

# BandMaster V Manual

## Installation

Installing and configuring the BM-5 BandMaster V is a simple process. All the configuration process is done from the front panel. Installation and configuration steps are listed below.



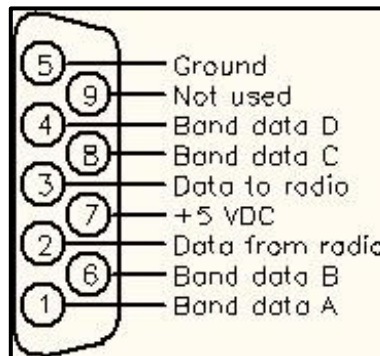
**Power / ShackLAN connections:** The first step in the installation of the BM-5 is to connect 12 V DC power to the unit. This can be done using either the power jack or via either ShackLAN jack from another device on the network.

**USB Connector:** The USB connector is used to transfer data to and from the radio to your computer using a standard USB cable. It is also used to update the firmware. The USB may also be connected directly to Flex SDR radios. The USB driver should automatically install itself.

**CI-V Connector:** This connector is used to interface to ICOM radios. It uses the standard 1/8" phone plug used on all ICOM radios for computer control. It should be connected to the REMOTE jack on ICOM radios. For other makes of radios a CI-V data stream is sent from this connector to allow control of external devices.

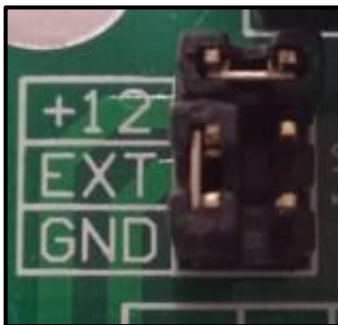
**Radio Connector** This connector is used to interface to all radios except ICOM. You can use the same cable you would normally connect between the radio and a computer except when using the band data outputs from Yaesu and K3 radios. It is preferred that you use the RS-232 data from the radio and not the band data outputs otherwise there will be reduced functionality. If you still wish to use the band data outputs, you will need to make your own interface cable or purchase a custom cable. Band data signals are labeled A, B, C, D in most radio manuals but may be designated as 1, 2, 3, 4 or 1, 2, 4, 8. Pinouts for the radio connector are shown in the diagram to the right. Consult your radio manual for pinouts on the radio connector.

When acquiring radio data from the CI-V, USB or band data this connector will transmit a RS-232 data stream in either Kenwood or Yaesu format. When not using band data from the radio this connector will output band data information.

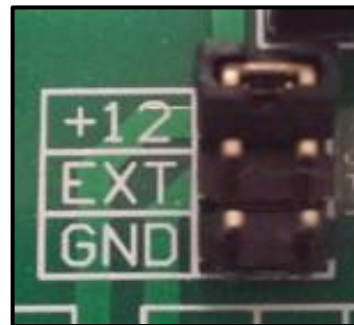


View looking at connector on rear panel

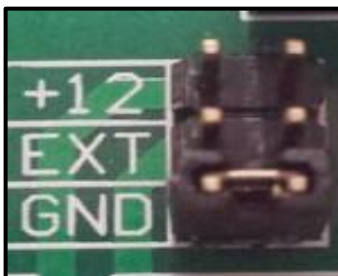
**Relay common selection:** The BM-5 has 12 internal relays with the relay common available at the rear panel. This common connection may be used to enable the relays to switch to +12 V DC, ground or an external voltage. These selections are made using jumper pins inside the unit. The jumper is located behind the relay connectors (outputs). The factory default is to provide 12 V DC when the relays are activated and should cover most installations. To change the common selection, remove the 4 screws from the rear panel and slide the board out far enough to access the jumpers. Shown to the right are 4 selection options.



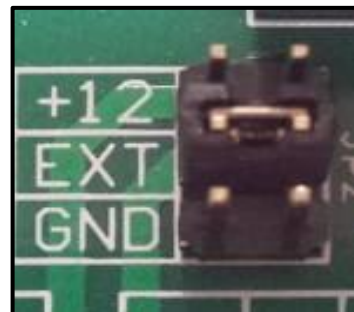
Supplies 12 V DC when activated.  
"C" pin is ground.  
(Factory default selection)



Supplies 12 V DC when activated.  
"C" pin is not connected.



Switches to ground when activated.  
"C" pin is not connected.



Connects to power source on  
"C" pin.

**Relay Connections:** Relay connections are made via the pluggable 7-pin connectors. No soldering is required. Each connector has outputs for 6 relays. The relay outputs are labeled 1 thru 12. The G pin is ground and the C pin is for an external voltage, if desired. Attach the control wires by inserting them into the holes in the connector plug and tightening the screw to secure them.

## Configuration

**Apply power:** Applying power the first time after completing the installation should result in the display shown to the right.



### Configuring the radio

**Enter configuration mode:** The configuration menus are entered by pressing the NEXT and PREV buttons at the same time. The Configuration screen should be displayed. The NEXT and PREV buttons are now used to move between the various configuration menus. When at the Configuration screen pressing PREV will exit the configuration mode.

**Begin radio configuration:** Press NEXT twice to move to the Setup Radio screen (or PREV if you have already passed it). When the Setup Radio screen is showing press AUTO to begin configuring the radio interface. NOTE: For Icom radios you must have CI/V Transceive enabled to complete the configuration process.

**Set radio type:** After pressing AUTO at the Setup Radio screen the Radio Type screen will appear. Cycle through the selections using the NEXT and PREV buttons. Press AUTO when the desired radio type is selected. If Band Data was selected you are now finished with the radio configuration. For all other radio type the Baud Rate screen will now be shown.

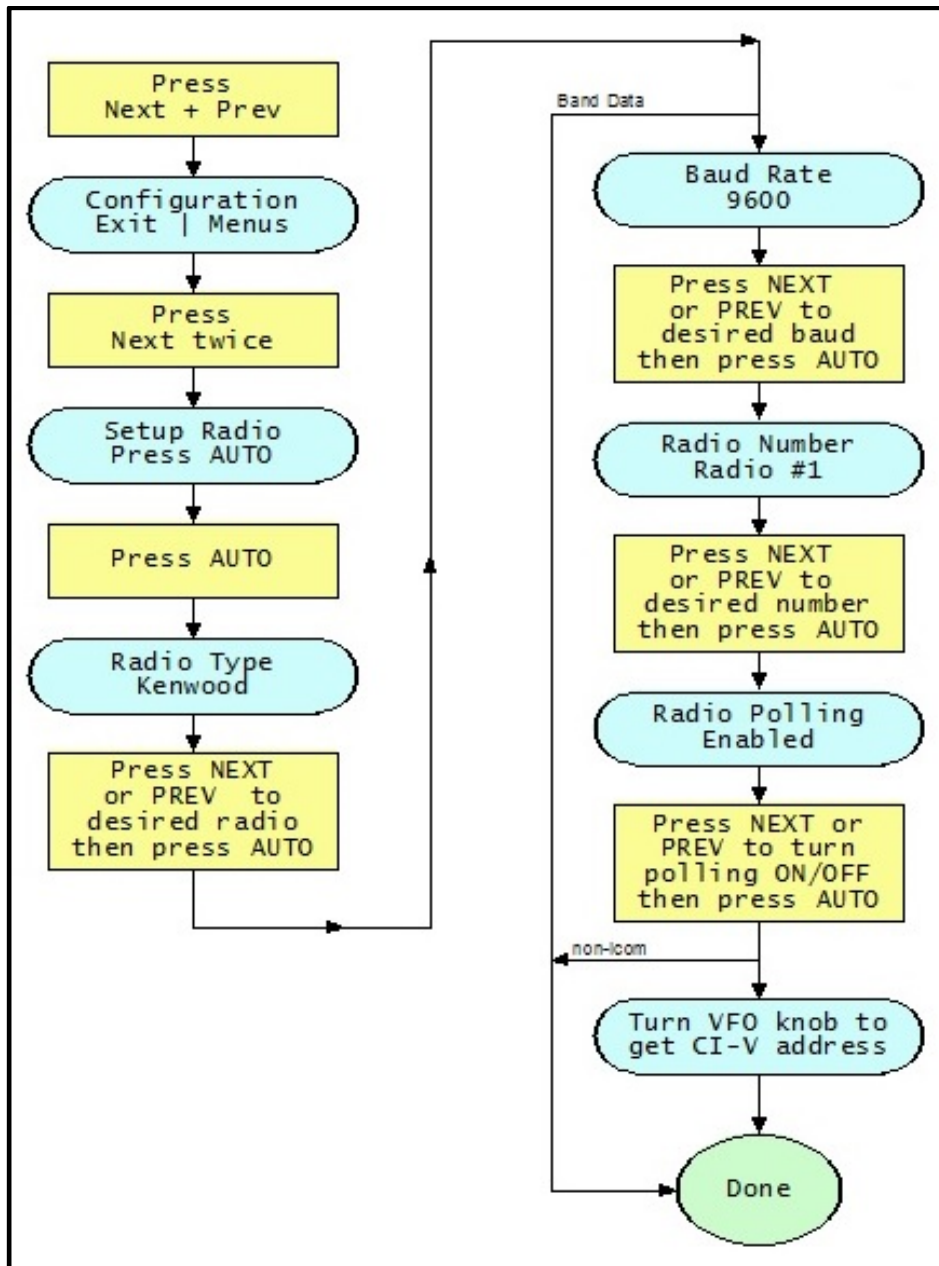
**Set radio baud rate:** After selecting the radio type you must select the radio baud rate. This baud rate applies to both the RS-232 and USB connections. Use NEXT and PREV to step between the selections. Press AUTO when the desired baud rate is selected. The Radio Number screen will now be displayed.

**Set radio number:** After selecting the radio baud rate you must set the radio number. This number is used when using multiple units to indicate when an antenna is in use by another radio. Press AUTO when finished.

**Set radio polling:** After selecting the radio number you must set the radio polling. Press NEXT or PREV to toggle between Enabled and Disabled. Leave polling enabled except under special circumstances. When polling is disabled you must have your logging or radio control software

poll the radio or the band decoder will not function. Press AUTO when finished. Except for ICOM radios this completes the radio configuration process.

**Acquire CI-V address (ICOM radios only):** The BM-5 automatically acquires the CI-V address of ICOM radios after exiting the radio configuration. This requires the CI-V “transceive” function on the radio to be enabled. The acquired address will be displayed.



Configuring the Radio Flowchart

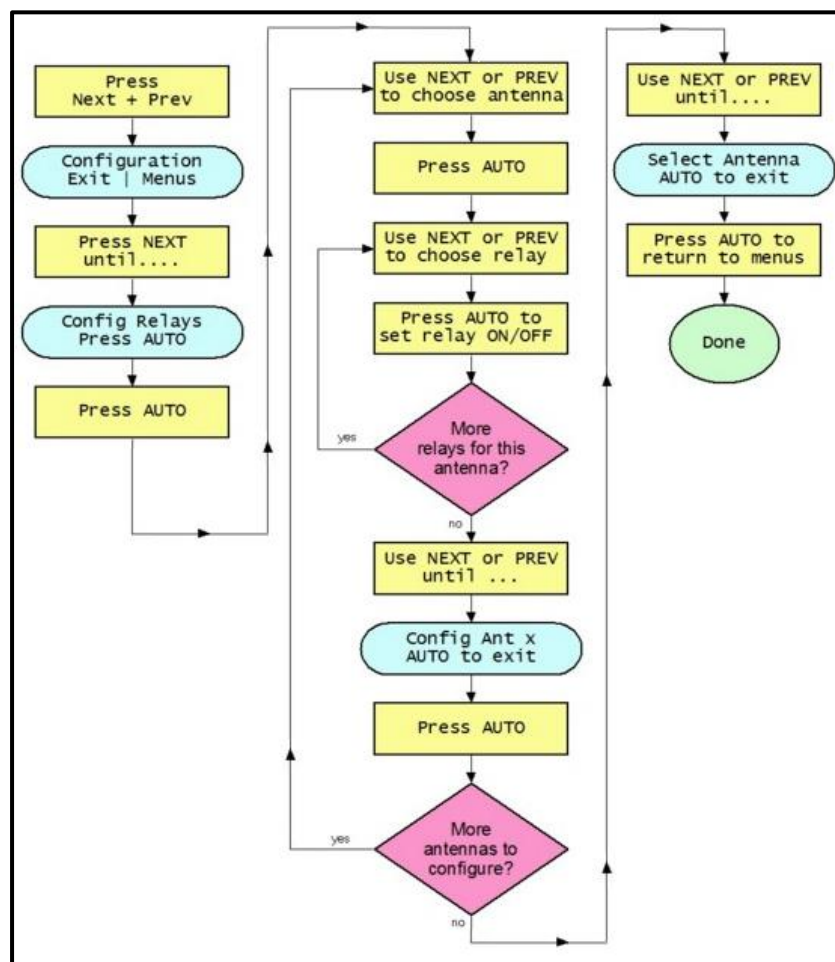
## Configuring Relays / Antennas

**Enter configuration mode:** The configuration menus are entered by pressing the NEXT and PREV buttons at the same time. The Configuration screen should be displayed. The NEXT and PREV buttons are now used to move between the various configuration menus. When at the Configuration screen, pressing PREV will exit the configuration mode.

**Begin relay configuration:** Press NEXT four times to move to the Config Relays screen or PREV if you have already passed it. Press AUTO when the Config Relays screen is displayed.

**Select antenna to configure:** Press NEXT or PREV to select the antenna to configure. The exit screen is located between Antenna 1 and Antenna 16. Press AUTO when the desired antenna is selected.

**Select relays for antenna:** Use NEXT and PREV to move among the 12 relays. Press AUTO to toggle the relay ON / OFF. When finished configuring an antenna, press NEXT or PREV to the exit screen which is located between Relay 1 and Relay 12. Press AUTO to return to the CONFIG ANTENNA screen. Use NEXT or PREV to select the next antenna to configure and repeat the process for each relay.



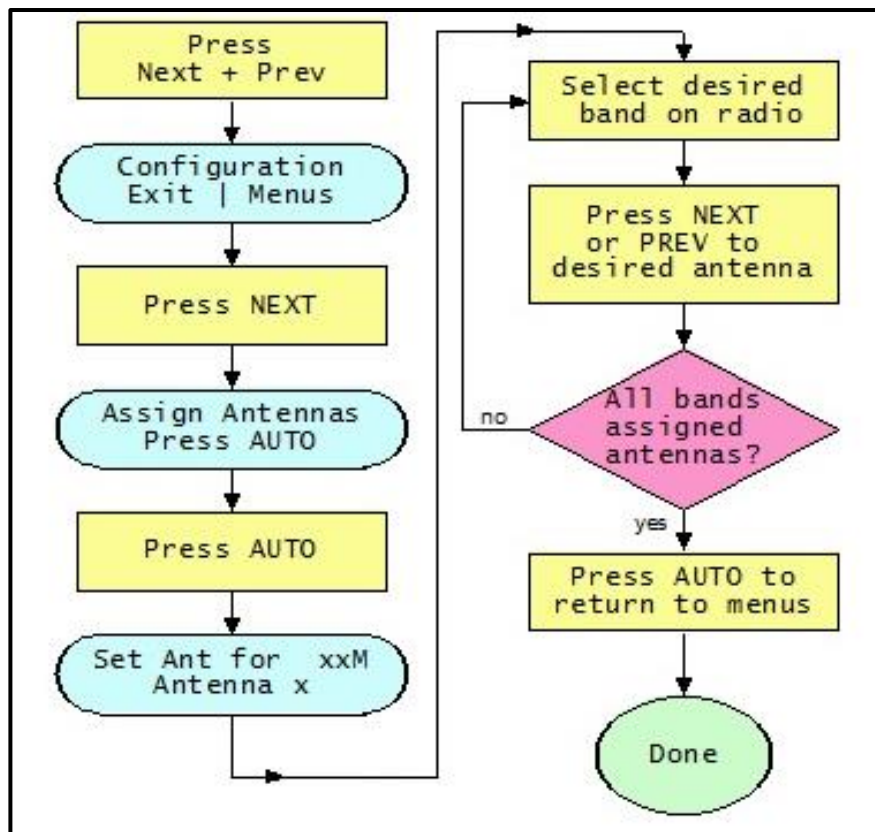
Configuring the Antennas/Relays Flowchart

## Assigning the Antennas

You must first configure the radio before you can assign antennas to each band as the band to be configured is selected by changing bands on the radio.

**Enter configuration mode:** The configuration menus are entered by pressing NEXT and PREV at the same time. The NEXT and PREV buttons are now used to move between the various configuration menus. When at the Configuration screen pressing PREV will exit the configuration mode. Press AUTO to begin assigning antennas to each band.

**Set antenna for each band:** You must configure the radio before assigning antennas as the band to configure is set by the radio. Place the radio on the band to be configured and then, using the NEXT and PREV buttons, select the antenna for the current band. Selections are automatically saved. Switch the radio to the next band and select the desired antenna. Do this for each band. Press AUTO when finished.



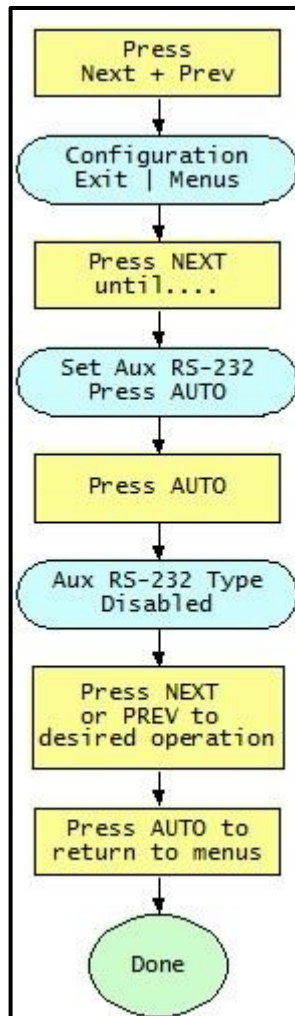
Assigning Antennas Configuration Flowchart

## Advanced Features

**Aux RS-232 data stream:** When the RS-232 connection on the radio connector is not being used by your radio, such as Icom, band data or Flex SDR on USB, the BM-5 can automatically generate a data stream on the RS-232 pins in either Kenwood or Yaesu format. This is useful for automatically controlling station accessories. The baud rate is fixed at 9600.

To enable this option, enter the configuration mode and press NEXT until the Set AUX RS-232 screen is displayed. Press AUTO to configure the options. Now use PREV and NEXT to select the Disabled, Kenwood or Yaesu mode. Press AUTO when finished.

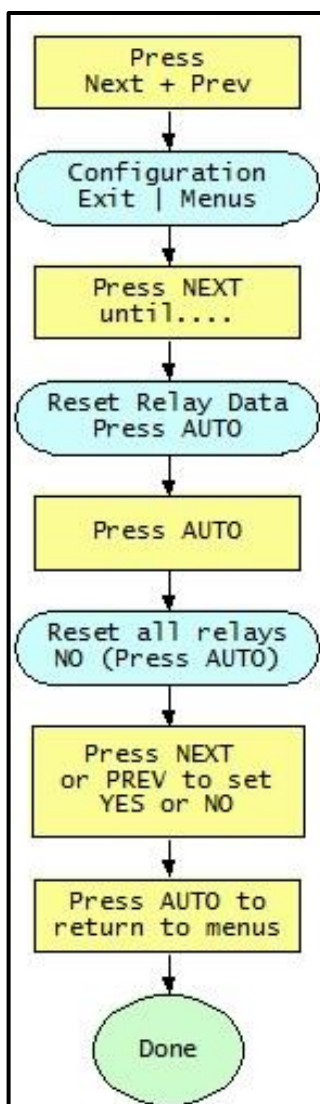
NOTE: When using band data from the radio the Aux RS-232 and CI/V data stream frequency is set to the middle of the band.



**Aux RS-232 Data Stream Configuration Flowchart**

**Reset relay data:** The Reset Relay Data function is used to reset the relay configuration for all antenna to the factory default of Relay 1 for Antenna 1, Relay 2 for Antenna 2, etc. Antennas 13 thru 16 will have no relays assigned to them.

If you wish to reset all the relays data enter configuration mode and press NEXT until the Reset Relay Data screen is displayed. Press AUTO to enter Reset All Relays screen. Press NEXT or PREV to toggle between YES and NO. Press AUTO when finished.

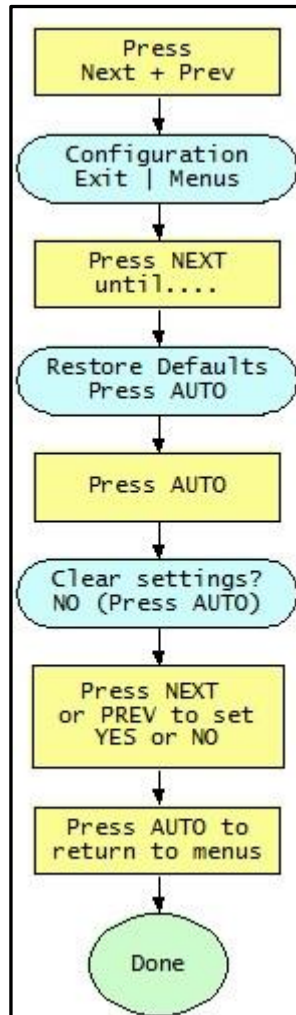


**Reset Relay Data Configuration Flowchart**



**Restore defaults:** The Restore Defaults function will clear all user data and restore them to factory defaults. Be aware that using this function will erase all of your settings.

If you wish to reset the BandMaster V to factory defaults enter configuration mode and press NEXT until the Restore Defaults screen is displayed. Press AUTO to enter the Clear Settings screen. Press NEXT or PREV to toggle between YES and NO. Press AUTO when finished.



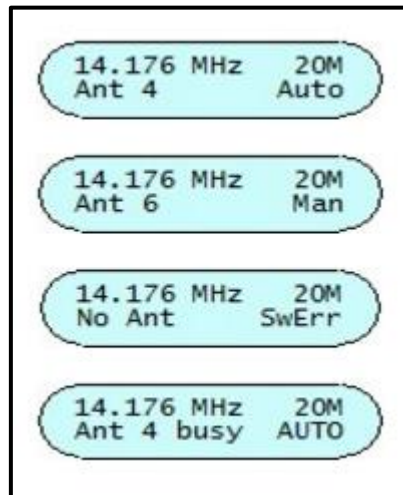
**Restore Defaults Configuration Flowchart**

## BandMaster V Operation

LCD Display: Operation of the BM-5 BandMaster V is quite simple. The main screen shows the operating frequency and band on the top line of the display. The bottom line shows the currently selected antenna and if the antenna selection is in Auto or Manual mode.

The bottom line can also show operational error messages.

For multiple radio installations the BM-5 will indicate when a desired antenna is already in use by another radio by displaying the “busy” message.



### BandMaster V Display

**Direct antenna selection:** The BandMaster V provides two methods of antenna selection. The AUTO mode determines the current band of operation from radio data and automatically selects the antenna assigned to that band. The AUTO mode is activated by pressing the AUTO button.

Antennas may also be selected manually using the PREV and NEXT buttons. When these buttons are pressed the BM-5 automatically enters the MANUAL mode.