



**BaseStation v180
and
SBS-3 Firmware v119
Release Notes**

**Version 1.2.3.180
5 August 2013**

SBS-3 Firmware L_0301_0000_0119

1. Output of I and Q data

This version of the firmware allows the SBS-3 to output I and Q data derived from SDR channel 1. This allows the SBS-3 to be used with the SDR Sharp application, which provides frequency-domain displays of the radio data from the SDR channel. The sample rate of the I and Q data is 192k samples per second, allowing a bandwidth of approximately 180 kHz to be displayed (after filtering), 90 kHz either side of the channel centre frequency.

To use this feature, you must connect to the SBS-3 using Ethernet rather than the USB port. This is because the required data rate is higher than that supported by the SBS-3's USB port.

Note - while I and Q data is being output SDR channel 1 cannot be used for other functions and Wideband FM demodulation cannot be performed. However channels 2 to 6 can be used for other functions as normal.

Please see the section below on using SDR Sharp with the SBS-3.

Changes introduced in SBS-3 Firmware L_0202_0000_0118

1. Operation of SBS-3 as a TCP/IP client

The SBS-3 can now connect as a TCP/IP client to a third party application. Please see the description under BaseStation version 178 below.

2. API problems with reading registers

Fixes a problem which prevented third party applications reading the RSSI registers using the API. Fixes also a problem with reading read-only register values when using the Register Access function with certain combinations of register op codes.

3. SBS-3 Radio Initialization Problem

Fix for a problem where the SBS-3 internal radio did not always tune properly to the last saved settings after BaseStation connected to it using USB.

4. Background Whistle on Digital Output when using Wide Band FM

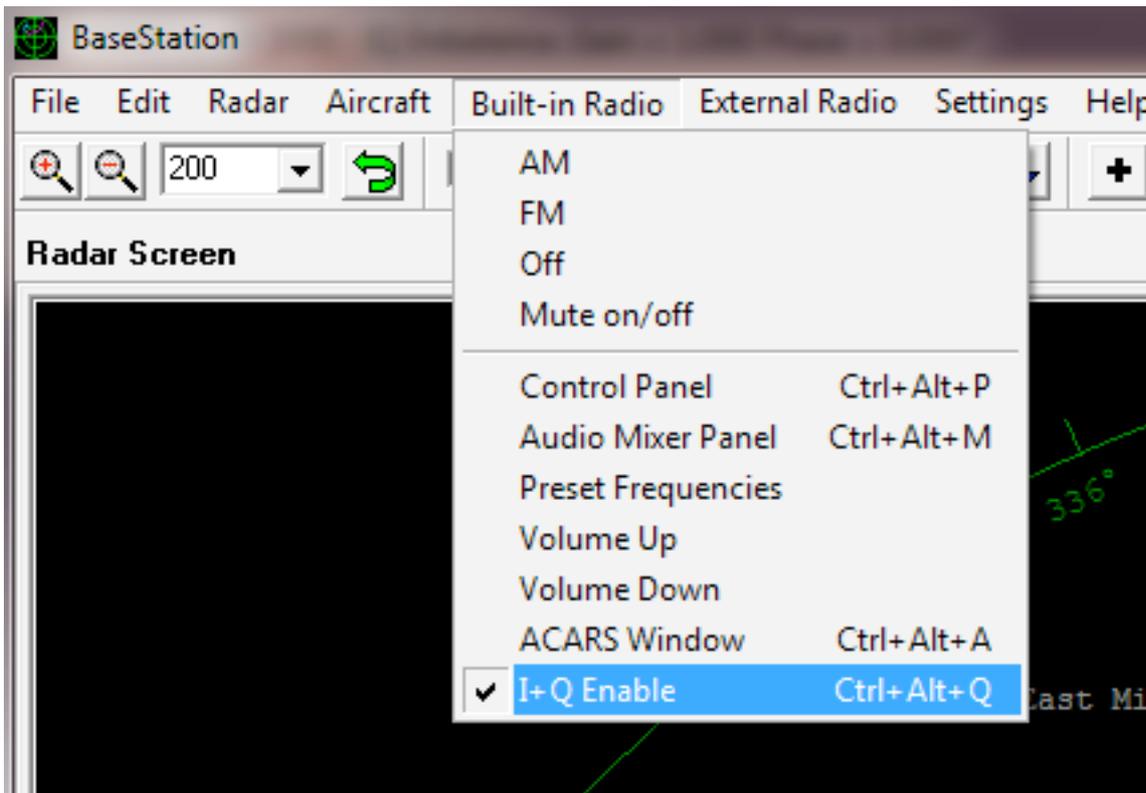
This issue has been fixed.

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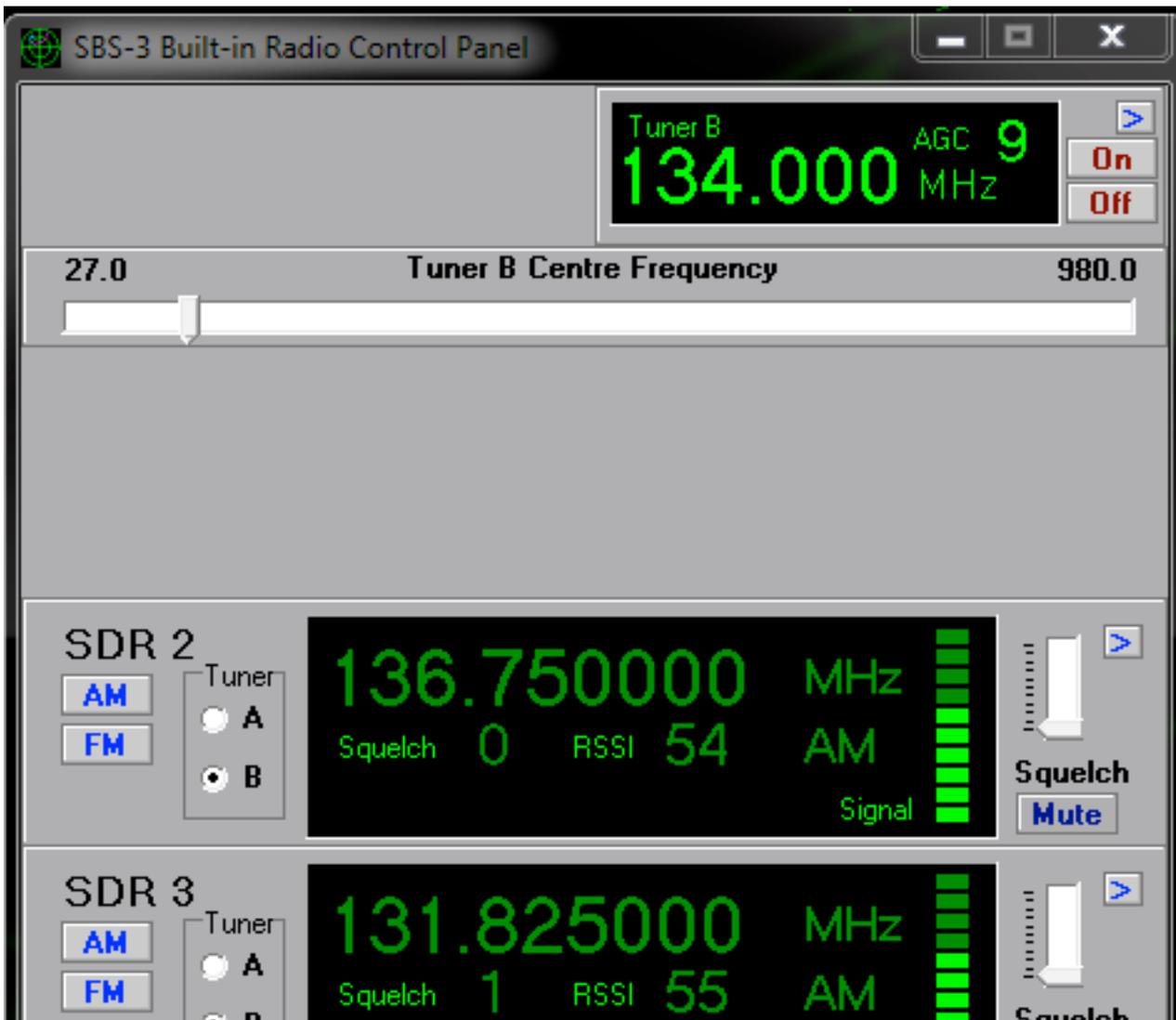
1. Pass-through of I and Q data

This feature allows use of an application such as SDR Sharp with the SBS-3, while retaining most of the normal BaseStation functionality, including the radar display and aircraft list. To use this feature with the SBS-3, BaseStation must be connected to the SBS-3 using Ethernet rather than the USB port. This is because the required data rate is higher than that supported by the SBS-3's USB port.

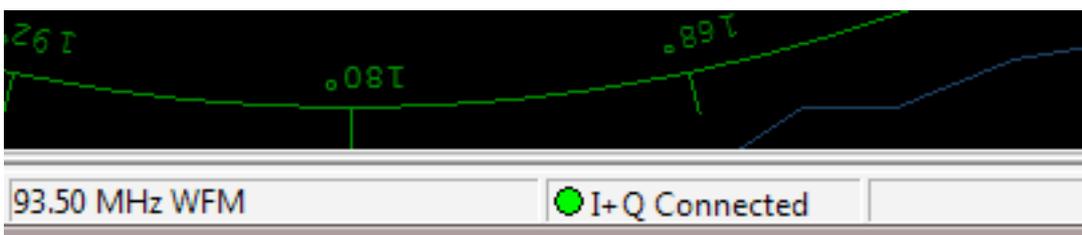
To turn on the feature, use the new menu item under Internal Radio:



While in I and Q output mode, Tuner B and SDR channels 2-6 can be controlled from BaseStation as normal, however Tuner A and SDR channel 1 are controlled by the SDR Sharp or other third party application. To reflect this, the controls for Tuner A and SDR channel 1 are removed from the control panel whenever this mode is enabled:



When I and Q output mode is enabled, a panel appears on the status bar to show the connection status.



The status bar shows a red symbol when BaseStation is not connected to an SBS-3 via ethernet, or to other Kinetic device that supports output of I and Q data.

It shows a blue symbol when BaseStation is connected to a suitable device but no application is connected to BaseStation's I and Q data output port (TCP port 30009).

Finally a green symbol is shown when an application such as SDR Sharp is connected to port 30009.

Please see also the section below on using SDR Sharp with the SBS-3.

Changes introduced in BaseStation version 179

1. Operation of SBS-3 with an external radio

This version enables control of a suitable external radio using the SBS-3's RS232 interface. Use of the external radio is described in section 4.4 of the BaseStation Reference Manual.

Pins 4 and 6 of the RJ11 interface connector on the SBS-3 will need to be connected to the radio's RS232 control input.

The pin-out of the RJ11 interface connector on the rear of the SBS-3 is as follows:

Pin 1 is the rightmost pin as viewed from the rear of the SBS-3

Pin 1 : 5VDC. (Pull up resistors only. **Not to be used for powering any external equipment.**)

Pin 2 : I2C Clock (Used by Kinetic for external module options)

Pin 3 : I2C Data (Used by Kinetic for external module options)

Pin 4 : RS232 Tx (Used to control external Radio receivers)

Pin 5 : RS232 Rx (Used to obtain GPS co-ordinates for BaseStation when selected)

Pin 6 : RS232 & I2C Ground

Changes introduced in BaseStation version 178

1. Operation of SBS-3 as a TCP/IP client

The SBS-3 can now connect as a TCP/IP client to a third party application. Firmware version L_0202_0000_0118_SBS3 is required. This mode is configured under the Network tab of the "Settings" - "Non Volatile Memory" menu item, where you can enter the IP address and port for the SBS-3 to connect to. The SBS-3 will repeatedly try to connect after waiting for the specified re-try interval. The connection mode can be configured separately for the main data connection and the NMEA port. If you set the client connection mode for the main port then BaseStation will no longer be able to connect to the SBS-3 using Ethernet. You will have to connect via USB in order to change the settings back to normal operation (server mode).

2. Support for the 1090 Puck and SDR Puck

This version of BaseStation is compatible with the new Puck products from Kinetic, due to be released early in 2013.

3. SBS-3 Radio Initialization Problem

Fix for a problem where the SBS-3 internal radio did not always tune properly to the last saved settings after BaseStation connected to it.

Changes introduced in BaseStation version 176

1. Processing of Squawk (Mode A) Codes

Fix for a problem where the “first squawk” field in the database was being populated with zeros.

Note: this bug was introduced in version 157 when the processing of squawk codes was changed to avoid earlier problems of incorrectly received squawk codes being displayed.

2. SBS-3 Radio Control Panel

Fix for problems with selecting (highlighting) SDR channels 5 and 6 on the display.

Using SDR Sharp with the SBS-3

Installing SDR Sharp:

1. Download and unzip a copy of SDR Sharp (current stable revision 1000) from the SDR Sharp website:

www.sdrsharp.com/index.php/downloads

2. Copy the Kinetic interface file :

SDRSharp.kinetic.dll

and the FTDI USB driver file :

ftd2xx.dll

into the folder where you installed SDR Sharp

3. Edit the file

SDRSharp.exe.config

using a text editor such as notepad or wordpad.

Locate the <frontendPlugins> section and add a line for the Kinetic interface:

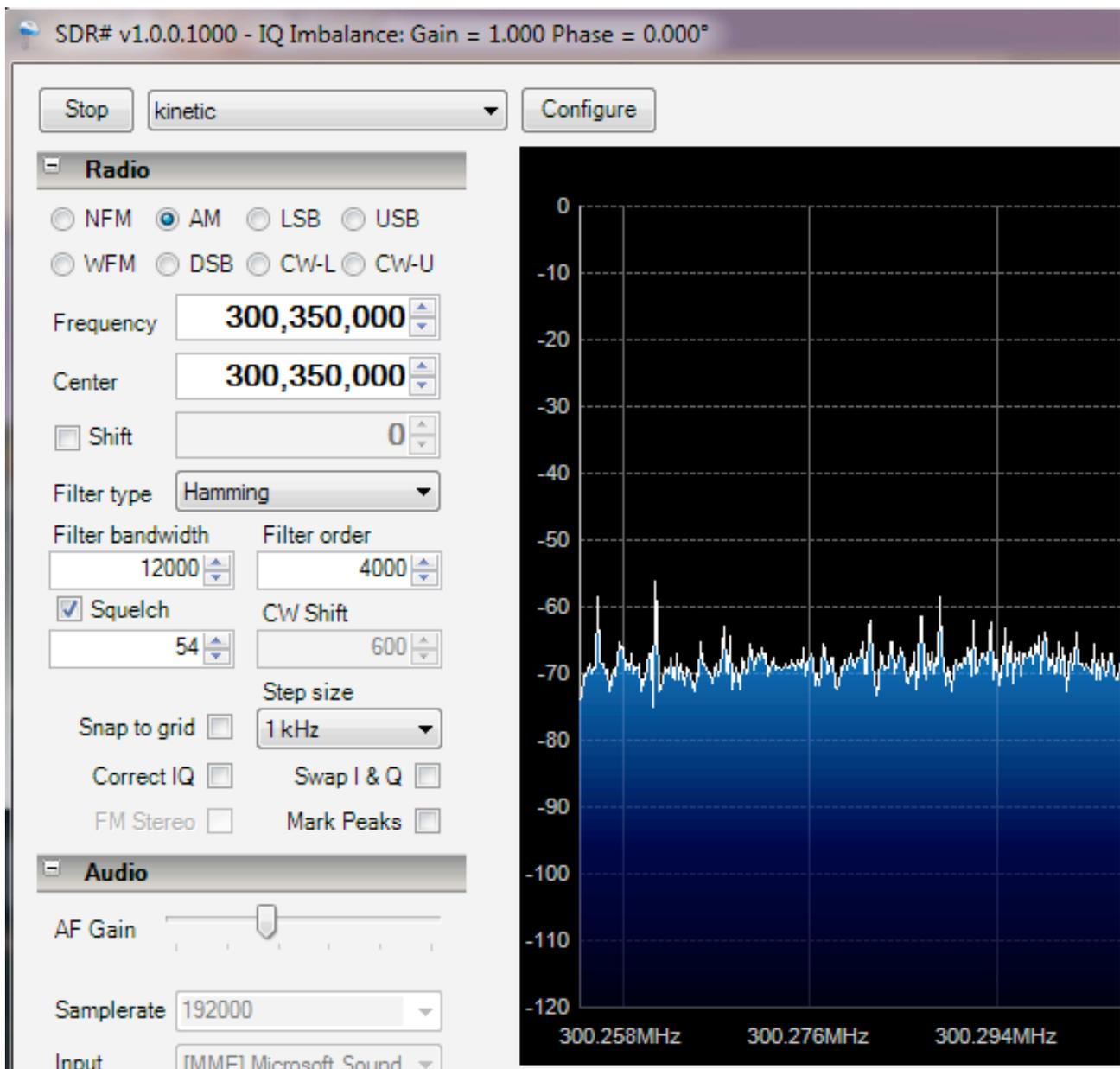
```
<add key="Kinetic" value="SDRSharp.kinetic.kineticIO,SDRSharp.kinetic" />
```

So that the section of the file looks something like:

```
<frontendPlugins>  
<add key="SoftRock / Si570" value="SDRSharp.SoftRock.SoftRockIO,SDRSharp.SoftRock" />  
<add key="FUNcube Dongle Pro" value="SDRSharp.FUNcube.FunCubeIO,SDRSharp.FUNcube" />  
<add key="FUNcube Dongle Pro+"  
value="SDRSharp.FUNcubeProPlus.FunCubeProPlusIO,SDRSharp.FUNcubeProPlus" />  
<add key="Kinetic" value="SDRSharp.kinetic.kineticIO,SDRSharp.kinetic" />  
</frontendPlugins>
```

4. Run SDRSharp.exe

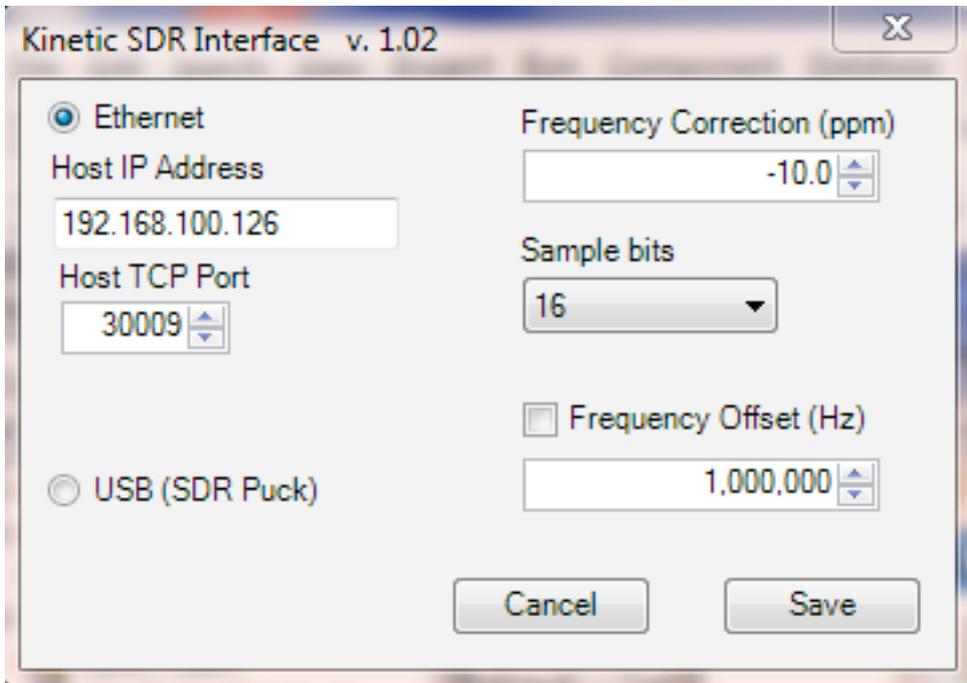
5. In the drop down list at the top, select “kinetic” as the radio type:



6. Press the Configure button to launch the configuration window. If an SBS-3 is being used then Ethernet should be selected. If using directly with the SBS-3 (without BaseStation) set the Host IP address to be the IP address of the SBS-3. Set the Host TCP port to be the main data output port of the SBS-3 (normally 10001). If connecting through BaseStation, set the Host IP address to be the IP address of the computer running BaseStation, and set the Host TCP port to be the I and Q data output port of BaseStation (normally 30009).

7. The Sample Bits setting should normally be set to 16. Setting it to 12 or 8 will reduce the data rate but results may be poor, especially with 8 bits.

8. The Frequency Correction box is an advanced setting that may be used to compensate for systematic tuning errors due to any small offset in the crystal oscillator frequency in the SBS-3. When this feature is not used it should be set to 0.0
9. The Frequency Offset box adds an optional fixed offset to the frequency sent to tune the SDR channel. This is useful when an external frequency converter is used between the antenna and the SDR. The frequency offset feature can be turned on or off using the check box.



10. Ensure that you click the Save button to save any settings you have changed.
11. Press the Start button to start receiving the data
12. Adjust the center frequency to the required frequency and select the demodulation type as required.
13. The "Correct IQ" check box should be left unchecked.