



# **FLEX-5000™**

## **HF-6m Transceiver**

# FLEX-VU5K ADDENDUM

# SOFTWARE DEFINED RADIO

# The FLEX-5000 Series Owner's Manual Addendum


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## FLEX-SERIES UPGRADES – 1 YEAR LIMITED WARRANTY

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This Limited Warranty is effective as of the date of first purchase of the FLEX-Series Upgrade by the consumer. FLEX-Series Upgrade equipment warranties and manufacturer support for FlexRadio products applies only to the original purchaser and are not transferable unless a warranty transfer agreement is purchased from FlexRadio Systems. Before requesting warranty service, you should complete a careful review of the most recent version of the Troubleshooting section of the FLEX-Series Operating Manual that applies to the radio and the upgrade. These are found on the FlexRadio Systems web site ([www.flexradio.com](http://www.flexradio.com)) or you can contact a FlexRadio Systems authorized service center for problem identification and triage. All product returns must be pre-authorized by the FlexRadio Systems service point and a Return Material Authorization (RMA) number issued for the return. Any product returned for service that is out of warranty or has had its warranty voided is subject to a one (1) hour diagnostic bench charge (currently \$65). This charge will be applied to any work performed.

**What is covered:** During the first year after date of purchase, FlexRadio Systems will repair or replace defective parts free of charge (post-paid) for FLEX-Series Upgrade components only. Any replacement hardware parts will be warranted for the remainder of the original FLEX-Series Upgrade warranty period or ninety (90) calendar days from the date of installation or repair, whichever is longer. FlexRadio Systems will also correct any FLEX-Series radio failure caused by defective parts and materials. You must send the defective unit (or the unit plus the associated radio if originally installed by FlexRadio Systems) at your expense to the appropriate FlexRadio Systems service point. FlexRadio Systems will pay return shipping.

**What is not covered:** This Limited Warranty as it pertains to FLEX-Series Upgrade components does not cover repair or damage caused by (1) damage to either the FLEX-Series Upgrade or the FLEX-Series radio caused by improper self-installation of the upgrade. (2) misuse, negligence or user modifications; (3) any performance malfunctions involving non-FlexRadio accessory equipment; (4) connection to improper or unstable voltage supply; (5) improper execution of hardware calibration or test routines; (6) the incorrect installation of any and all cables connected to the radio by the user or (7) 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-FlexRadio equipment or components used in conjunction with our products. Any such repair or replacement is the responsibility of the customer. FlexRadio Systems 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.

# Introduction

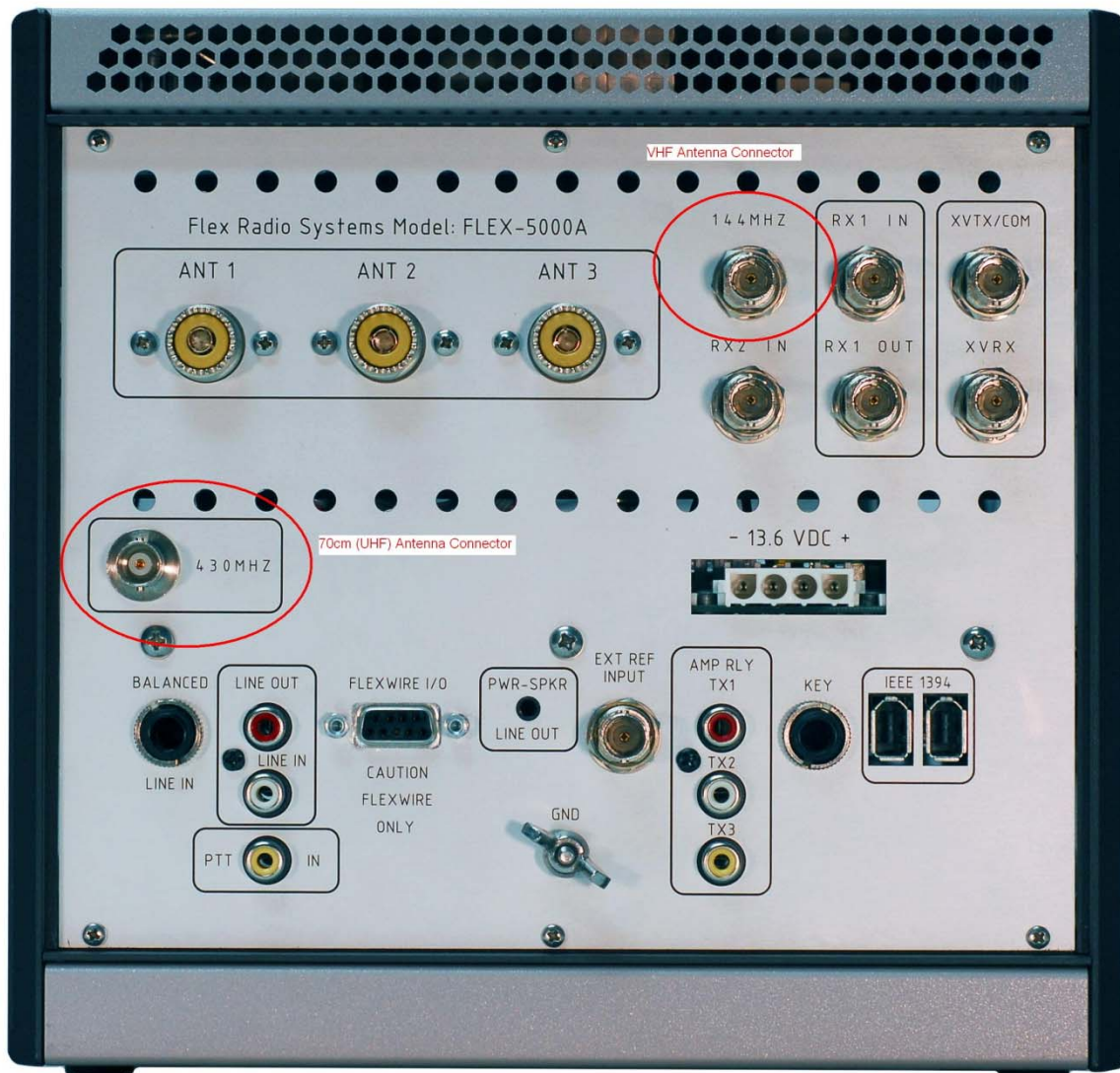
The FLEX-VU5K adds 2 Meter (144 to 148 MHz) and 70 cm (430 to 450 MHz) operation to the existing HF and 6 Meter Capability of the FLEX-5000 Software Defined Radio. The transmit and receive capability in these bands enjoys the same flexibility and capability of the basic FLEX-5000 with the added capability to run cross-band full duplex, with the optional RX-2 second receiver.

If you have any ideas on how to improve the FLEX-VU5K or FLEX-5000, please feel free to contact us, or better still, to join our email reflector (see <http://kc.flex-radio.com/KnowledgebaseArticle50024.aspx>). Not only is the FLEX-5000 a software defined radio; it is also a user defined radio.

FlexRadio Systems is committed to ensuring that your experience with the FLEX-5000 will be one of the most enjoyable you have with Ham radio. If you have any questions, issues or problems operating PowerSDR and/or the FLEX-5000, you may be able to find the solution on the Support Pages of our website (<http://support.flex-radio.com/>), in our Knowledge Center (<http://kc.flex-radio.com/search.aspx>), our Forum (<http://forums.flex-radio.com/>), or through our highly active email reflectors ([http://www.flex-radio.com/Support.aspx?topic=Reflector\\_Description](http://www.flex-radio.com/Support.aspx?topic=Reflector_Description)). If none of these sources provide you the assistance required, please contact FlexRadio Systems using the information provided on the Contact Page of our website (<http://www.flex-radio.com/About.aspx?topic=contactus>).

# Hardware Description

With the addition of the FLEX-VU5K module, two separate additional connectors become active on the rear panel. There is a BNC connector for VHF (144 to 148 MHz) transmit and receive operation, and a separate BNC connector for UHF (430 to 450 MHz) operation.



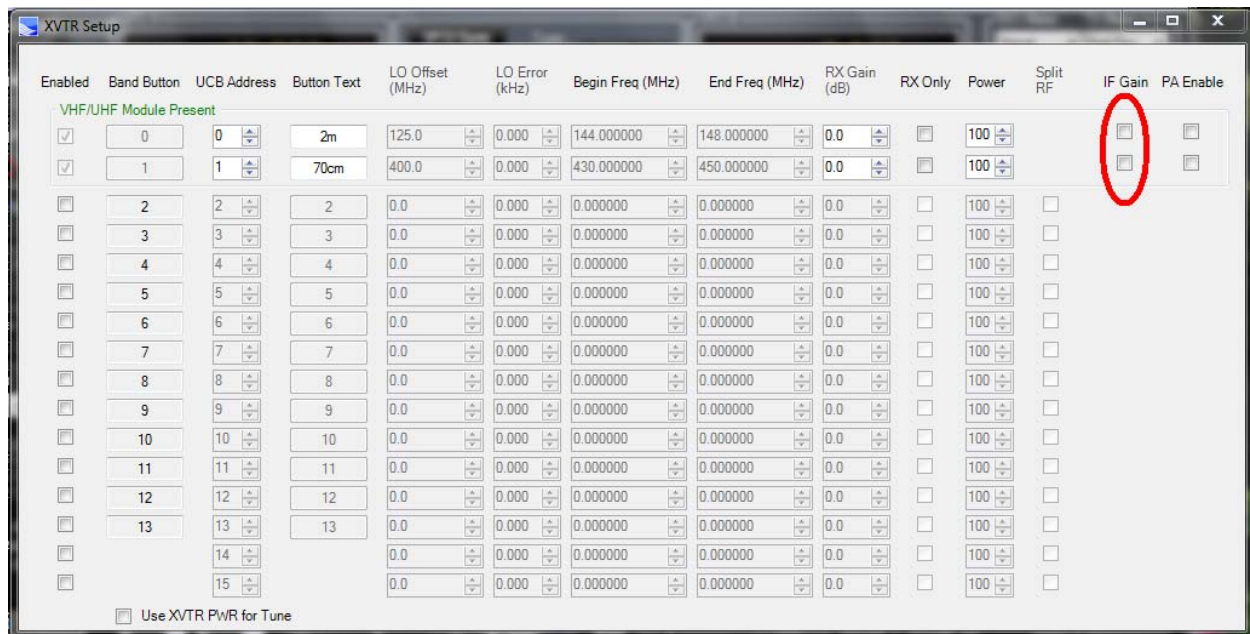
Rear Panel of FLEX-5000 with FLEX-VU5K installed, showing VHF and UHF connector locations.



# PowerSDR Operation

Control of the FLEX-VU5K module requires PowerSDR version 2.0.13 or later for proper operation. Control of the two new bands is consistent with the overall operation of PowerSDR, with the understanding that the first two lines in the transverter configuration page are dedicated to the FLEX-VU5K VHF and UHF bands, respectively.

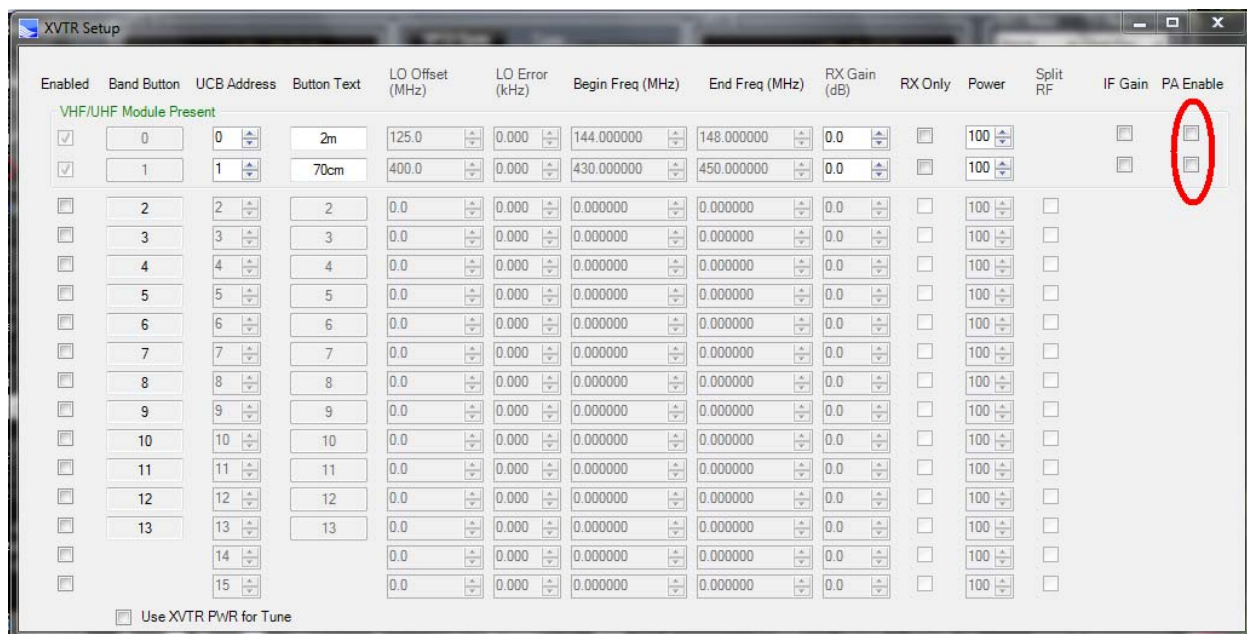
Access to the transverter configuration page is provided by selecting the “XVTR” tab at the top of the PowerSDR main panel.



Transverter Set Up Control Panel, showing IF Gain Check Boxes

The IF gain check boxes are used to turn the inline receive gain blocks ON and OFF, and have a gain of 20 dB on VHF, and on UHF.

The front end receive low noise preamplifiers are always on, and present a system noise figure of less than 1 dB at the panel connector on VHF and less than 2 dB on UHF.

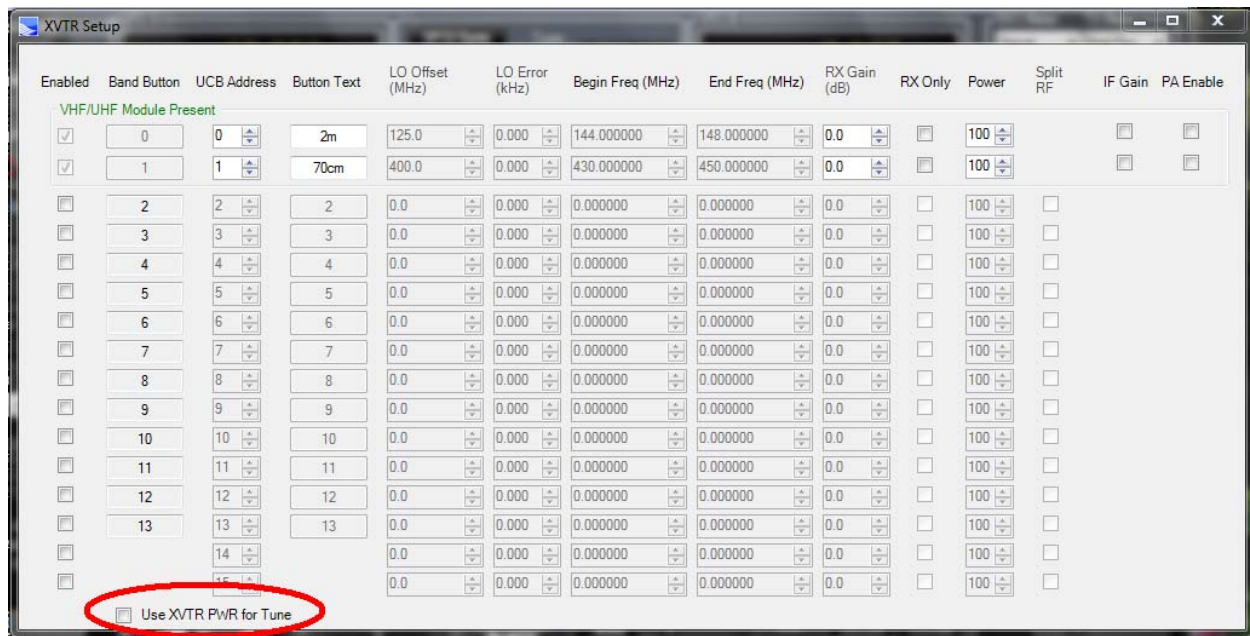


Transverter Set Up Control Panel, showing PA Enable Check Boxes

The PA Enable Check Boxes determine if the transverter is operating in the high power (60 Watts Maximum) or low power mode ( -3 to +15 dBm). The low power mode would normally be used to interface to an external transverter.

The transmit PA modules are rated for 60 Watts nominal, maximum output at 50 Ohms, and are rated for operation at V.S.W.R of 3:1 or less. Since there is no built-in VSWR detector or power meter on the VHF or UHF transverter outputs, it is the responsibility of the user / operator to make sure that the antenna loads presented to the radio are within the specifications.

The RF Gain boxes are used to adjust the receiver level calibration for any gain present in an external transverter or preamplifier. The receiver levels of the basic (standalone) system are calibrated with this Receiver Gain control set at 0.0 dB.

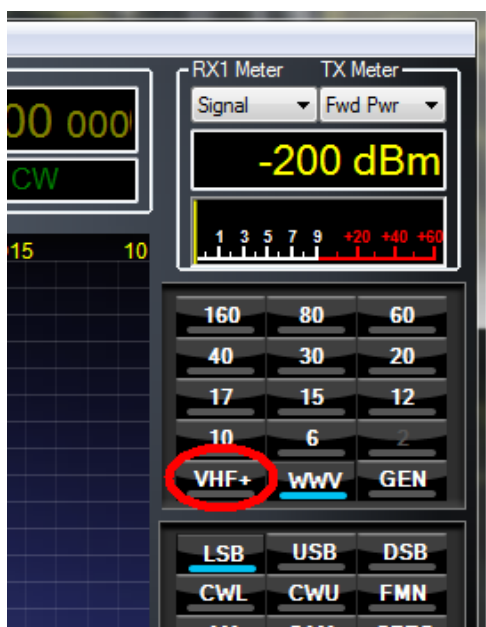


Transverter Set Up Control Panel, showing XVTR PWR for tune

This check box causes PowerSDR to use the normal power or drive setting for the transmit function for tune. If this box is not checked, then the power output during tune will revert to normal “Tune” operation, (default slider setting of 10, until manually changed or overridden.)



When in the initial HF band mode, you can enter the VHF/UHF mode by pressing the button labeled VHF+.



Select 2 Meter (144-148 MHz) operation by pressing the button marked 2m.



To activate the UHF (430 to 450 MHz) operation, press the button marked 70cm.



To return to HF operation (160 M through 6 M), press the button marked “HF.”



When the optional second receiver (RX2) is present, then it is possible to monitor multiple bands at one time. The bands monitored may be 2 meters and 70 cm as shown, or it may be one of the VU5K bands and an HF band, such as 10 meters or 6 meters.



Presence of the optional RX2 also enables the ability to transmit and receive at the same time in crossband operation. This enables cross band full duplex satellite communications.

NOTICE: The FLEX-5000 with the FLEX-VU5K module installed, has not been submitted for CE testing and certification, so the combination can not be represented to conform to CE requirements at this time.