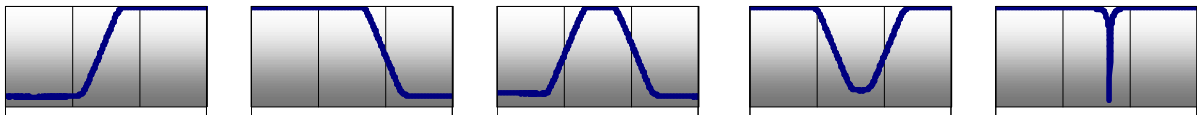


# Kemo®

## BenchMaster 8 Versatile 2 Channel Filter Amplifier 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
- Highpass / Lowpass / Bandpass / Bandstop / Notch
- Differential/Single ended input
- 'Pulse' and 'Flat' Modes
- Range of filter types
- IEPE 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, and anti-aliasing responses. The two independent channels can each be switched between highpass and lowpass, or combined in series or parallel to give; two channels of lowpass, two channels of highpass, one lowpass/one highpass, series connection to give bandpass, and parallel connection for bandstop/notch filtering.

The BenchMaster 8 has easy to use clear front panel controls, with BNC input and output. The inputs can be AC or DC coupled, single ended or differential. Up to +54dB(x500) of gain can be applied, in 9 steps, to the input before filtering, with 4 stage signal level indication. An IEPE 4 mA current source is available for transducer power, with indication of correct connection.

The basic filter response has 3 'modifier' settings: a minimum overshoot 'pulse' mode for impulsive signals; 'flat' which provides a flattened response to cut-off; and a '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.

**All together, 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>Output impedance:</b>	50 Ω
<b>Filter cutoff resolution:</b>	999:1 in 5 ranges	<b>Output voltage:</b>	+/- 10 V (load > 2kΩ)
<b>Cutoff accuracy:</b>	2 % of $F_c$	<b>Output noise:</b>	< 200 nV/√Hz
<b>Input impedance:</b>	1MΩ , 100pF	<b>Output linearity:</b>	< 0.03%
<b>Input voltage, linear:</b>	+/- 10 V	<b>Offset voltage:</b>	< 5 mV
<b>Input voltage maximum:</b>	+/- 40 V	<b>Offset drift:</b>	200 μV/ °C
<b>Input gain:</b>	+ 54 dB (x 500 in 9 steps: x1, 2, 5, 10, 20, 50, 100, 200, 500)	<b>Cross talk:</b>	> -80dB
<b>Input modes:</b>	Single Ended/Diff. , IEPE (ICP <sup>®</sup> ) (4 mA, 24V)	<b>Amplitude matching:</b>	+/- 0.1 dB to 0.8 of $F_c$
<b>Input coupling:</b>	DC, AC, -3 dB @ 0.17 Hz (matched AC coupling for differential input)	<b>Phase matching:</b>	+/- 1° to 0.8 of $F_c$
<b>Output type:</b>	Single ended	<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

**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:-

**8.05** 4 pole Butterworth, 24 dB/Octave, monotonic stopband. (Butterworth response modifier shown)

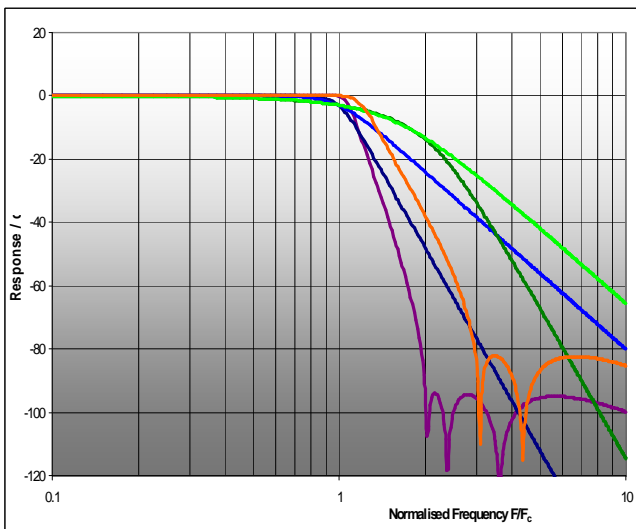
**8.03** 8 pole Butterworth, 48 dB/Octave, monotonic stopband. (Butterworth response modifier shown)

**8.09** 4 pole Bessel, 24 dB/Octave, monotonic stopband. (Butterworth response modifier shown)

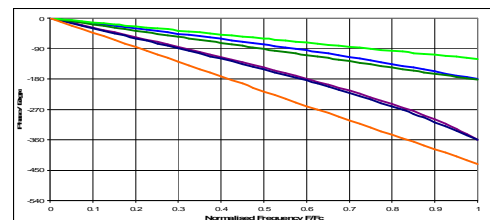
**8.07** 8 pole Bessel, 48 dB/Octave, monotonic stopband. (Butterworth response modifier shown)

**8.13** Elliptic type response, 94 dB/Octave, - 90 dB stopband. (Flat response modifier shown)

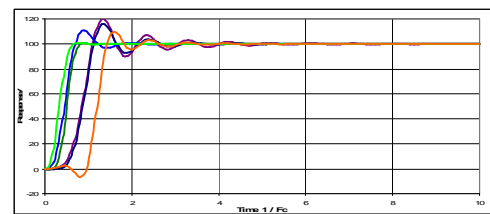
**8.41** Flat, linear phase response, 52 dB/Octave, - 80 dB stopband. (Flat response modifier shown)



BenchMaster 8 Filter responses



BenchMaster 8 Phase responses



BenchMaster 8 Amplitude responses

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