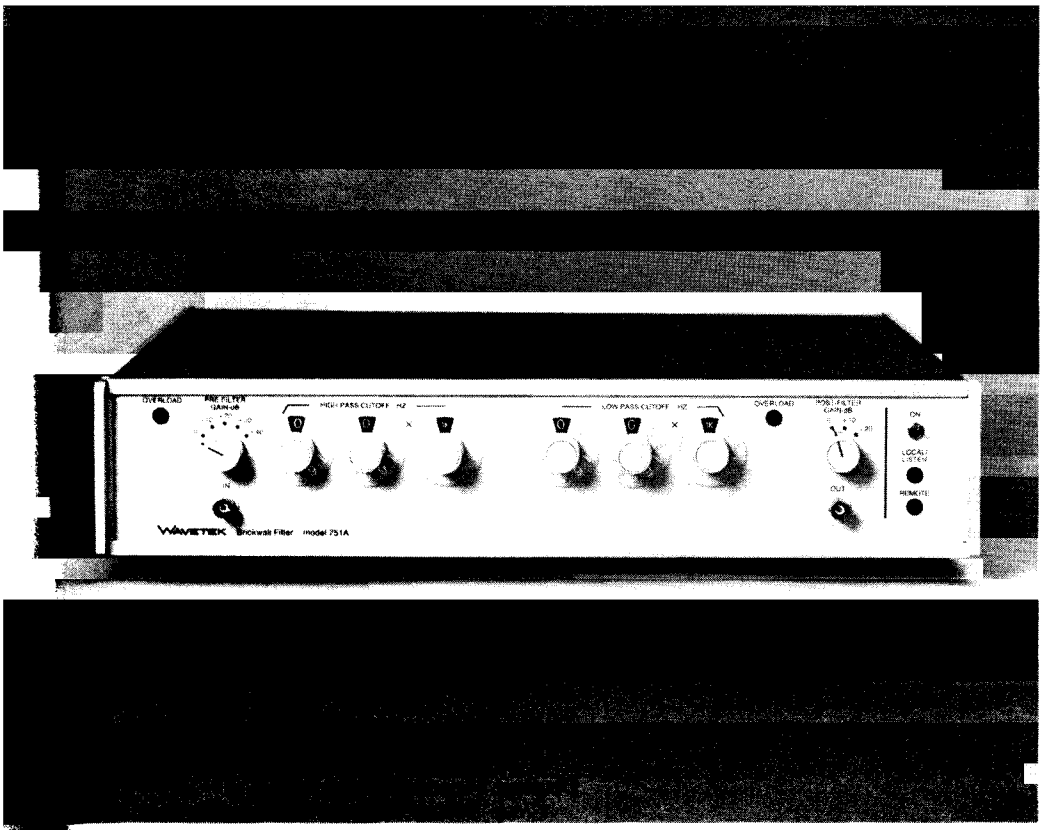

Programmable Brickwall® Filter

- **Frequency Range: 1 Hz to 100 kHz**
- **Rolloff: 115 dB/Octave**
- **Resolution: 2 Digits**
- **Overload Detectors**
- **Options: GPIB and BCD Interfaces**

Models 751A, 752A and 753A are wide-range tunable, programmable Brickwall® filters with near ideal passband and stopband characteristics.

Each network or channel employs a patented* 7th order elliptic (Cauer) filter with very high attenuation slopes of 115dB/octave.

Features

Programming of high and low filter cutoff frequencies, pre-filter gain, and post-filter gain is by front panel controls and optionally, by digital programming through a BCD parallel-input, buffered interface or an IEEE 488-1978 (GPIB) bus interface.

*U.S. Patent 4,246,542

FUNCTIONS

Model 751A: Bandpass with independent control of high pass and low pass sections.
Model 752A: Dual indepenent low pass channels.
Model 753A: Independent high pass and low pass channels.

CUTOFF FREQUENCY (f_c)

Range
1 Hz to 99 kHz with front panel control and GPIB.
1 Hz to 100 kHz with remote control (BCD only).

Control (Each Channel): Two 10-position switches, one 4-position multiplier switch; remotely by 12-bit code.

Resolution Multiplier	Frequency (Local)	Resolution
X1	1 to 99 Hz	1 Hz
X10	100 to 990 Hz	10 Hz
X100	1k to 9.9 kHz	100 Hz
X1k	10k to 99 kHz	1 kHz

Accuracy
Low Pass: −0, +2.5%.
High Pass: +0, −2.5%.
Stability: ± 200 ppm/°C.
Gain (Prefilter): 0 to +40 dB (±0.2 dB) in 10 dB steps. One 5-position switch or 3-bit code.
Gain (Postfilter): (Model 751A only.) 0, +10, +20 dB (±0.2 dB). One 3-position switch, or 2-bit code.

INPUT CHARACTERISTICS

Coupling
Low Pass channel: DC, AC with 0.3 Hz nominal cutoff.
High Pass channel: DC input, AC thruput.
Impedance: 1 MΩ, 50 pF, nominal.
Full-Scale Signal: ±10V at 0 dB gain; ±100V absolute max.
Equivalent Input Noise: −150 dBV/√Hz with +40 dB gain.

OUTPUT CHARACTERISTICS

Impedance: 50Ω nominal.
Full-Scale Signal: ±10V, into 5 kΩ.
Noise (1 MHz BW): Better than 80 dB below full-scale referred to output at any prefilter gain. (0 dB post filter gain (Model 751A only).
<10 μV referred to input at 40 dB prefilter gain.
Harmonic Components: >80 dB below full-scale for 1 kHz input frequency.
Spurious Components; >80 dB below full-scale (includes line related spurious).
Intermodulation Products: >70 dB below full-scale for 90 kHz and 70 kHz input frequencies.
DC Offset: <±50 mV, adjustable to 0 Vdc.
Drift: ±50 mV max, 0° to +40°C at 0 dB gain setting.

FILTER CHARACTERISTICS

Type: 7-pole, 6-zero elliptic (Cauer).
Rolloff: 115 dB/octave.
Passband Ripple
Low Pass Channel: 0.8 dB, p-p max.
High Pass Channel: 0.8 dB, max; 1.4 dB, p-p max, for f_c >40 kHz, −3 dB at approx. 400 kHz.
Stopband Attenuation
Low Pass channel:
>0.8 dB (DC to f_c),
>40 ± 4 dB at 1.34 f_c,
>60 ± 4 dB at 1.53 f_c,
>76 dB at 1.7 f_c.
High Pass channel:
>0.8 dB at f_c,
>40 ± 4 dB at 0.75 f_c,
>60 ± 4 dB at 0.65 f_c,
>76 dB at 0.6 f_c.
Maximum Stopband Attenuation
Low Pass Channel: 90 dB typ; 80 dB min. for f >2 f_c.
High Pass Channel: 90 dB typ; 80 dB min for f <0.5 f_c.
Amplitude Match: (Model 752A only.) ±0.25 dB, DC to 0.8 f_c, ±0.4 dB, 0.8 f_c to f_c.
Phase Match: (Model 752A only.) ±3° max, DC to 0.8 f_c; ±4 max, 0.8 f_c to f.

GENERAL

Supplied: Manual and rack mount kit.
Input/Output: BNC's on front and rear panel.
Environment
Operating Temperature: 0° to +40°C.
Storage Temperature: −20° to +70°C.
Dimensions: 43.2 cm (17 in.) wide, 8.9 cm (3½ in.) high, 33 cm (13 in.) deep.
Weight: 8.2 kg (18 lb) net, 10.5 kg (23 lb) shipping.
Power: 115/230V ±10%, 50 to 60 Hz, 25 watts.

OPTIONS

001: BCD Interface. A total of 35 bits (lines) for programming. Programming delay is 500 μs plus filter settling time: a function of cutoff frequency being programmed.
002: IEEE 488-1978 Bus Interface (GPIB). IEEE functions: AH1, L1, DT1.

FACTORY/FOB

San Diego, CA

PRICE

Model 751A	**$4,395**
Model 752A	**$4,695**
Model 753A	**$4,695**
Option 001	**$825**
Option 002	**$875**