HamSphere 4.0

BAND SCANNER

User Manual
V.1.0

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1. Introduction and Features

The Band Scanner plugin allows you to have your HamSphere 4.0 Transceiver actively searching for signals even while you are busy doing other things on or near your computer. This is one of the most feature-rich plugins currently available for HS 4.0. The features include:

- Scans from one to all fifteen bands. You pick which ones to scan.
- Can scan an entire band in 5 seconds.
- Mutes the receiver while scanning to give you "static free" scanning. When it finds a signal it un-mutes the receiver so you can hear it.
- Scans for signals on all frequencies across the entire band, tuning to the nearest 1Khz step when a signal is found.
- You see your LCD, Band Scope, Waterfall, etc. sweeping across the bands as the scanner searches each 5Khz segment.
- 20 LEDs show each 5Khz segment as you sweep across the band.
- Individual segments of bands can be disabled by clicking on the LED so that you can tell the scanner to skip over beacons and other signals you don't care about.
- An LED bar meter shows the strength of any signal you are tuned to, whether scanning or not.
- An adjustable threshold knob allows you to set how strong a signal must be before the scanner will stop on it. The threshold you set can be seen on the bar meter for easy reference.
- HOLD scan mode will keep the scanner on a signal until the signal drops below the threshold for the amount of time you set with the DELAY knob.
- PAUSE scan mode will stop on the signal for the amount of time you set with the DELAY knob and then will continue scanning even if the signal is still above the threshold.

- MANUAL antenna mode will use whatever antenna you currently have selected as the scanner scans the bands you have enabled.
- PROGRAMMED antenna mode will use the antenna and azimuth that you program for each band. To program an antenna and azimuth for a band, you simply have the desired antenna and azimuth selected when you enable that band on the scanner. Every band can have a different antenna and/or azimuth if you like,and the scanner will switch to them automatically as it goes to each band.
- You can set the scanner to scan each band from 1 to 4 times before moving on to the next enabled band.

2. Getting Started with Simple Scanning

After installing the Band Scanner plugin into your custom HS 4.0 transceiver, you are just a few button clicks away from scanning.

All you need to do is to use the SCANNER BANDS buttons to enable the bands you want to scan (none are enabled by default) and then click to SCAN button to start scanning.

That's all there is to getting started on scanning! If you have multiple bands selected, the bands will be changed automatically as the scanner scans. The receiver will mute while the scanner looks for signals and will unmute when a signal above the threshold is found.

3. Stopping Scanning

There are multiple ways to end scanning mode and put your receiver back into its normal mode. Many are so intuitive that you may not even think about the fact that you've stopped the scanner, while you enjoy a contact with the station you just found.

To end scanning mode:

1) Click on the SCAN button again. The green LED on the button will go off and your receiver will no longer be in scanning mode.
2) Start transmitting (with your PTT button or VOX). The green LED on the SCAN button will go off and your receiver will no longer be in scanning mode. This makes it easy to return a call if the scanner has stopped on a station calling CQ. You don't need to do anything but start answering the CQ.
3) Change to another frequency or band. The green LED on the SCAN button will go off and your receiver will no longer be in scanning mode. This makes it easy to jump to a new frequency without having to stop the scanner first.

4. Detailed Button and Control Description

The Band Scanner is simple to use if you just want to enable some bands to be scanned and start scanning. It also has advanced features that allow you customize the scanning experience to suit your needs. There are multiple controls located around the plugin panel…

The SCANNER BANDS buttons are used to enable (or disable) bands for scanning. By default, no bands are enabled. When you click on a SCANNER BAND button to enable a band for scanning, the small green LED on the button will illuminate, telling you that particular band will be scanned when you start scanning. If you click on the button again, the green LED will to off and the band will not be scanned. The "0/15" button is a toggle to allow you to disable or enable all the bands for scanning with one button press. The yellow border around a button (The "BC" button in the picture above) tells you what band your HS 4.0 transceiver is currently using.
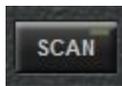
The SCAN button starts (and stops) scanning. When scanning is active, the small green LED on the SCAN button will illuminate. Note that if you have not enabled any bands for scanning with the SCANNER BANDS buttons then the scanner will simply beep and the green LED on the SCAN button will go back off. Make sure you have enabled some bands for scanning before starting the scan.

The "SCANNER SEGMENTS" LEDs are used to show which 5KHz segment of the band you are currently listening to or scanning (green LED) and which, if any, 5KHz segments of a band are currently disabled from being scanned (red LEDs). To disable a segment from being scanned (for instance, if there is a beacon or on-going QSO in that segment and you don't want the scanner to stop on that signal), you simply click on the LED for that segment. If you have disabled multiple

segments in a band and you want to re-enable all the segments easily, you can use the CLEAR button to clear all the RED LEDs and re-enable all segments for scanning.

The THRESHLD (Threshold) knob and signal meter are used to set how strong a signal must be in order for the scanner to stop on it. The green LEDs on the signal meter show the strength of the received signal, whether you are in scanning mode or not. The yellow LED on the signal meter shows where your scanner signal threshold is currently set. The THRESHLD knob allows you to set the signal threshold (yellow LED) to a lower (weaker) or higher (stronger) signal threshold. If you find that the scanner is never stopping on signals that are strong enough to clearly hear, then you may want to turn the signal threshold down. If you find that the scanner is stopping on signals that are too weak to easily understand, then you may want to turn the signal threshold up.

The SCAN MODE buttons select whether the scanner will stay on a signal as long as the signal stays above the signal threshold (HOLD mode) or will go back to scanning after it has stopped on the signal for a period of time (PAUSE mode).

The DELAY knob sets the time (in seconds) that the scanner will HOLD or PAUSE on a signal. When the SCAN MODE is set to HOLD, the delay setting determines how many seconds the scanner will stay on a frequency before moving on, **if** the signal has dropped below the signal threshold. When the SCAN MODE is set to PAUSE, the delay setting determines how many seconds the scanner will pause on the signal before moving on, regardless of the signal strength.   Note that the green LED on the SCANNER SEGMENTS display will start to flash when the scanner is 3 seconds away from moving on.   In HOLD mode, the LED will stop flashing and the delay will be reset if the signal comes back up above the signal threshold.

The REPEATS/BAND buttons determine how many times the scanner will scan a single band before moving on to scan the next band (if multiple bands are enabled for scanning). If only one band is enabled for scanning, the REPEATS/BAND buttons have no effect. Due to the time it takes for signals to settle when changing bands, especially when using the programmed antenna mode (discussed later in the manual), it is highly recommended that you scan a band at least twice before moving on to the next band.

The ANT MODE (Antenna Mode) buttons determine which antenna will be used when scanning a band. The choices are MAN (Manual) and PROG (Programmed). The effect of each setting will be discussed in the next section of the manual.

5. Antenna Modes -- Manual or Programmed

The Antenna Mode setting is perhaps the most powerful feature of the Band Scanner plugin. For users who just want to select an all-band antenna and start scanning, there is no reason to change the Antenna Mode selector from its default MAN (Manual) setting. For users who want to use their very "best" antenna for each band or who want to look for signals from different directions on different bands while scanning, the PROG (Programmed) setting gives them incredible flexibility in doing this.

The MAN (Manual) mode setting simply tells the Band Scanner to not do anything with the antenna setting. Whatever antenna you have selected with your normal antenna selector will be used by the scanner as it scans through the enabled bands. You can change the antenna and the scanner will continue to scan with the newly selected antenna.

The PROG (Programmed) mode allows the Band Scanner to automatically switch the antenna (and azimuth for directional antennas) as it switches to a new band.

To tell the Band Scanner what antenna (and azimuth for directional antennas) you want the scanner to use on a particular band, you select the desired antennas with your antenna selector and, if applicable, the azimuth on the rotator, and then you enable the band for scanning using the appropriate SCANNER BAND button.   It is the act of enabling the band with the SCANNER BAND button that programs the antenna setting in the scanner for that band . If you want to change the antenna setting that is programmed for a band which is already enabled for scanning, you can simply disable the band for scanning, make sure the antenna setting is how you want it, and then re-enable the band for scanning to program the setting.

Note that enabling a band for scanning with the appropriate SCANNER BAND button will program the scanner antenna setting for that band even if you are currently in MAN (Manual) antenna mode, but the scanner will only USE the programmed setting if you are in PROG (Programmed) antenna mode. This means that you will not lose your programmed settings when you switch back and forth between the antenna modes.

6. Recommendations on Usage

As with all other aspects of the Ham Radio hobby, HamSphere 4.0 depends on **activity** to make it fun and exciting. If all the users are just passively listening or scanning, then there will be no stations calling CQ and not much activity. The purpose of the Band Scanner plugin for HS 4.0 is **not** to make users more passive. The purpose is:

1) Make it easier to continue to use HamSphere 4.0 while you are temporarily busy doing other things on your computer (like e-mail or Facebook) or are busy doing other activities near your computer. If you are temporarily unable to call CQ or stir up HS 4.0 activity in some other way, the scanner can allow you to continue to monitor for other stations calling CQ. When the Band Scanner stops on the signal, you can then put your other activity on hold and make a contact! Who knows, it might even be with a new country that you normally wouldn't have heard because they are on at a time that you normally are not listening to the bands!

2) Make it easier to get answers to your own CQ calls. With other users who would normally not be listening to the bands while they are busy doing other things on or near their computer listening with the Band Scanner, the chances of your CQ being heard are increased. As with any time you call CQ, the best way to get heard is to make relatively long calls (repeating your CQ and callsign multiple times) with relatively short gaps between. As long as you give stations hearing you enough time to answer you, there is no reason to have long gaps of silence between your calls. The long gaps between your transmissions just give users (or Band Scanners) tuning around the band more chances to miss hearing you!

7. How-To and Demo Video

Hopefully this User Manual tells you everything you need to know to get the most out of your HS 4.0 Band Scanner plugin. If you feel like a demonstration would be good additional help, there is a YouTube video available here: https://youtu.be/11PBu32IYGc