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Bandpasser II

AS-419

100W Bandpass Filter System

by Hamation



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Introduction

- **Six bands in one compact unit**
- **100W power rating**
- **SWR less than 1.25 across band**
- **Low insertion loss < 0.6db**
- **High rejection of adjacent bands**
- **Compatible with K3/Yaseu band data**
- **Hand tuned for maximum performance**
- **Cost effective filter solution**
- **Anodized aluminum case with laser engraved panels**
- **Custom labeling available**
- **Size: 2.4H x 6.7W x 9.6D (inches)**
- **Weight: 3 pounds**

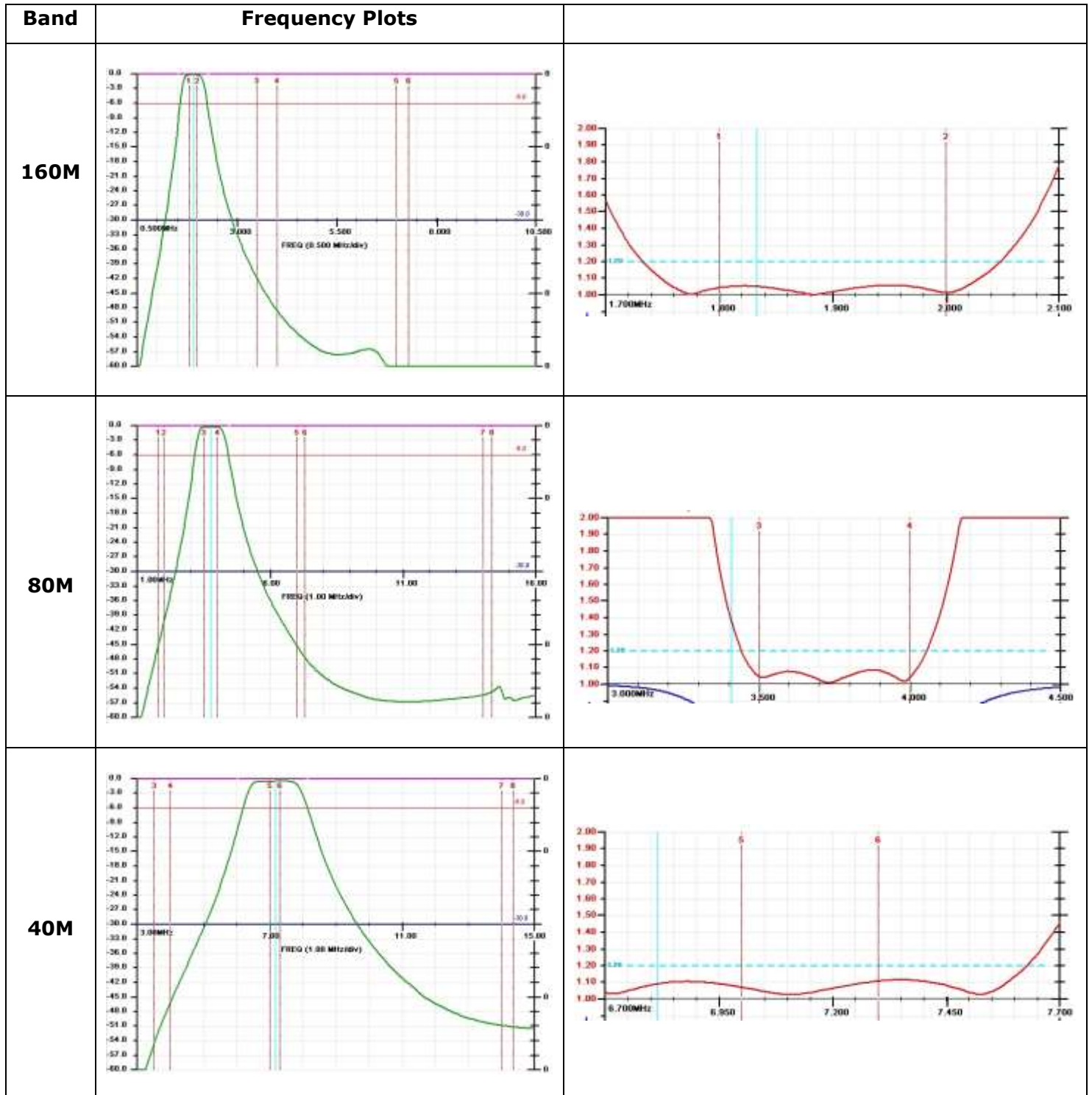


The ShackLAN Bandpasser contains six high performance bandpass filters in a single compact package and comes standard with filters for 160, 80, 40, 20, 15 and 10 meters. Filters for 160M thru 15M are 3-pole Chebyshev designs which provide over 40db rejection of adjacent bands (excluding WARC bands). Due to the narrow separation between 15M and 10M (25%), the 10M filter is a Cauer high pass design that provides deep notches on the 15M and 20M bands. These filters are rated at 100 watts and can handle 100% duty-cycle modes, such as RTTY. These filters are designed to be used between your radio and amplifier or antenna. They have low insertion loss (less than 0.6 db) and low SWR (less than 1.25:1) across an entire band. The filters can be selected via front panel pushbutton switches, via our ShackLAN system or remotely by applying +4 to +14 volts to the rear panel REMOTE control connector. The Bandpasser may also be configured to interface directly to Elecraft K3 and Yaesu band data signals. Bypass mode is automatically selected when no power is applied or no filters are selected. As is standard in all ShackLAN devices, the unit is protected against reverse polarity and over-voltage.

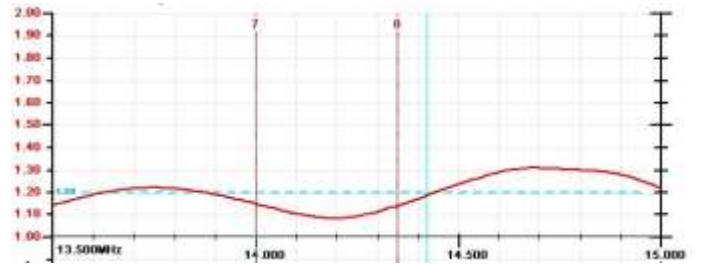
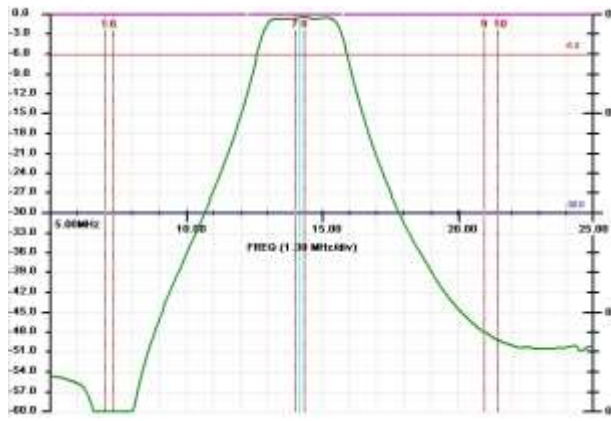
All filters in the Bandpasser are built with high quality components using Micrometals toroid cores and low-dissipation, high Q TDK capacitors. All shunt (parallel) nodes are built with 2KV and 3KV capacitors while the series node uses 1KV, 2KV and 3KV capacitors. While these filters are rugged, you should be aware of problems that can arise when operating the unit into a high SWR which can cause unexpected high RF voltages, even at 100 watts. Also, the filters are designed for 50 ohms and a large departure from the design impedance can change the filter response and you may not achieve optimal band to band rejection. Be aware that the tuners built into many radios will not correct any high SWR presented to the Bandpasser. If you must operate into high SWR loads you should use an external tuner connected between the Bandpasser and your antenna or antenna switch. Most amplifiers have a reasonable match on the input and should not normally present any problems.

The Bandpasser is packaged in a heavy duty (0.080 wall) anodized aluminum case. Front and rear panels are laser engraved so the lettering will not wear off with use. RF connectors have teflon insulation and gold plated center pins. Power requirements are 12-14 vdc at 100ma.

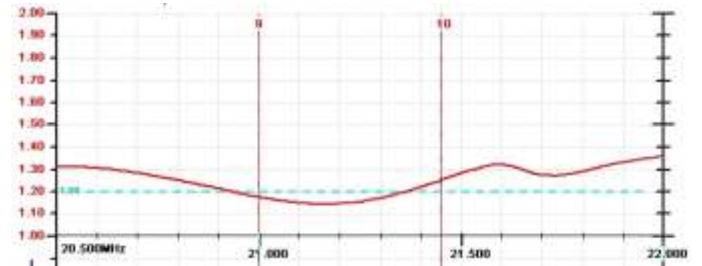
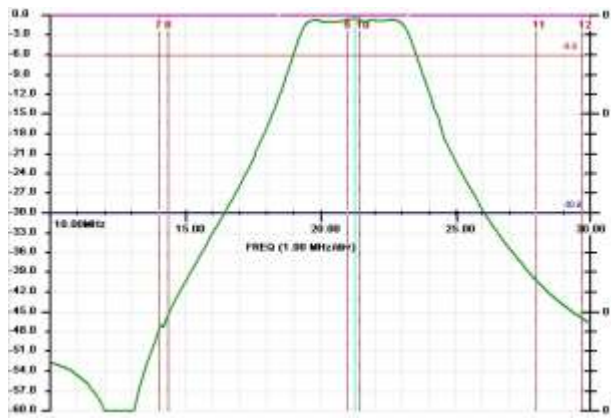
Shown below are typical performance plot of the filters. Solid vertical lines mark band edges.



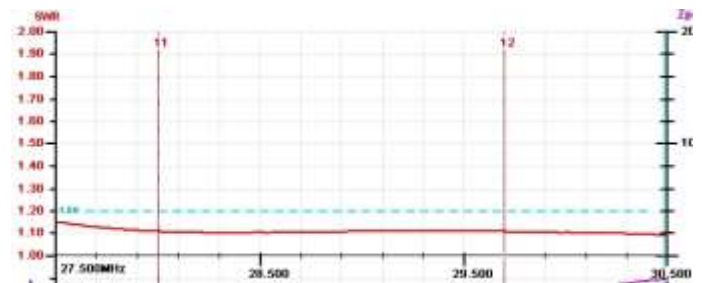
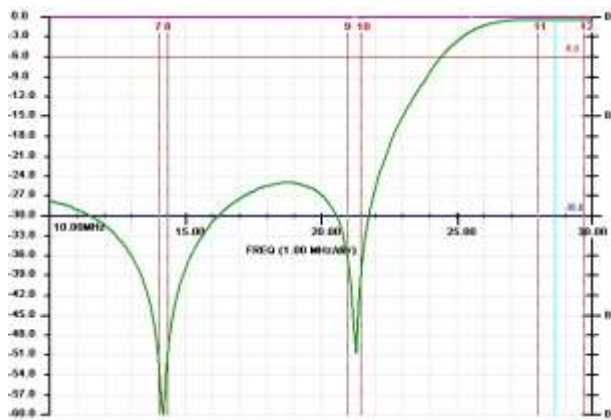
20M



15M



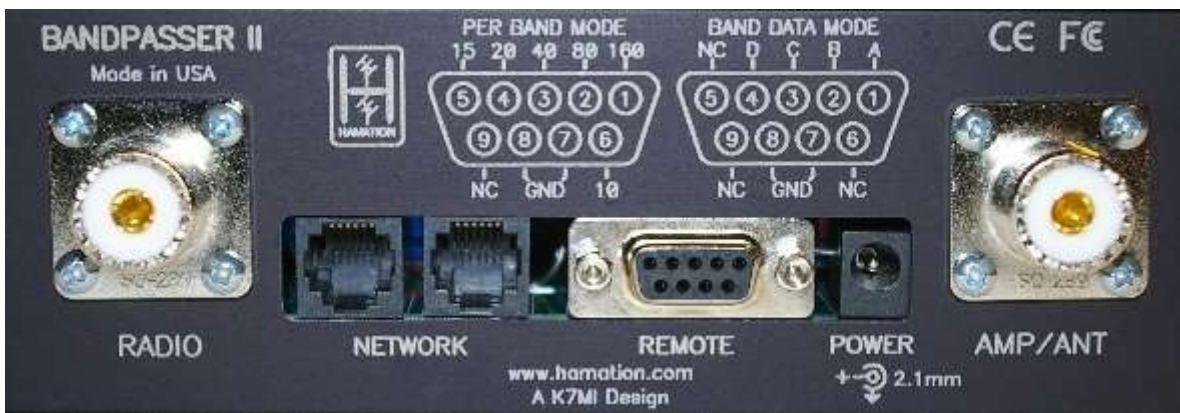
10M



Bandpasser (AS-419) Installation

Before you begin

Installing and configuring the Bandpasser is a simple process which involves connecting the unit to your radio. You will need a length of 50 ohm coax with PL-259 connectors (not supplied). If you are using a ShackLAN equipped band decoder, such as the Array Solutions Bandmaster 3, any Hamation decoder or Integrated Controller, automatic band selection is as simple as plugging in a network cable between the Bandpasser and the decoder. No other connections are required. For stand-alone operation or use with a non-ShackLAN equipped band decoder you will also need to connect the unit to a +12vdc power source. Control from an external device is done via the Remote connector on the rear panel. Apply +4 to +14v to the pin for the desired band selection. The Bandpasser II may also be configured to directly use the band data signals from Elecraft K3 and most Yaesu radios. Connector pinouts for both interface types are engraved on the rear panel for easy reference. Installation steps are listed below.



Bandpasser Rear Panel

WARNING: The Bandpasser is designed to be installed between your radio and amplifier. If you install the filters on the output of your amplifier, the filters will be destroyed the first time you transmit through them.

DO NOT EVER use a transceiver Auto Tuner into any bandpass filter, you risk high current or voltage damage into the filter system.

Power connection

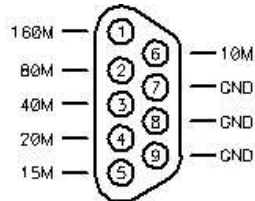
A power connection is only required when operating the Bandpasser stand-alone or with a non-ShackLAN equipped band decoder. Power requirements are +12-14vdc at 100 ma. The Power connector is a standard 2.1mm jack with the center pin positive. No power connection is required when operating with a ShackLAN equipped decoder as power is distributed over the network cables.

Network connection

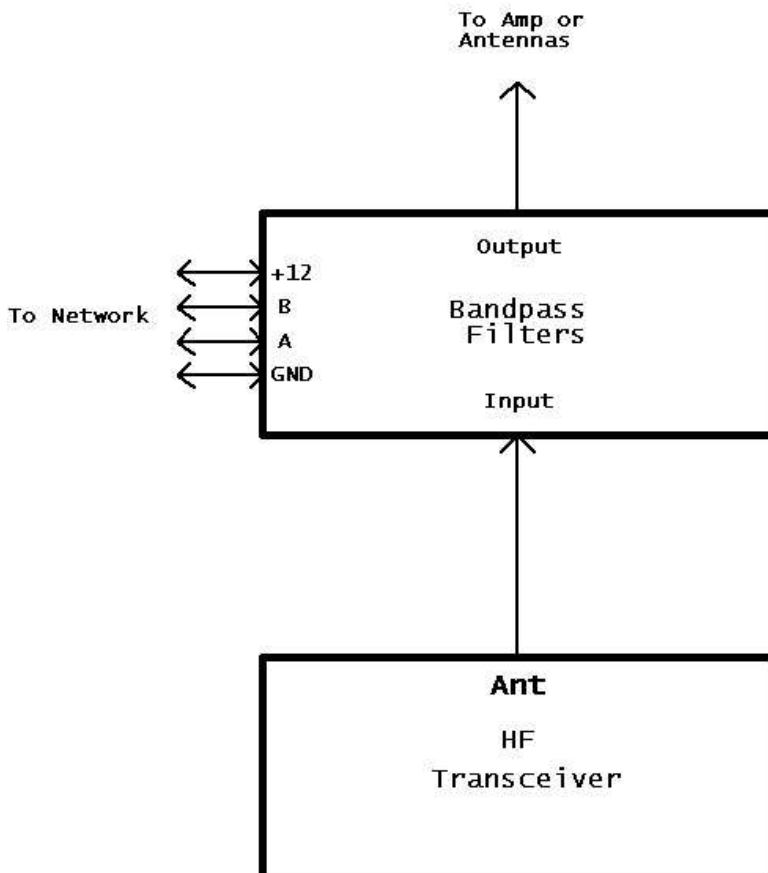
Connecting the Bandpasser to a ShackLAN equipped band decoder is done by simply plugging a 6-conductor modular cable from one of the network jacks to the decoder. Older decoders use a 4-pin screw terminal connector and an adaptor is available to facilitate operation with older decoders. Two network jacks are provided to allow easy daisy-chaining of other ShackLAN units. The two jacks are connected in parallel internally and either may be used.

External Control Wiring

This step can be skipped if controlling the Bandpasser with a ShackLAN compatible band decoder or only with the front panel controls. For external control you need to apply +4v to +12v to the pin on the Remote connector for the desired band. Current required for each band is less than 1mA. The pinouts of the Remote connector for both Per Band and Band Data modes are shown on the rear panel. The Remote connector is a standard 9-pin subminiature female D connector. The mating male plug and a connector hood are supplied with each unit.



External Inputs/Outputs



RF Connections

There are two standard SO-239 (UHF) connectors on the rear panel for RF connections. Connect a 50 ohm cable from the RADIO connect to the antenna connector on your radio. Similarly, connect another 50 ohm cable from the AMP/ANT connector to your amplifier input or antenna switch, if no amplifier is used.

DO NOT CONNECT THE BANDPASSER TO THE OUTPUT OF AN AMPLIFIER OR SEVERE DAMAGE WILL OCCUR.

Bandpasser (AS-419) Operation

Each time the Bandpasser is powered on it will flash two of the band LEDs three times to indicate the radio number on the Shacklan network and the current control mode for the REMOTE connector. The 160M, 80M, 40M or 20M LEDs will flash to indicate the radio number (1-4) and flash either the 15M LED to indicate PerBand Mode or the 10M LED to indicate Band Data Mode. After the self-test is complete the Bandpasser is ready to go. Operation of the Bandpasser is simple and straightforward. There are three mode of operation. These are Auto, Manual and Bypass. You can step through the three modes by pressing the Mode button. Also, pressing any of the Band buttons will automatically place the unit into Manual mode.

Auto Mode

The Auto mode is used when you want band selection to be done from an external source either from a ShackLAN compatible band decoder via the network or other type of band decoder via the Remote connector. Select Auto mode by pressing and releasing the the Mode button until the Auto LED is on.

Manual Mode

This mode is used when manually selecting filters from the front panel controls. Pressing any of the Band buttons will cause the unit to automatically enter Manual mode or you may press and release the Mode button until the Mode LED is on.

Bypass Mode

This mode is self-explanatory. In Bypass mode, no filters are selected. The Bypass LED will also indicate no filters selected when in Auto or Manual modes.

Radio Number

When used in a ShackLAN system, you will need to set the radio number of the Bandpasser so it tracks the band on the desired radio. This is done by pressing and holding the Mode button while pressing one of the band buttons for the desired radio number. The band buttons, from left to right, are numbered radio 1 to radio 4. Upon releasing the buttons the green LED for the selected radio will flash three times along with either the 15M LED or 10M LED to indicate Auto mode lock status. The Bandpasser then returns to normal operation.

Configuring the Remote Control Mode

The Bandpasser II can be configured to use K3/Yaesu band data directly or single inputs for each band. **Select the Per Band Mode by pressing and releasing the PBM button while holding in the MODE button. Configure the unit for Band Data Mode by pressing and releasing the BDM button while holding in the MODE button.** The configuration will be verified by flashing the proper LED three times.

In Case of Difficulty

No signals can be heard in receiver or high SWR

Check to be sure you have selected the proper band. Due to the high rejection of other bands you must select the correct filter.

Unit appears dead

Check your power supply and connections. If all is good then check in the internal 315 ma fuse.

Bands not being selected by decoder

For ShackLAN type decoders, verify you have programmed the radio number to match the decoder.

For other decoders, verify your decoder is applying +4v to +14v to the appropriate pin on the Remote connector.