



# Model 90 Switcher

The Model 90 Switcher is designed to allow multiple microphone support for measurement systems such as SIA Software's SmaartLive®. Using the Model 90, audio professionals can easily realize the benefits of obtaining multiple measurement points. Up to eight microphones can be connected and routed to the two outputs. Each of the eight inputs includes a source of 48 volt phantom power. This ensures correct operation of virtually all measurement microphones. Eight DIP-type switches allow individual on/off control of the phantom power sources. Line-level signals can also be connected and routed by the Model 90. For additional flexibility, an audio attenuator ("pad") circuit is associated with each of the two outputs. These pads, in or out selectable under software control, simplify the connection of a mix of microphone and line-level signals. Front-panel switches and displays allow manual operation of the unit. The Model 90 also incorporates a USB interface, enabling PC control of the unit's operation.

## Model 90 Front Panel



The Model 90's switching functions are entirely passive, with no active electronics in the signal path. Simple by design, the Model 90 does not include microphone pre-amplification, analog-to-digital conversion, or other processing circuitry. The outputs are intended to be connected to devices best suited to perform those tasks. Switching and pad functions are performed using 36 subminiature electro-mechanical relays. The circuitry design has been optimized to provide negligible signal degradation, high off isolation, and excellent cross-talk characteristics. For flexibility, each of the two outputs can be placed in one of three states: connected, connected with pad, and not connected. In either of the connected states any one of the eight inputs can be connected to an output. In the connected with pad state the selected input is first routed through a resistor attenuator and then onto the output. In the not connected state the output is actually terminated providing a balanced 150 ohm load. This presents a "quiet" signal to an associated measurement system.

By incorporating a USB interface the Model 90 can be quickly connected to and controlled by a personal computer running the Microsoft Windows® operating system. A simple application program is included, allowing display of the Model 90's status, as well as selecting the input sources and state of the output pads. Third-party software products are also able to control the Model 90, including SIA's SmaartLive. While intended to be primarily controlled by a personal computer, the pushbutton switches and numeric displays on the Model 90 allow the unit to be used in a completely stand-alone manner.

The compact, lightweight unit has been optimized for use in portable applications. Weighing less than three pounds, it's an ideal accessory for use with personal computer-based testing systems. For permanent installation a rack-mounting kit is also available. Standard 3-pin XLR-type connectors are used for all audio inputs and outputs. Mains input voltage is factory selected for 120 or 220/240V, 50/60Hz operation.

While the Model 90 was intended primarily for use with measurement microphone signals, additional applications can be easily supported. As the switching method is passive and the outputs include attenuators many different signal types can be supported, including line-level analog and digital audio. The only caveat is that at all times a fixed load is placed across each of the eight input channels. This is due to components associated with the 48 volt phantom power circuitry. The load across pins 2 and 3 of the input XLR-type connectors is nominally 13.62k ohms, with a "center tap" connection capacitor-coupled to pin 1. In most applications this should not prove to be an issue as the source impedance of contemporary devices is generally very low. For channel selection and pad control, the personal computer software architecture associated with the Model 90 was selected to be very simple. This allows other software applications to easily incorporate support for the unit.

A reasonable question may arise concerning the Model 90's need for 120 or 220/240 volt mains power. For portable applications it would be ideal if the unit could be powered directly from the USB interface. Unfortunately, reality comes into play in the form of the phantom power supplies. While some microphones may work with phantom power as low as 12 volts, a number of popular and excellent mics require 48 volts for operation. The power available from a USB connection is simply not sufficient to generate the required 48 volts.

To meet the Model 90's performance goals required the careful placement of the front- and back-panel components. The overriding goal was to minimize the unit's size while maximizing its audio integrity. It was imperative to keep the AC mains connections, power supply section, and logic circuitry as far away from the inputs, outputs, and switching circuitry as possible. This led to the unique placement of the connectors, switches, and displays.

### **Model 90 Back Panel**



## **Model 90 Specifications**

### **Audio Inputs:** 8

Input Impedance: 13.62k ohms ( $\pm 2\%$ ) from pin 2 to pin 3; 6.81k ohms ( $\pm 1\%$ ) via 22uf capacitor from pin 2 to pin 1 and from pin 3 to pin 1. (This is due to the 48 volt phantom power circuitry.) Compatible with microphone or line-level signals.

### **Phantom Power:**

+48 volt, individual on/off for each input

### **Audio Outputs:** 2

Each output has 35dB attenuator ("pad"), in/out selectable

### **Switching Method:**

Metallic using sealed bifurcated relays; no circuitry in signal path

### **USB Interface:**

Complies with USB version 1.1 for low-speed operation; configured as an HID device. Used for input selection and configuration only; does not send or receive digital audio signals.

### **Interface software:**

Compatible with Microsoft Windows® 98SE, 2000, and XP operating systems

### **Source Selection:**

Manual using pushbutton switches, remote via personal computer application software, or auto-sequence. Inputs associated with auto-sequence can be selected; auto-sequence time interval selectable over range of  $\frac{1}{2}$  to 9 seconds.

### **Connectors:**

**Audio:** 3-pin XLR-type

**USB:** standard type B

**AC Mains:** 3-blade IEC-type

### **AC Mains Requirements:**

120 or 220/240V,  $\pm 10\% / -15\%$ , factory configured 50/60Hz, 10VA maximum

### **Dimensions:**

9.35 inches wide (23.8 cm)

7.20 inches deep (18.3 cm)

1.72 inches high (4.4cm)

### **Rack Mounting Kit:**

Allows unit to be mounted in one space of a standard 19-inch rack; purchased separately

### **Weight:**

2.7 pounds (1.2 kg)

3.9 pounds (1.8 kg), shipping

Features and specifications subject to change without notice.

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