Small Instrumentation Modules

SIM965 — Bessel and Butterworth filter

- Bessel and Butterworth filter types
- 1 Hz to 500 kHz
- 3-digit cutoff frequency resolution
- High-pass or low-pass operation
- Selectable rolloff
- Continuous time (not sampled)





SIM965 Analog Filter

The SIM965 Analog Filter is ideal for signal conditioning applications where Bessel or Butterworth filters are needed. Bessel filters offer clean step response (negligible overshoot) and linear phase response, while Butterworth filters provide excellent pass-band flatness with some overshoot. A choice of high-pass or low-pass filtering is selected from the front panel. Cutoff frequencies are set with 3-digit resolution, and a choice of 12, 24, 36 or 48 dB/octave rolloff is provided for either filter type.

The SIM965 accepts input signals between ±5 V, and has unity gain. Its low noise and low harmonic distortion, along with a bandwidth of greater than 1 MHz, make it ideal in sensitive analog applications. If signal amplification is needed, the SIM910 JFET Preamplifier, or the SIM911 BJT Preamplifier should be considered.

Up to eight SIM965 modules can be housed in one SIM900 mainframe. Mainframes can be cascaded, allowing an unlimited number of filter channels for complex applications.

The SIM965 is also fully programmable. All functions can be controlled from a computer via the SIM900 Mainframe. Both RS-232 and GPIB interfaces are supported by the mainframe.

The digital control circuitry in the SIM965 is designed with a special clock-stopping architecture in which the microcontroller is turned on only when settings are being changed. This guarantees that no digital noise can contaminate low-level analog signals.

Ordering Information

SIM965	Programmable analog filter

Input

Impedance	1 MΩ
Coupling	AC or DC
Gain	1×
Max. input	±5 V (48 dB/Oct Butterworth setting) ±7 V (36 dB/Oct Butterworth setting) ±10 V (all other Butterworth settings and all of the Bessel settings)

Filter

Filter	Low-pass or high-pass
Tuneable freq. range	1 Hz to 500 kHz
Resolution	3-digit
Type	Butterworth, Bessel
Rolloff	12 dB/oct., 24 dB/oct., 36 dB/oct., or 48 dB/oct.

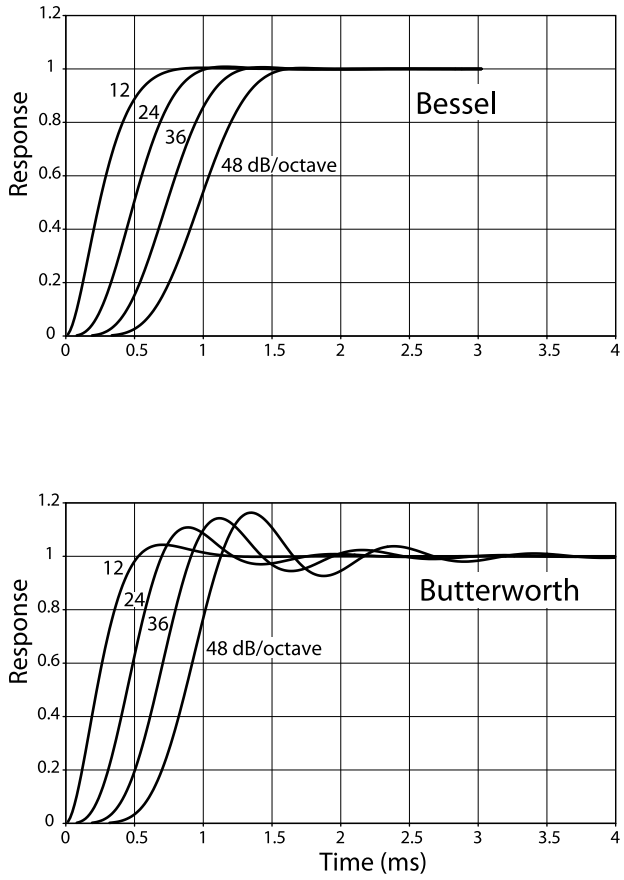
Output

Noise	<200 µVrms (1 MHz bandwidth)
THD	0.01 % (80 dB) at 1 kHz

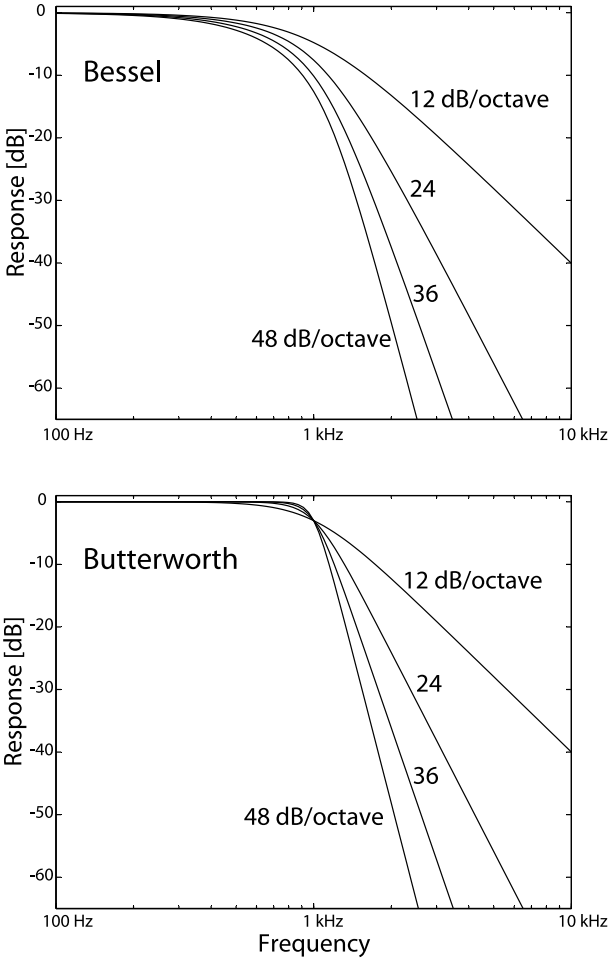
General

Operating temperature	0 °C to 40 °C, non-condensing
Interface	Serial via SIM interface
Connectors	BNC (2 front, 1 rear) DB15 (male) SIM interface
Power	Powered by SIM900 Mainframe, or by user-provided DC power supply (±15 V and +5 V)
Dimensions	1.5" × 3.6" × 7.0" (WHD)
Weight	1.5 lbs.
Warranty	One year parts and labor on defects in materials and workmanship

Step Response



Frequency Response



Note: All graphs correspond to a 1 kHz cutoff frequency