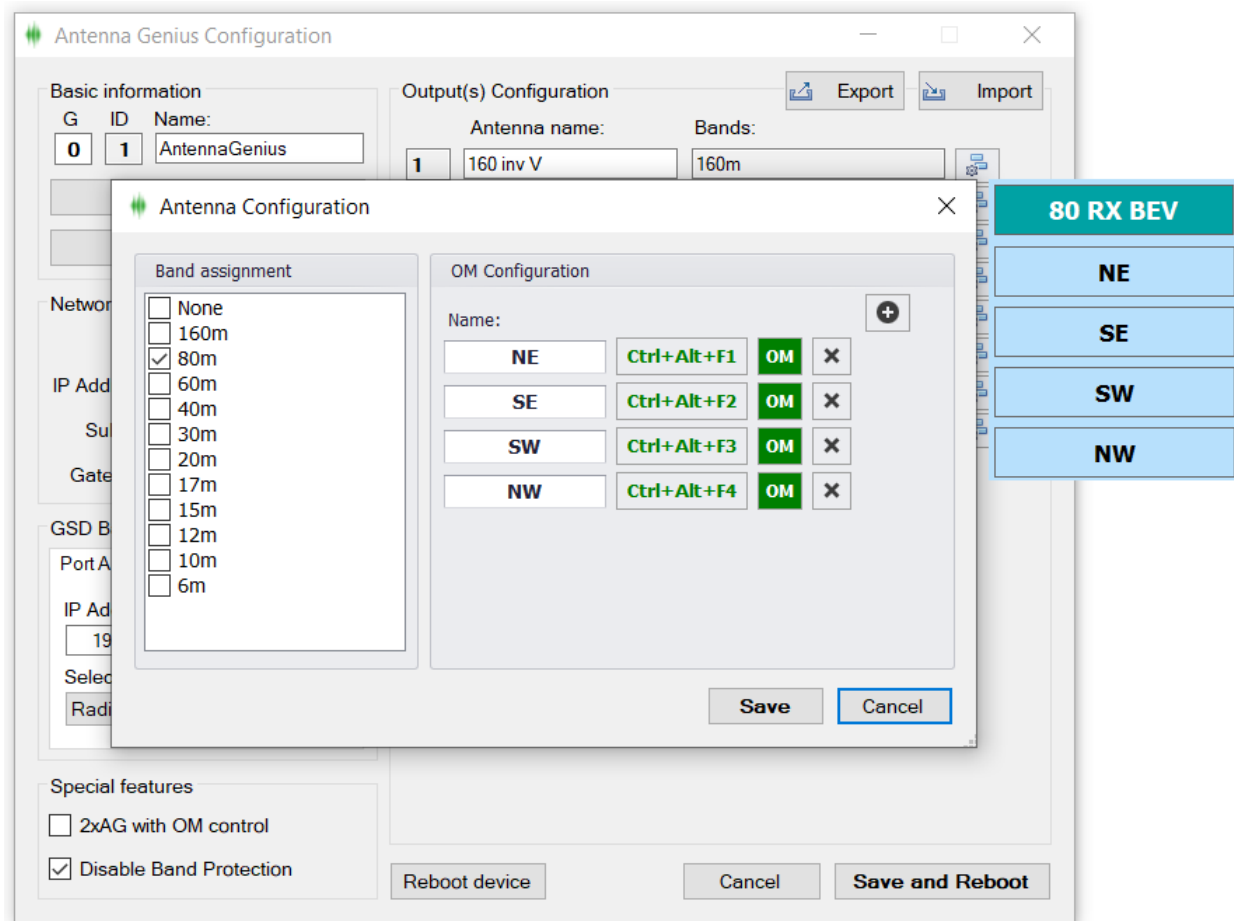
Click the OM button to set the relays you wish to control. You toggle states by clicking on the output icon. There are three possible states:

	Not used by the button.
	Turn off this output.
	Turn on this output.
	Light gray is notification that pin is already configured in another OM entry. One pin can be configured in multiple entries.

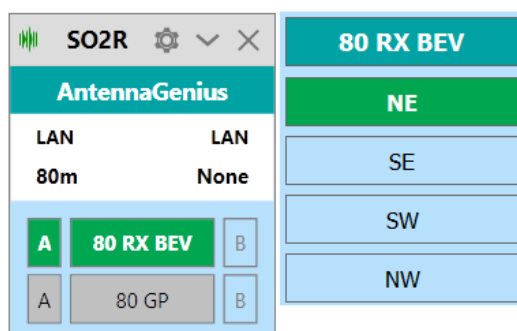
Click **Accept** when done.



Repeat the process. It should look something like this in the end.



Press **Save**, then **Save and Reboot**. Next time this antenna is selected, a window will appear as well.



### 11.3. Special features – Disable Band Protection

The image shows the 'Antenna Genius Configuration' window. The 'Basic information' section has 'G' set to 0, 'ID' set to 1, and 'Name' set to 'AntennaGenius'. The 'Network configuration' section has 'DHCP' checked, 'IP Address' set to 192.168.001.140, 'Subnet' set to 255.255.255.000, and 'Gateway' set to 192.168.001.001. The 'GSD Band data' section has 'Port A' selected, 'IP Address' set to 192.168.001.130, 'Port' set to 9000, and 'Selected radio' set to 'Radio A'. The 'Special features' section has '2xAG with OM control' unchecked and 'Disable Band Protection' checked (highlighted with a red box). The 'Output(s) Configuration' section shows a table of 8 antennas with their names and bands. The 'Export' and 'Import' buttons are at the top right. The 'Reboot device', 'Cancel', and 'Save and Reboot' buttons are at the bottom.

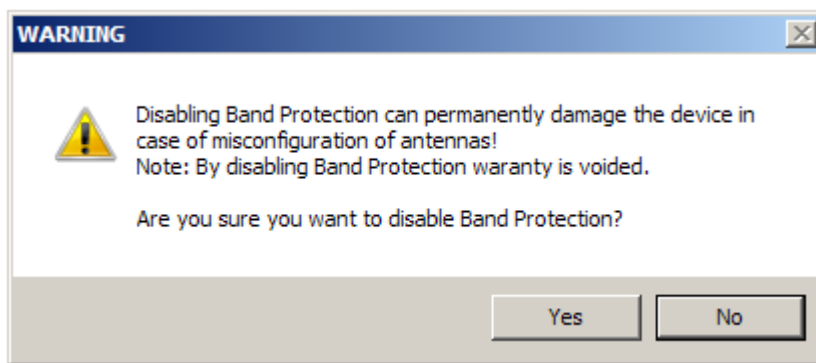
	Antenna name:	Bands:
1	160 inv V	160m
2	80 RX BEV	80m
3	80 GP	80m
4	40 3L	20m, 17m, 15m, 12m, 10m, 6m
5	7B ant	40m, 30m, 20m, 17m, 15m, 12m
6	Dipole 40M	40m
7	15M 5L	15m
8	10M 5L	10m

By default, AG comes with band interlock which prevents AG to have the same antenna on both A and B ports.

However, it is possible to override this setting by enabling it in Special Features of Antenna Genius Configuration.

**GENIUS WARNING!** Disabling Band protection can permanently damage the device in case of configuring of antennas! Use at your own risk. By disabling Band Protection the warranty is voided.

Tick checkbox “Disable Band Protection” and confirm that you understood that your device might be permanently damaged in case of misconfiguration of antennas.



#### 11.4. Special features – 2xAG with OM control

**Antenna Genius Configuration**

Basic information

G ID Name:  
0 1 AntennaGenius

Configure Bands

Configure Stack

Network configuration

☒ DHCP

IP Address: 192.168.001.140

Subnet: 255.255.255.000

Gateway: 192.168.001.001

GSD Band data

Port A Port B

IP Address: 192.168.001.130 Port: 9000

Selected radio  
Radio A

Special features

☒ 2xAG with OM control

☐ Disable Band Protection

Output(s) Configuration

Antenna name: Bands:

1	160 inv V	160m	
2	80 RX BEV	80m	
3	80 GP	80m	
4	40 3L	20m, 17m, 15m, 12m, 10m, 6m	
5	7B ant	40m, 30m, 20m, 17m, 15m, 12m	
6	Dipole 40M	40m	
7	15M 5L	15m	
8	10M 5L	10m	

Reboot device Cancel Save and Reboot

You can use one OM module and one 8xAB switch to merge two AGs into a system and share 8 antennas between 4 different work stations/radios.

Antennas are connected to AG#1 through the 8xAB switch.

The OM module is connected to AG#2. Configure OM module to use Port1A signal outputs +12VDC, which will be used for 8xAB switch. Open AG Configuration Settings and check “2xAG with OM control”. Click on Save and Reboot.

More details about OM Module configuration in chapter 11.2.

When we want to use particular antenna on AG#2, simply choose antenna input on AG#2 (manually, band data) and the OM module will switch the desired antenna on AG#2. Note that antenna switching will occur without any condition or interlock. AG#1 will lose that antenna momentarily.

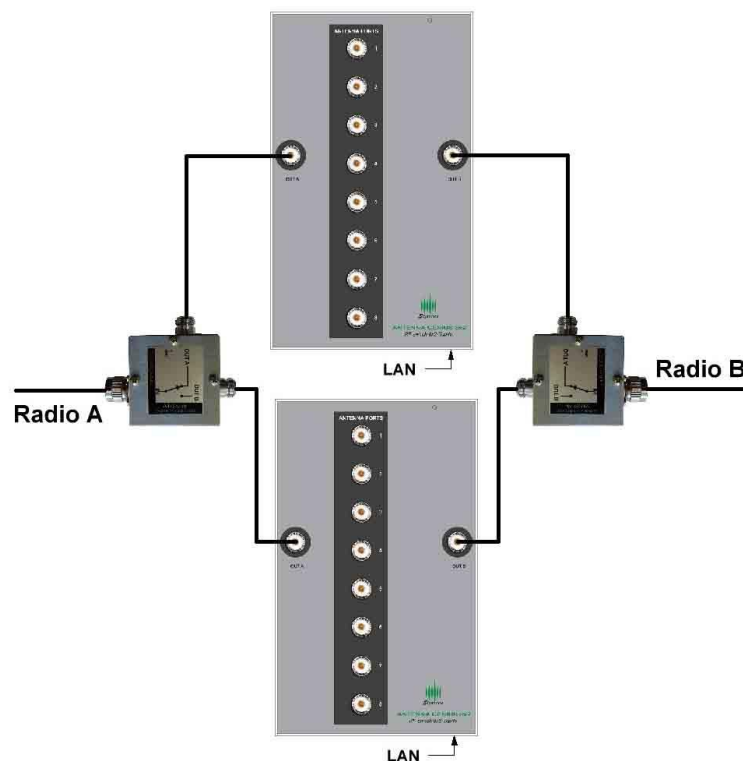
**GENIUS WARNING!** Coordinate your activity. You can switch-off antenna from AG#1 even if that antenna is in use!

### 11.5. Stacking multiple AGs into a superswitch by AB switches

You can now combine multiple 8x2 v2 Plus units for 16x2, 24x2, and even 32x2 switching capability.

Implemented with a **Master / Slave** design. Once you configure the system you will be connecting to the Master unit. It will be in charge for the overall logic of the system.

In the simplest scenario configuration, we use two AG 8x2 v2 Plus units and two 403A AB Switches to create 16x2 switch.



Stack of two AG - 16 antennas to two radios

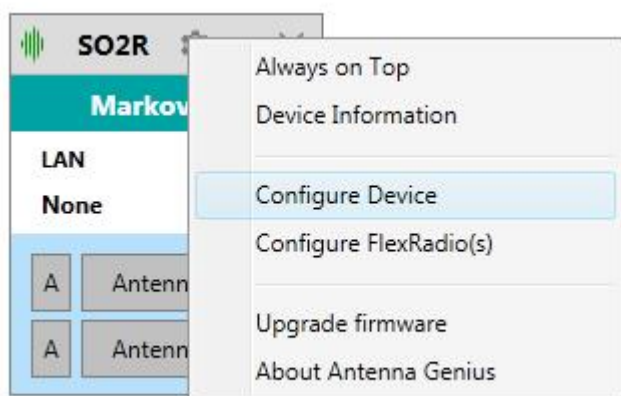
First, we need to configure the top device as a **Master** device. It is the one taking over control and the one we will be connecting to. It hosts the main configuration file.

There is only one configuration file for a stack configuration.

The bottom device will be configured as a **Slave** device. It will be standing by for commands.

Keep the bottom device powered off to make sure you're connected to the right one.

Connect to the top device, click the Gear icon and select **Configure Device**.





Notice the G and ID numbers in the top left corner. We will set Group as 1 and ID as 1 for this unit.

You can change the Group ID by editing it directly in the app.

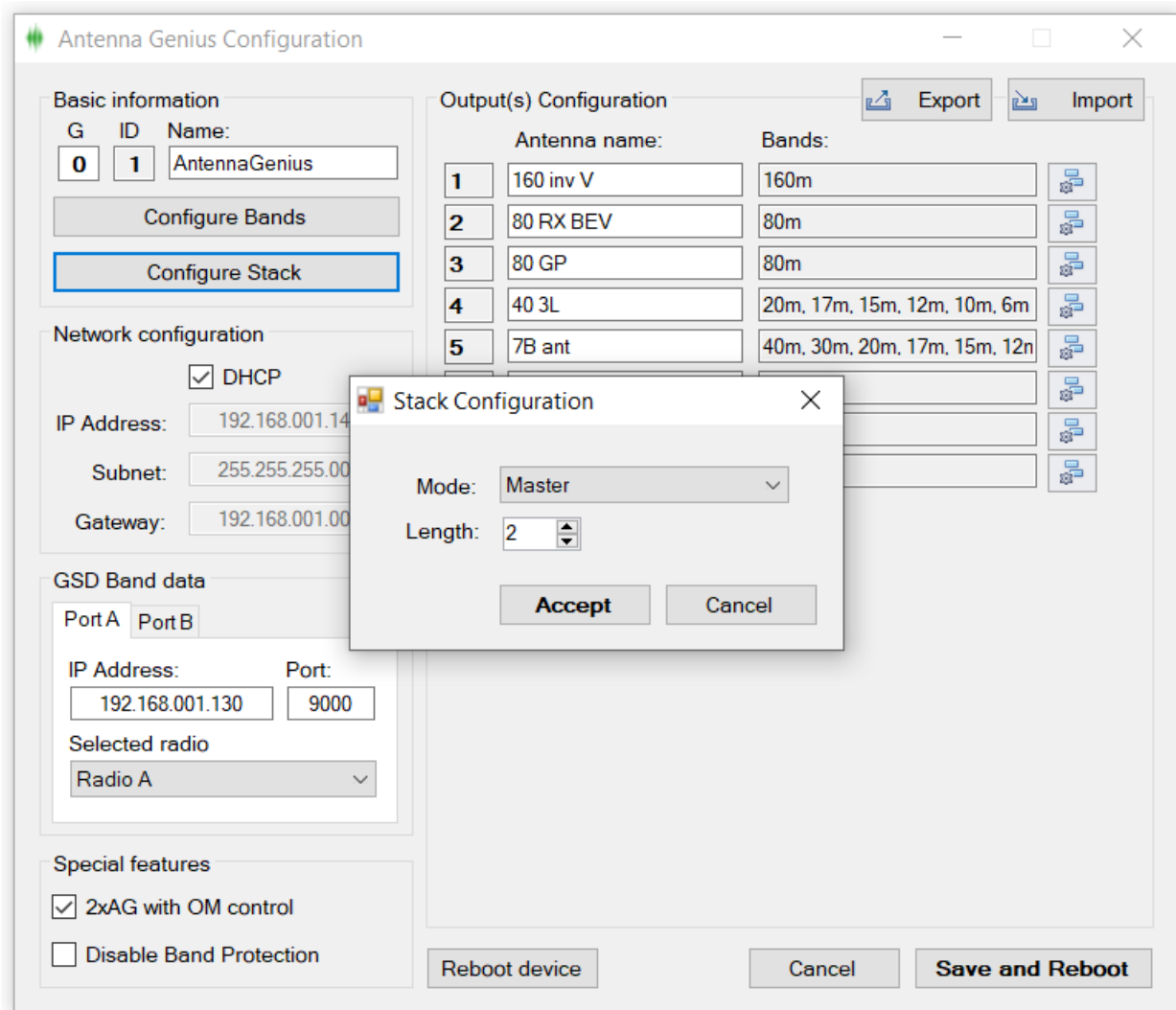
You change the ID by setting DIP switches on the device. To set ID as 1, set DIP 5, DIP 6 to **OFF**.

Click the **Configure Stack** button in the upper left corner:

The image shows the 'Antenna Genius Configuration' window. The 'Basic information' section has 'G' set to 0, 'ID' set to 1, and 'Name' set to 'AntennaGenius'. The 'Configure Stack' button is highlighted with a red rectangle. The 'Network configuration' section has 'DHCP' checked, 'IP Address' set to 192.168.001.140, 'Subnet' set to 255.255.255.000, and 'Gateway' set to 192.168.001.001. The 'GSD Band data' section has 'Port A' and 'Port B' tabs, 'IP Address' set to 192.168.001.130, 'Port' set to 9000, and 'Selected radio' set to 'Radio A'. The 'Special features' section has '2xAG with OM control' checked and 'Disable Band Protection' unchecked. The 'Output(s) Configuration' section has a table with 8 rows, each with an antenna name and a list of bands. The 'Reboot device', 'Cancel', and 'Save and Reboot' buttons are at the bottom.

	Antenna name:	Bands:
1	160 inv V	160m
2	80 RX BEV	80m
3	80 GP	80m
4	40 3L	20m, 17m, 15m, 12m, 10m, 6m
5	7B ant	40m, 30m, 20m, 17m, 15m, 12m
6	Dipole 40M	40m
7	15M 5L	15m
8	10M 5L	10m

Set Mode to Master, and Length to 2 (total number of AG's in the stack). Click **Accept**, then **Save and Reboot**.



The device will reboot and reconnect. When you back to the configuration menu, you will see 16 antenna entries.

You will configure it in the exact same way as the 8x2 switch, but first let's configure the Slave device.

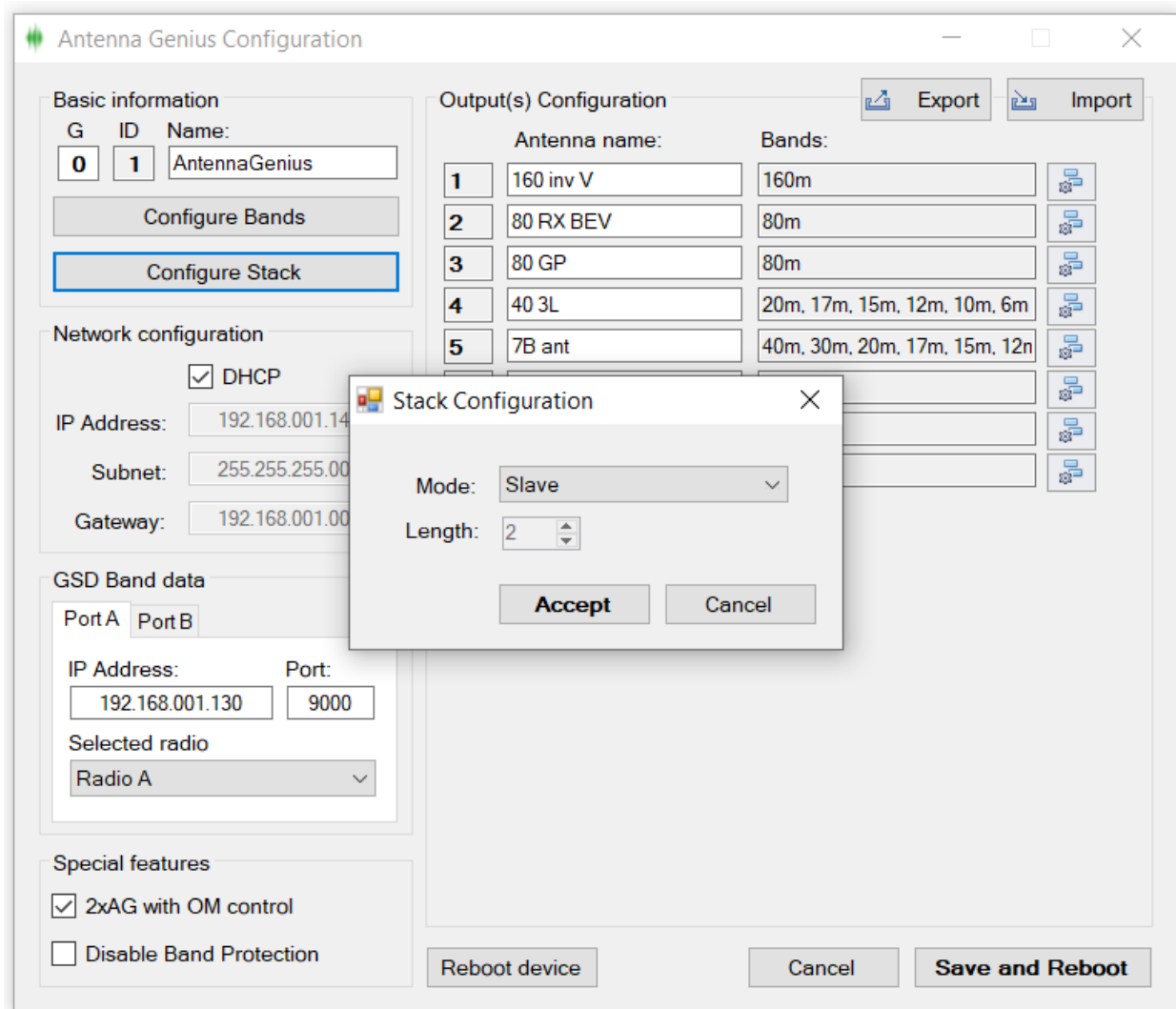
Disconnect from the Master unit. Power it off.

Power on the Slave unit. Connect to it.

Configure the mode to Slave.

Set the Group as 1 by editing it directly from the app.

Change the ID by setting DIP 5 to **ON**, DIP 6 **OFF**. Press **Accept**, then **Save and Reboot**.



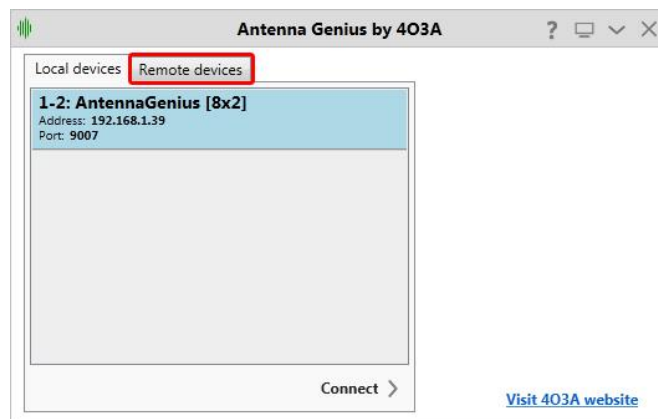
Power on both of the devices, connect to the first AG.

Configure your antennas and enjoy your new super switch.

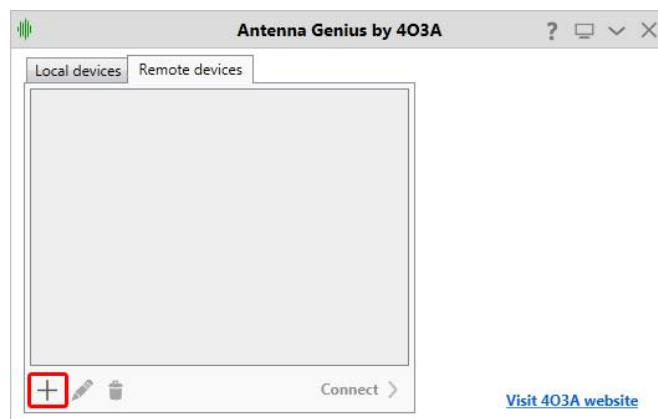
## 11.6. Auto connect on startup

You can configure your AG shortcut to skip the discovery screen and connect to your AG directly. This is most useful if you want to put this shortcut in the startup folder or just to shave off those few seconds when opening the app.

Step 1: Click on Remote devices tab.



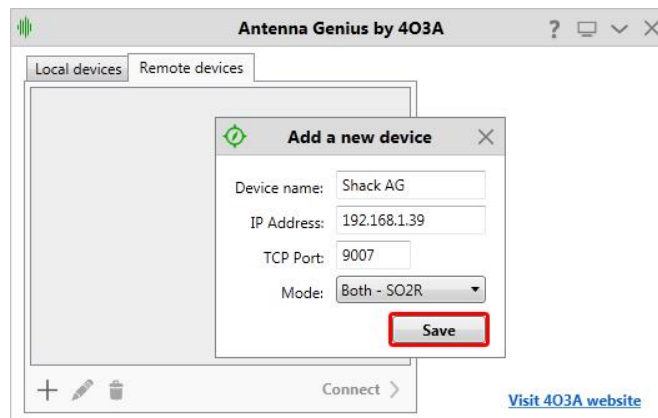
Step 2: Add an entry for your AG.



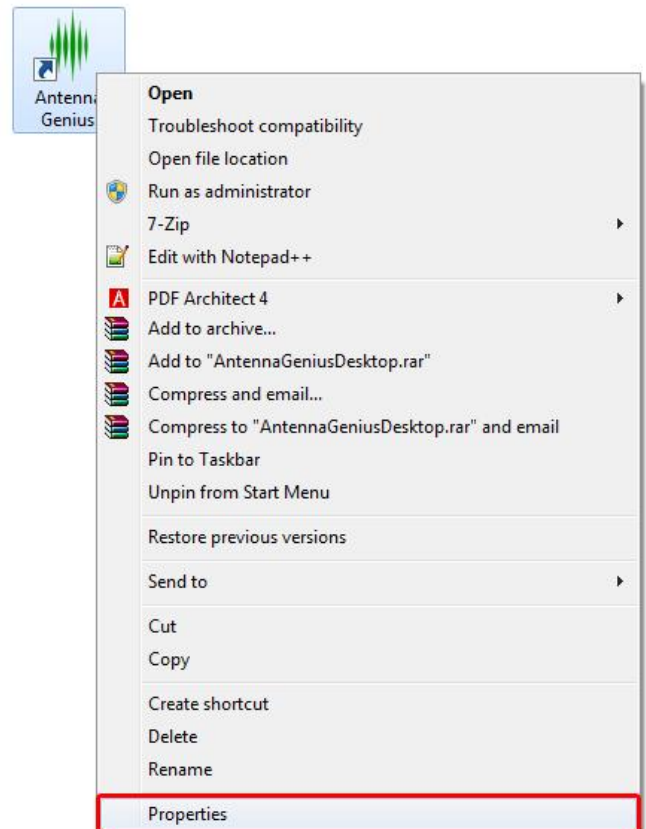
Step 3: Name it, enter the correct IP address. TCP port is most likely going to be the default 9007 value.

Specify the mode you want to use.

Click Save when done.



Step 4: Right click your AG shortcut and select Properties.

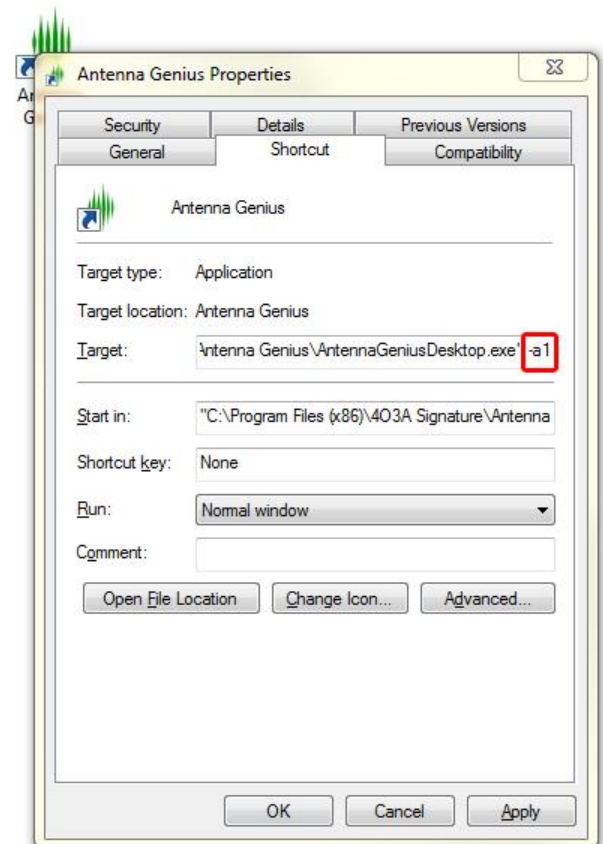


Step 5: In the target textbox, add -a1.

“-a” is the argument for connecting automatically.  
 “1” is the entry number. If you have only one remote entry use this. If you have multiple entries specify the one you want to connect to (2 for second entry, 3 for third etc.).

Click OK when done.

Next time you open the shortcut you will be automatically connected.



## 12. TROUBLESHOOTING

### 12.1. Re-riving a bricked device

The most typical scenario of bricking an AG is interrupting a firmware upgrade or failing a firmware upgrade due to a bad network connection.

AG features a bootloader software enabling you to reinstall the firmware at any time.

The bootloader uses a fixed IP address – 192.168.1.250 so make sure your network is using the same subnet.

Follow these steps to take to reinstall firmware on a bricked device:

1. remove DC power from AG
2. move DIP 8 to ON position
3. turn DC power back on
4. Open the app, add a new device in the remote tab
5. set name to anything and the address to 192.168.1.250. Click **Save**
6. connect to this device
7. the app will keep saying "unable to connect". Don't worry, this is expected
8. click **Configure**, then in the drop down menu choose **Upgrade firmware**
9. click **UPGRADE**
10. wait for the progress bar to fill up
11. move DIP 8 to to OFF position
12. remove DC power from AG
13. turn DC power back on

## 13. CHANGELOG

This log is not exhaustive, but covers the significant changes between versions.

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Acronyms:

AG - Antenna Genius

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App v3.1.4 Release 15-Jul-2020

Firmware version: v3.1.4  
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Firmware:

#34 Connecting to two separate FlexRadios now works correctly.

Windows app:

#33 OM output window bug fixed.

#32 Disconnect window label fixed.

#31 FlexRadio discovery protocol bug that crashed the app in some cases fixed.

#30 "Drive 4x stack with OM" label changed to "2xAG with OM control"

#29 OM buttons remember their location correctly.

#28 Uptime logging has been fixed.

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App v3.1.2 Release 17-Sep-2019

Firmware version: v3.1.2  
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Firmware:

#027 Option to disable band checks is added (Enables use of inband station and diversity reception).

#026 Support for special OM for AB switches is added (4x32 stack is possible).

#025 Direct connection from AG to Flex is enabled (instead through application) for getting band data.

#024 Support for Flex 3.0 is improved.

#023 Stack stability is improved.

#022 New version of the TCP/IP stack used.

#021 Some unused features were removed.

Windows app:

#020 OM window "Always on top" functionality can now be turned off

#019 OM profile configuration for antenna 8 is fixed.

#018 Uptime will now count days correctly.

#017 Configuration will no longer be corrupted in case the antenna is named nothing (no characters).

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App v3.0.8 Release 10-Apr-2019

Firmware version: v3.0.8  
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#016 PTT IN/OUT protection support for AG 8x2 v2+

#015 Fixed the bug with the discovery protocol that sometimes happens with multiple AG's on the network.

#014 Stacking support for AG8x2 v2+

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App v3.0.6 Release 12-Dec-2017

Firmware version: v3.0.4  
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#013 Changed the import/export configuration buttons.

#012 Fixed the bug that crashes the configuration when an antenna has no name.

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App v3.0.4 Release 11-May-2017	Firmware version: v3.0.4
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#011 The app now automatically detects the AG hardware model. 8x1 users won't get the .A/B/SO2R. option anymore.

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App v3.0.3 Release 02-Feb-2017	Firmware version: v3.0.0
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#009 Added the firmware file to the app.  
#010 Added automatic discovery.

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App v3.0.1 Release 08-Sep-2016	Firmware version: v3.0.0
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#007 Fixed a bug regarding custom bands.  
#008 Latest firmware file now comes included in the app installation, enabling easier firmware upgrades.

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App v3.0.0 Release 31-Aug-2016	Firmware version: v3.0.0
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#0004 Stacking: Ability to combine multiple 8x2 Plus AGs for 16x2, 24x2, and even 32x2 switching capability. Available only on the plus models.

#0005 Output Module Control: Ability to switch 16 accessory OM (Output Module) relays, available on the 8x1 Plus and 8x2 Plus models.

#0006 Three user programmable bands: can be any of range of frequencies supported by your transceiver, plus each of the ham band edges can now also be user programmed.

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App v2.0.2 Release 04-Apr-2016	Firmware version: v2.0.0
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#0002 Application now accepts "-a<number>" command line argument for auto connecting on startup, skipping the main window.  
Example: "AntennaGeniusDesktop.exe -a1" connects to the first item on the list, "AntennaGeniusDesktop.exe -a5" connects to the fifth item on the list, etc.

#0003 You can now import / export antenna configurations, making it easier to swap between setups.

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App v2.0.1 Release 24-Mar-2016	Firmware version: v2.0.0
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#0001 The app now reconnects to the FlexRadio after FlexRadio has been shut down and turned back on.

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App v2.0.0 Release 11-Mar-2016	Firmware version: v2.0.0
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This version is completely rewritten from scratch.