



BenchMaster 21M

Highpass / Lowpass Filter System
Gain to x50 (+34dB)

- 9800 : 1 cutoff span
- Easy to Use
- Switchable High / Low pass
- Signal level indication
- 6 Gain steps to x50 (+34dB)
- Single ended / differential input
- BNC connectors
- AC / DC / IEPE(ICP[®]) inputs
- Input overload indication
- Switchable 'pulse' response
- 2 Rugged racks, AC or DC power
- Full range of filter responses



8 Channel BenchMaster 21M

The Kemo BenchMaster 21M, is an easy to use, versatile manual filter system. Available in single channel DC powered case, or up to 9 channels in AC or DC powered racks. The simple easy to use front panel make this system ideal for general purpose filtering, and on- site work.

Inputs are front panel switched, AC/DC coupling, and a 4mA, 20 Volt source for IEPE (ICP[®]) transducers. Two stage gain provide steps of 1,2,5,10,20,50, with 4 level indication of input signal level. A front panel switch selects either high pass or low pass filtering. Front panel connectors are BNC. There are three operating modes, normal filter response, bypass, and a minimum overshoot mode for impulsive signals. Frequency is set by two digital thumbwheels, and a 3 position decade switch. This provides 3 ranges of 98:1 filtering. Three frequency options are available, 0.1Hz to 980 Hz, 1 Hz to 9 800 Hz and 10 Hz to 98 000 Hz. Filter bypass is frequency setting '99', and external control '00'.

The BenchMaster 21M is available with the full range of Kemo filter responses, Butterworth, Bessel, anti-aliasing, general purpose linear phase, and the legacy response 37 to ensure compatibility with existing installations. BenchMaster 21M filters can be fitted to a Kemo 19" rack, available with AC or optional DC power, or can be fitted to the compact 1 channel case. A neat portable high/lowpass filter with gain and easy operation.

The BenchMaster 21M is a versatile easy to use highpass/lowpass filter, and its ease of use make it well suited to on site use.

Due to continued product development Kemo reserves the right to change specification without notice

• **Kemo Limited**

Unit 1, Dene Yard
Green Street Green Road
Dartford Kent DA2 8DH
www.kemo.com
Tel + 44 (0)1474 705168
Fax + 44 (0)1474 705366

• **Kemo Inc.**

5 Northbrook Way
Greenville
SC 29615

Tel (864) 297 2522
Fax (864) 675 1530

ds_bm21m.doc

BenchMaster 21M, Filter Amplifier System Performance Specification

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

<p>Frequency range: 3 models 10 Hz – 98 kHz 1 – 9 800 Hz 0.1 – 980 Hz</p> <p>Filter cutoff resolution: 98:1 in 3 ranges</p> <p>Cutoff accuracy: 2 % of F_c</p> <p>Input impedance: 100kΩ , 100pF</p> <p>Input voltage, linear: +/- 10 V</p> <p>Input voltage maximum: +/- 40 V</p> <p>Input gain: x 50+ 34 dB 6 steps: x1, 2, 5, 10, 20, 50,</p> <p>Input modes: Single Ended/Diff. , IEPE (ICP[®]) (4 mA, 24V)</p> <p>Input coupling: DC, AC, -3 dB @ 0.17 Hz (matched AC coupling for differential input)</p>	<p>Filter Bypass Yes</p> <p>Output type: Single ended</p> <p>Output impedance: 50 Ω</p> <p>Output voltage: +/- 10 V (load > 2kΩ)</p> <p>Output noise: < 200 nV/$\sqrt{\text{Hz}}$</p> <p>Output linearity: < 0.03%</p> <p>Offset voltage: < 5 mV</p> <p>Offset drift: 200 $\mu\text{V}/^\circ\text{C}$</p> <p>Cross talk: > -80dB</p> <p>Amplitude matching: +/- 0.1 dB to 0.8 of F_c</p> <p>Phase matching: +/- 1° to 0.8 of F_c</p>
--	---

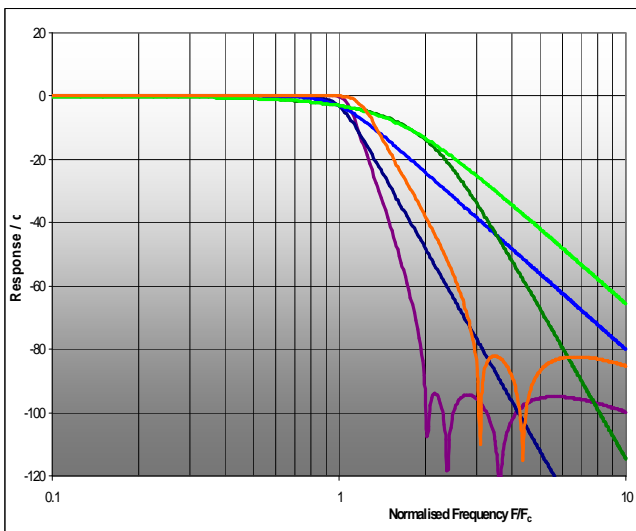
Ordering Information and Filter Responses

The BenchMaster 21M is available with a range of filter responses. When ordering select the frequency and a suitable filter response. The response types are shown below and can be ordered as:-

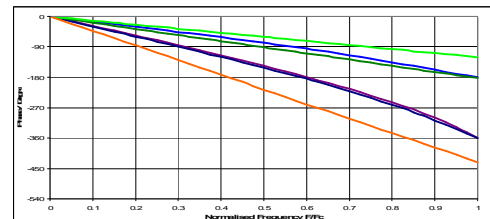
- 05** 4 pole Butterworth, 24 dB/Octave, monotonic stopband.
- 03** 8 pole Butterworth, 48 dB/Octave, monotonic stopband.
- 09** 4 pole Bessel, 24 dB/Octave, monotonic stopband.
- 07** 8 pole Bessel, 48 dB/Octave, monotonic stopband.
- 13** Elliptic type response, 94 dB/Octave, - 90 dB stopband.
- 37** Elliptic type response, 51 dB/Octave, - 80 dB stopband.
- 41** Flat, linear phase response, 52 dB/Octave, - 80 dB stopband.



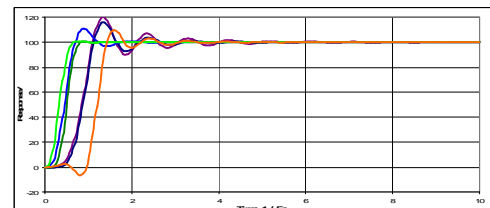
Single channel
BenchMaster 21M
in compact mini rack.



BenchMaster 21M Filter responses



BenchMaster 21M Phase responses



BenchMaster 21M Amplitude responses

Any questions or if you need more information please contact Kemo

• Kemo Limited

Unit 1, Dene Yard
Green Street Green Road
Dartford Kent DA2 8DH
www.kemo.com
Tel + 44 (0)1474 705168
Fax + 44 (0)1474 705366

• Kemo Inc.

5 Northbrook Way
Greenville
SC 29615

Tel (864) 297 2522
Fax (864) 675 1530