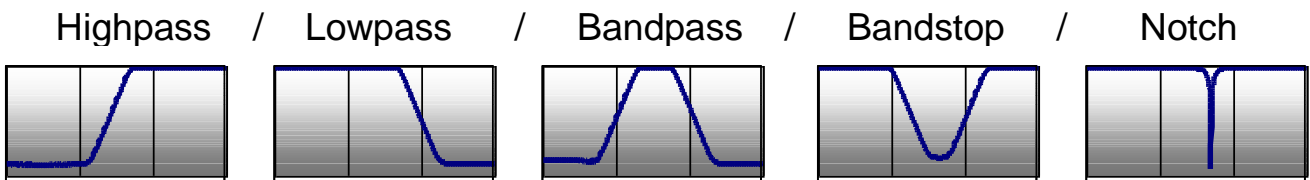




## BenchMaster 8

Versatile 2 Channel Filter / Amplifier / IEPE  
Switchable High / Lowpass Gain to x 500

- 2 Independent Channels
- Switchable High/Low pass
- 0.01 Hz – 99.9 kHz filter range
- Input gain to x 500 (+54 dB)
- 6 models, 6 filter responses
- 3-digit frequency setting
- Differential/Single ended input
- 'Pulse' and 'Flat' Modes
- Range of filter types
- IEPE 24VDC, 4 mA transducer supply
- 4 stage signal level indication
- Optional DC powered versions



The BenchMaster 8 dual channel filter with gain, is considered by many to be the 'standard classic' benchtop laboratory analogue filter. Now in its 6<sup>th</sup> generation, it has been in continuous production since 1975, with 1000's in use worldwide.

The BenchMaster 8 is available in a range of different filter types:

- Butterworth
- Bessel (4 and 8 pole)
- General purpose
- Linear phase
- Anti-aliasing responses

The two independent channels can each be switched between high pass and lowpass or combined in series or parallel to give; two channels of lowpass, two channels of high pass, one lowpass/one high pass, series connection to give bandpass, and parallel connection for band stop/notch filtering.

Inputs can be AC or DC coupled, single ended or differential. Up to +54dB(x500) of gain can be applied to the input before filtering (9 steps) with 4 stage signal level indication. An IEPE 24VDC, 4 mA current source is available for transducer power with indication of correct connection.

The basic filter response has 3 'modifier' settings:

- Minimum overshoot 'pulse' mode for impulsive signals
- 'flat' which provides a flattened response to cut-off
- 'Butterworth' type response with -3 dB at cut off frequency.

Using the 'flat' modifier true 16 pole Bessel and Butterworth filters can be set, maintaining -3dB at cut off.

Optional 10 - 30 Volt DC power input allows use for portable and vehicle applications. The compact 1U metal case is designed for both bench top use and rack mounting.

**Altogether, no other laboratory filter offers so many features for the price or size.**

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## BenchMaster 8, Filter Amplifier System Performance Specification

Electronic: Typical specifications after 30 minutes warm up at 20 °C ambient temperature.

<b>Frequency range:</b> 0.01 Hz – 99.9 kHz <b>Filter cutoff resolution:</b> 999:1 in 5 ranges <b>Cutoff accuracy:</b> 2 % of $F_c$ <b>Input impedance:</b> 1M $\Omega$ , 100pF <b>Input voltage, linear:</b> +/- 10 V <b>Input voltage maximum:</b> +/- 40 V <b>Input gain:</b> + 54 dB (x 500 in 9 steps: x1, 2, 5, 10, 20, 50, 100, 200, 500) <b>Input modes:</b> Single Ended/Diff., IEPE (ICP®) (4 mA, 24V) <b>Input coupling:</b> DC, AC, -3 dB @ 0.17 Hz (matched AC coupling for differential input) <b>Output type:</b> Single ended	<b>Output impedance:</b> 50 $\Omega$ <b>Output voltage:</b> +/- 10 V (load > 2k $\Omega$ ) <b>Output noise:</b> < 200 nV/ $\sqrt{\text{Hz}}$ <b>Output linearity:</b> < 0.03% <b>Offset voltage:</b> < 5 mV <b>Offset drift:</b> 200 $\mu\text{V}/^\circ\text{C}$ <b>Cross talk:</b> > -80dB <b>Amplitude matching:</b> +/- 0.1 dB to 0.8 of $F_c$ <b>Phase matching:</b> +/- 1° to 0.8 of $F_c$ <b>Power AC:</b> 105-125, 210-250 VAC 50/60Hz 30 VA connector IEC 6 Amp <b>Power DC: (optional)</b> 10-30 VDC 30 VA connector XLR3 pin
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**Size and Weight:** 390x482x44 mm, 15.4"x19"x1.7" (with handles), metal case, 1U 19" rack mounting, 390mm (13.8") deep, integral mounting brackets, 3.7 Kg (8.2 lb)

## Ordering Information and 6 Filter Responses

The BenchMaster 8 is available as 6 models (6 filter types), each with 3 modifier settings.

The modifier settings are: -

- 'flat' modifier with a flatter bandpass, near 0 dB response at cut off;
- 'Butterworth' modifier with -3 dB at cutoff
- 'pulse' modifier optimised for minimum signal overshoot.

The six response types are shown below and can be ordered as: -

The response types are shown below and can be ordered as: -

**8.05 4 pole Butterworth, 24 dB/Octave, monotonic stopband.**

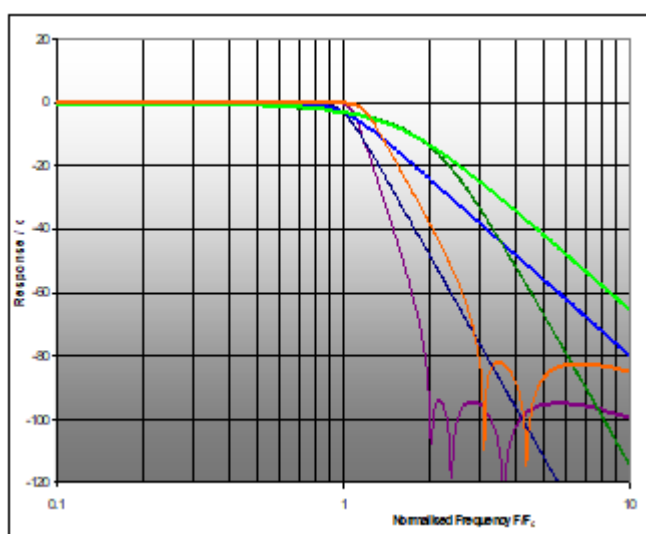
**8.03 8 pole Butterworth, 48 dB/Octave, monotonic stopband.**

**8.09 4 pole Bessel, 24 dB/Octave, monotonic stopband.**

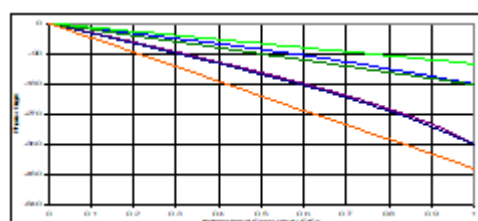
**8.07 8 pole Bessel, 48 dB/Octave, monotonic stopband.**

**8.13 Elliptic type response, 94 dB/Octave, - 90 dB stopband.**

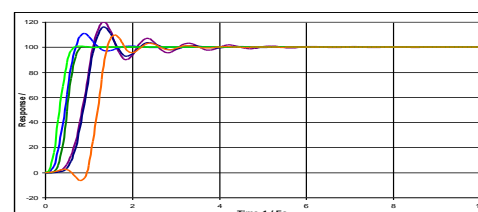
**8.41 Flat, linear phase response, 52 dB/Octave, - 80 dB stopband.**



Benchmaster 8 filter responses



Benchmaster 8 Phase responses



Benchmaster 8 Amplitude responses

Due to continued product development Kemo Limited reserve the right to change specification without notice.

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