

TECHNICAL ASSISTANCE

If you have difficulty or need additional information please feel free to contact us. Most installation questions can be handled via email or phone call.

Contact Information:

Toll Free (US) : 1-800-457-1690

Phone or FAX : 503-397-2918

Email: sales@dunestar.com

Web Page: www.dunestar.com

U.S. Mail: Dunestar Systems
P.O. Box 37
St. Helens, Oregon 97051

OTHER PRODUCTS

Dunestar manufactures several types of RF filters, switching and accessories. Please contact us for further information.

Dunestar

**Multiband
Remote Switchable**

**Model 600
HF Bandpass Filter**

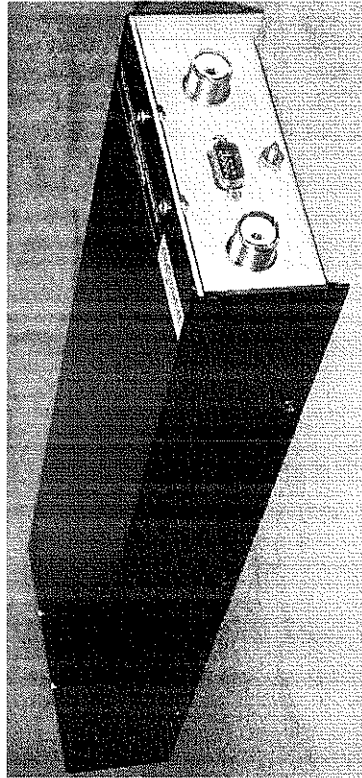
Dunestar

systems



Model 600

HF Remote Switchable Multiband Bandpass Filter



Thank you for choosing a Dunestar Multi-Band Bandpass Filter. With just a few simple connections your new filter system can be placed in operation. The Model 600 operates on 12VDC and requires less than 100-ma maximum. Either positive or negative keying may be used to activate the Model 600. The unit is normally configured for positive keying but is easily changed to negative keying. Keying mode is selected by jumpers on the relay board. Please refer to the accompanying schematic and instructions.

The 600 can be left in line full-time and by-passed when not in use by removing the +12VDC from the unit. A relay automatically by-passes the filter when the power is removed or if a band is NOT selected. This 'failsafe' feature allows use of WARC bands or listening on frequencies outside the available bandpass without swapping coax cables.

Band switching can be accomplished in several ways, depending on your usage: (1) Tracking with your transceiver can be piggy backed with one of the interface devices currently on the market. (2) Tracking with your remote antenna system switching scheme.(3) A separate rotary switch dedicated to the Model 600. Examples are included which can be adapted to your individual circumstance.

CAUTION:

General Specifications:

Insertion : Typical, 0.5-0.7db
 Rejection: Typical, 40db band-to-band
 Bandwidth: VSWR < 1.5/1 typical.

160M	1.8 - 1.93
80M	3.5 - 3.85
40M	7.0 - 7.30
20M	14.0 - 14.35
15M	21.0 - 21.50
10M	28.0 - 28.70

50 Ohm In and Out , Connectors: UHF

POWER RATINGS:

These filters are intended for use with 200-watt PEP SSB/CW transceivers. This is not to imply a 100% duty cycle. For example, if you were to operate RTTY for two minutes (continuous carrier, 100% duty) as much heating would occur as if you had run SSB speech (without compression, 50% duty) at the same power for roughly twice that length of time, as the average power is less with speech than with a continuous carrier. With speech compression, the average power increases with the amount of compression (60-80% duty) in use. CW average power is roughly comparable to speech.

VSWR CONSIDERATIONS:

VSWR can have a profound effect on the RF voltages and currents appearing in the bandpass filter. Excessive RF voltages and currents lead to component failures. Please remember that automatic antenna tuners correct the mismatch at the TRANSCIEVER not at the load or output end of the filter. The automatic tuner can actually make the stress on the bandpass filter worse. Before applying transmitter power to the filter check the VSWR to the amplifier or antenna(s) on each band and correct any excessive VSWR before transmitting through the filter. In general, the lower the SWR, the less likely you will be to experience difficulties. Every effort should be made to maintain minimum VSWR.

The Model 600 is designed to handle TRANSCIVER transmitter output levels. It cannot be used on high power amplifier outputs.

Default = +

Logic

INSTALLATION

DB9 Pin outs:

- (1) Brown 160M
- (2) Red 80M
- (3) Orange 40M
- (4) Yellow 20M
- (5) Green 15M
- (6) Blue 10M
- (7) Grey Ground
- (8) White Not Used
- (9) Black +12V Shell Shield

Positive Keying (supply +12V):

This is the configuration of many remote antenna select systems. Pin 9, NO CONNECTION, jumpered to ground in positive key mode. +12V from antenna switch or interface output applied to corresponding band select pin. Diodes should be used to isolate bandpass filter lines from antenna select lines. (See examples)

Negative Keying (closure to ground):

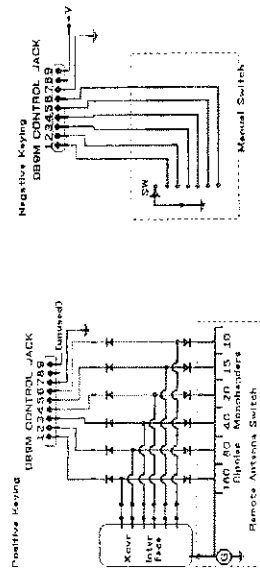
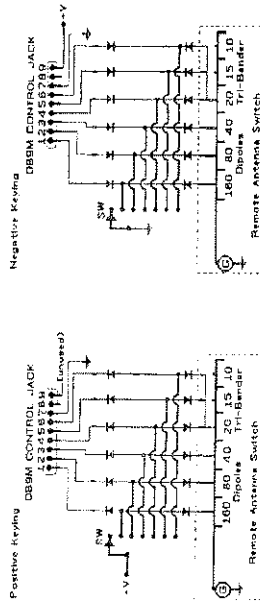
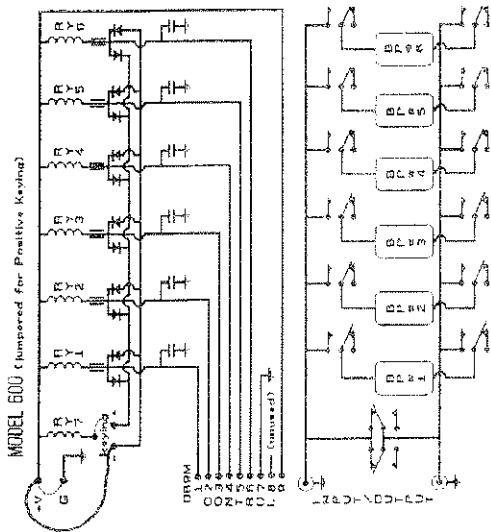
The 12VDC can be provided by a universal wall adapter or a 12VDC power supply already in the station. Most modern transceivers have low current 12VDC available on the "Acc." jack. Refer to transceiver manual for appropriate connection terminals. Provide a fuse in the supply voltage feed to the unit. 250-ma (1/4 Amp) is suggested. Normal maximum current is less than 100-ma. The negative (-) lead from your power supply and from your switch are connected to the Pin 7 (ground). The positive (+) lead connects to Pin 9 (+12V input). The antenna switch or interface output (closure to ground) is applied to corresponding band select pin. Diodes should be used to isolate bandpass filter lines from antenna select lines. (See examples)

RF CONNECTIONS:

The coax fittings can be used interchangeably for Input or Output. Depending on your station cables you may note better apparent VSWR one direction or the other. Some variation is expected due to tolerances of components and the electrical length of the coax lines in the station. GROUND: The case grounding post should be attached with a direct lead (short piece of coax braid or strap) to the station ground system.

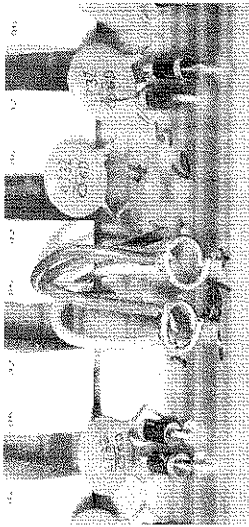
CHANGING KEYING MODE

Keying modes may be changed easily from POSITIVE to NEGATIVE. Refer to the diagrams and drawings provided.



(1) Carefully remove the four (4) 4-40 bolts and nuts from the front and rear of the enclosure. Also remove the #6 sheet metal screws (3 on each side). The top cover will lift straight up from the base. Do not disturb the placement of the windings on the coils as this will alter the tuning of the filter sections. By using a small iron the rest of the procedure can be accomplished without removing the entire assembly from the case.

(2) The leads from the DB9 can be shifted to allow viewing of the key terminals marked (+) and (-), and the (+V) terminal. Compare current jumpering to the illustrations of the PC board.



Jumpered for
< Positive Keying

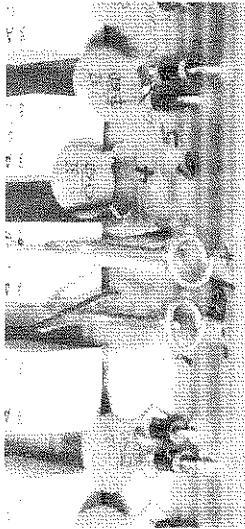
(3) For POSITIVE keying the ground (GREY) lead is connected to the terminal at (+V) along with the lead from V+ (BLUE) and the KEY LINE (VIOLET) is soldered to the (+) terminal.

NOTE: The +12V line on Pin #9 of the DB9 connector is grounded in this mode.

(4) For NEGATIVE keying, the ground (GREY) lead is not used. It should be pushed up out of the way. The KEY LINE (VIOLET) is soldered to the (-) terminal and the +12V line on Pin #9 of the DB9 connector is used to supply the relays.

(5) One end of the BLUE wire is attached to the (+V) terminal. The opposite end is jumpered to (-) keying terminal in POSITIVE mode or to the (+) keying

Jumpered for
> Negative Keying >



terminal in NEGATIVE mode. It is used to provide Back EMF suppression across the relay solenoids. This protects interface devices from possible spikes. It is not strictly required for use with mechanical switching.

(6) Replace screws from step #1.

Schematic and Switching Examples

The schematic shows the switching system which is the heart of the Model 600. The use of diodes in a matrix serves two purposes, first it allows shifting from Positive to Negative keying to select bands and the off set of diodes protects against back EMF by being placed across the relay solenoid.

The switching examples shown on page 6 are just a few of the many possibilities. By studying them you should be able to adapt one of these configurations to suit your application. The examples should also help you visualize the differences between Positive (source) and Negative (sink) keying.

The diodes are used to isolate the devices being switched, from each other.

If you need assistance please feel free to call, FAX or email.