

# Small Instrumentation Modules

*SIM965 — Bessel and Butterworth filter*



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- **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 ... \$1095 (U.S. list)**



## **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  $\pm 5$  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 | \$1095 |
|--------|----------------------------|--------|

## Input

|            |  |
|------------|--|
| Impedance  | 1 M $\Omega$   |
| Coupling   | AC or DC   |
| Gain       | 1 $\times$   |
| Max. input | $\pm 5$ V (48 dB/Oct Butterworth setting)<br>$\pm 7$ V (36 dB/Oct Butterworth setting)<br>$\pm 10$ 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. |

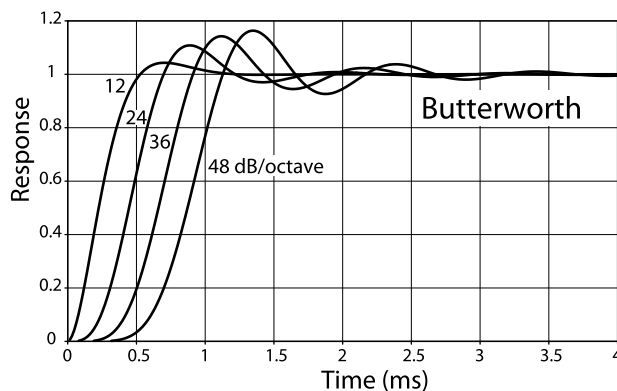
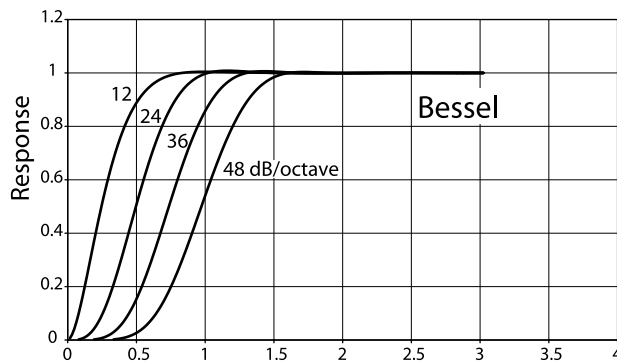
## Output

|       |                                   |
|-------|-----------------------------------|
| Noise | <200 $\mu$ Vrms (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)<br>DB15 (male) SIM interface                                      |
| Power                 | Powered by SIM900 Mainframe, or by user-provided DC power supply ( $\pm 15$ V and +5 V) |
| Dimensions            | 1.5" $\times$ 3.6" $\times$ 7.0" (WHD)  |
| Weight                | 1.5 lbs.  |
| Warranty              | One year parts and labor on defects   |

## Step Response



Note: All graphs correspond to a 1 kHz cutoff frequency

## Frequency Response

