

SwitchMan “*Quartet*”

Preliminary User’s Guide

Dec. 08, 2000

Firmware revisions: Main *v1.3*, Remote *v1.1*

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1. Product Brief

The SwitchMan "Quartet" system is a switching control center. The complete system consists of the Main Unit and a wired Remote. All user controls and displays are on the Remote. The Remote draws power from the Main Unit. The following list summarizes features of this product:

- 4 sets of 6-channel inputs:
 - 2 balanced/unbalanced inputs with XLR connectors
 - one balanced/unbalanced input with XLR *and* RCA connectors
 - one unbalanced input, RCA only
- 6-channel output with two connector sets: balanced (XLR) and unbalanced (RCA)
- Proprietary, fully electronic volume control system
- Individual level trim and mute functions on all channels, all inputs
- Templates store the system set-up data
- Built-in MIDI interface
- 115/230V 50/60Hz operating voltage

All input connectors are on a front panel of the Main Unit. All output connectors, MIDI and Remote Unit connectors are found on the back panel.

The signal path is made of six electrically identical channels. The gain and noise characteristics are:

- | | |
|--|--------------------|
| • Maximum gain (balanced IN to balanced OUT) | 9 dB |
| • Gain control range | better than 62 dB |
| • Max. output level | 26 dBu |
| • Max. input level | 22 dBu |
| • S/N ($U_{out} = 2V$ RMS, A-weighted) | > 110 dB |
| • THD ($U_{out} = 2V$ RMS) | < 0.01% |
| • Crosstalk | better than -80 dB |

At this time (Nov. 30/2000), the Main system ships with firmware v1.3, and Remotes ship with firmware v1.1

Product changes since last release (Main v1.2)

- 1) A new feature: **Soft Mute** is being introduced in this release; see “Special Features”, section 3.6

Product changes introduced in v1.2

- 1) **Template Load** details have changed; check section 1.2.3
- 2) Previously announced **Channel Solo** feature has been implemented; see “Special Features”, section 3.2
- 3) New feature: **Sticky Templates** is being introduced in this release; see “Special Features”, section 3.5

2. Getting Started

1.1 Quick Set-up

Main Unit has one port dedicated to the connection with the Remote. Look for DB-9 modular connectors on the back panels of both units. The Remote is powered from the Main Unit.

Typical set-up procedure will consist of the following steps:

- connect the Remote to the Main Unit using the cable provided, secure the connectors in place
- connect audio systems to the Main Unit
- power up SwitchMan Main Unit.

The Remote-to-Main cable is terminated with DB-9 plugs: male connector on the Main Unit side and female connector on the Remote side. Please note that DB-9 terminated cables are commonly used to connect RS-232 peripheral devices to personal computers. On a personal computer, those DB-9 connectors are marked as COM ports. SwitchMan's Remote Unit is NOT an RS-232 compatible device, thus

*never connect SwitchMan Remotes to COM ports on personal computers,
never connect SwitchMan Main Units to COM ports on personal computers.*

After first-time power-up, the Remote should present the following information:

- Master Volume setting of **20** on the numerical display
- input system indicator LED (green) should be lit at System **A**
- all other LED indicators should be turned off.

The system **A** selector (green LED) on the Main Unit's front panel should be lit as well. At this point, the SwitchMan "Quartet" is ready for operation. Turning the main knob at the center of the Remote adjusts the Master Volume. The volume setting is displayed as a step number ranging from **0** ("zero", full attenuation) to **110** (max. volume).

The initial configuration of the system is as follows:

- Input System A is selected
- Master Volume level is step no. 20 (all Input Systems)
- Channel Trim value is 0 (all channels, all Input Systems)
- none of the channels is mute (all Input Systems)

SwitchMan "Quartet" uses a nonvolatile memory (NVRAM) to store Template files. A template is a data file that saves system settings. The NVRAM contains six templates. In a new system, all templates are initialized to default values, as listed above.

1.2 Operation

From a user standpoint, the SwitchMan “Quartet” system operates in one of the three modes:

- Volume Control Mode
- Channel Trim Mode
- Template Load/Save Mode.

After power-up, the system always switches to the Volume Control Mode. This is the fundamental operational mode.

SwitchMan Quartet is operated from a Remote Unit. The top panel of the Remote has 14 buttons, 1 rotary knob, 14 LED indicators, and a numerical display. In addition, there are two buttons on the back: **SHIFT** (black) and Remote **RESET** (red.)

1.2.1 Volume Control Mode

The system offers several functions in the Volume Control Mode:

- Master Volume adjustment using the rotary knob at the center of the Remote
- Input Selection using buttons **A**, **B**, **C**, and **D**, on the left side of the Remote
- System Mute (all channels) using **MUTE** button
- channel setting inspection, using channel buttons **1**, **2**, **3**, **4**, **5**, and **6** on the right side of the Remote
- switching to the Channel Trim Mode using **TRIM** button
- Template Load or Template Save using **LOAD/SAVE** buttons.

The volume setting is displayed as a step number ranging from **0** (“zero”, full attenuation) to **110** (max. volume.)

Fast-blinking **MUTE** LED indicator (red) confirms that Mute function is engaged i.e. all channels are at full attenuation. The main knob remains active, however, and the display is being updated. Upon disengaging the Mute, the system returns to volume setting as shown on the display.

Green LED indicator confirms Input System selection.

Yellow LED indicator confirms the Channel selection. The Channel Settings are presented as follows:

- Level Trim value is shown on the numerical display
- channel mute status is indicated by red **MUTE** LED.

Channel Level Trim is displayed as a step number ranging from **-40** to **+40**. Trim step equates to **0.25** dB. Trim settings are always displayed with a plus or minus sign; the trim value of **zero** is displayed with a plus.

In Volume Control Mode no changes can be made to channel settings - when a channel button is pressed, the settings are viewed only. If no other buttons are pressed at this time, the system will wait 4 seconds, then restore the main display (Master Volume step shown again) and turn off the channel LED indicator.

To modify a channel setting, please switch to the Trim Mode first.

1.2.2 Channel Trim Mode

The Trim Mode enables modifications to channel Level Trim and channel Mute status. Pressing **TRIM** button switches to Channel Trim Mode. To go back to Volume Control Mode, press the **TRIM** button again.

In this mode, one channel is always selected; thus, one of the channel LEDs (yellow) is lit. To operate on another channel, press the proper channel button on right side of the Remote.

Adjust the Channel Level Trim using the rotary knob at the center of the Remote. Channel mute status is toggled with the **MUTE** button.

Maximum range of channel Volume Trim is **-40** to **+40** steps. Trim step equates to **0.25** dB. The display always shows Trim settings with a leading sign. The trim value of **zero** is displayed with a plus.

Please note that the system may limit the range of a trim adjustment on the plus side. This happens if a relatively high Master Volume setting is combined with the positive trim value. The resulting channel gain setting may be outside the system's range. The SwitchMan system always tracks trim values on all channels.

The "Special Features" chapter contains more information on this topic.

1.2.3 Template Load Mode

Template Load mode allows for selection of a one of six templates stored in the NVRAM. When a template is loaded, all the settings saved in it are applied immediately. A Template holds the following information:

- an Input System that was selected (**A**, **B**, **C**, or **D**)
- all the settings for each Input System:
 - Master Volume setting
 - Level Trim value for each channel (1 to 6)
 - Mute Status for each channel (1 to 6)

In addition, the system "remembers" which template was loaded or saved last time. Upon power-up, the system settings are restored because that template loads automatically.

Press **TEMP** button to switch to Template Mode – a yellow LED indicator above the button should be lit. At this point you can return to Volume Control Mode (press **TEMP** again) or select a template using buttons **1** to **6** on the right side of the Remote. Channel buttons double as template selectors. The System will wait for a template selection for approx. 4 seconds. If a selector key is not pressed during that time, the SwitchMan will return to Volume Control mode.

At this point, one of the LED indicators (1 to 6) is blinking to remind of the most recently loaded template. Once new template is selected, the corresponding LED indicator will light up. The LEDs will stay on for approx. 2 seconds and the system returns to Volume Control Mode automatically.

New template settings are effective immediately; the Input System selector LED and master volume display are updated.

The main rotary knob and **TRIM** button are inactive during template load operations.

1.2.4 Template Save Mode

Current system settings can be saved in a template. A template contains separate data records for each Input System.

Press **SAVE** button to switch to Template Save Mode. Alternatively, press **TEMP** and then **SAVE** keys to go to Template Save Mode.

Yellow LED indicators above **TEMP** and **SAVE** buttons should be lit. At this point you can return to Volume Control Mode (press **SAVE** again) or select a template using buttons **1** to **6** on the right side of the Remote. The System will wait for a template selection for approx. 4 seconds. If a selector key is not pressed during that time, the SwitchMan will return to Volume Control mode.

One of the LED indicators (1 to 6) blinks to remind of the most recently accessed template.

When a template selector key is pressed, the corresponding LED indicator will light up and the **SAVE** indicator will blink briefly to confirm the template save operation. At this point, the current settings are already saved in the selected template in NVRAM. Then SwitchMan system automatically returns to the Volume Control Mode.

The main rotary knob and **TRIM** button are inactive during template save operations.

3. Special Features

3.1 Volume Control Profiles

The SwitchMan system uses a unique, fully electronic, precision volume control circuitry. The Remote displays volume information as a step number ranging from **zero** to **110**. A step number translates to a predefined attenuation level applied in the signal path. The translation curve is called a *Volume Control Profile*. Current firmware release (*v1.3*) contains two *Volume Control Profiles*.

The profile selection is made through a DIP switch (**OPTIONS**) on the Main Unit's back panel. The actuators on positions **1** and **2** determine the profile number; therefore, four profiles can be defined.

Important: SwitchMan Main Unit reads **OPTIONS** switch only at start-up time. Set the desired configuration before powering up your system.

Channel Level Trim *always* applies **0.25** dB of gain change per step.

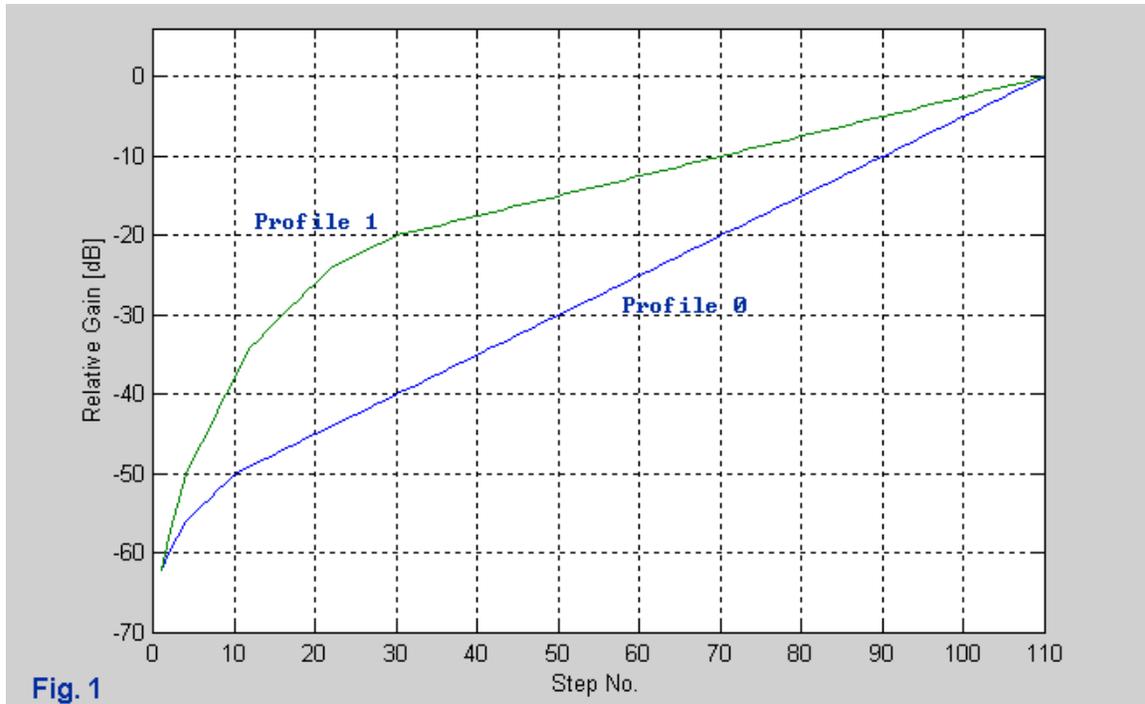
3.1.1 Profile 0 (*factory setting*, DIP pos. **1**: **OFF**, DIP pos. **2**: **OFF**)

The step mapping is **0.5** dB. Starting from the top step no. 110, down to step 10, a channel gain is gradually reduced by 50 dB. Last 9 steps, down to step 1, use coarser gain changes. At step 0 the channel is at full attenuation.

3.1.2 Profile 1 (DIP pos. **1**: **ON**, DIP pos. **2**: **OFF**)

The step mapping is **0.25** dB. Starting from the top step no. 110 down to step 30, a channel gain is gradually reduced by 20 dB. Last 29 steps, down to step 1, use coarser gain changes. At step 0 the channel is at full attenuation.

The Profile 0 and Profile 1 are both shown in Figure 1 below.



Press **SHIFT-TRIM** button on the Remote to verify the profile selection. The numerical display will show a **P0** or **P1** symbol. After approx. 1 second, the display returns to normal operation.

3.2 Channel Solo

Channel Solo, when engaged, temporarily mutes all but one selected channel.

The Channel Solo is being engaged from Volume Control Mode. Press the **SHIFT** key on the back of the Remote, and then one of the channel buttons **1** to **6**.

The LED indicator for the selected channel will blink. This channel stays on.

Press another channel button (without a **SHIFT**) to move the **SOLO** to the other channel. In order to return to Volume Control Mode, press the **SOLOed** channel button again. Pressing any of the input selector buttons also returns the system to Volume Control Mode.

SOLO does not affect main knob functions – the master volume is still adjustable.

If a channel were mute, it would not be soloed - it would remain mute. The **MUTE** LED shall light up to indicate mute status.

The Solo feature allows for an immediate transfer to Channel Trim Mode (press the **TRIM** button now) where mute status of the channel can be changed.

3.3 System Lock

This feature is not available in current firmware release.

This feature prevents unauthorized changes to your system. The Main Unit can be locked from the Remote:

- press the SHIFT-**SAVE** button; the SAVE LED indicator will blink slowly
- punch a 4-digit *Lock Code* using channel buttons (**1** to **6**)
- try remembering your *Lock Code*.

At this point, the numerical display is blank and all LED indicators are turned off. A small red dot on the numerical display will blink slowly.

To unlock the system, use one of the two methods:

- punch four digits of your *Lock Code* again; when the correct code is entered, the remote is re-activated and the system operates normally
- reset the entire system i.e. cycle the power on Main Unit.

3.4 Template Erase

Caution: This procedure will erase data of ALL six templates in NVRAM. Erased template data cannot be recovered. All templates will be reset to factory settings.

To erase Templates, follow this procedure:

- press **TEMP** button, the TEMP LED indicator will light up
- press SHIFT-**MUTE** button; at this point, the NVRAM is being erased; all template LED indicators (1 to 6) blink fast.

After approx. 3 seconds, the system goes through complete hardware reset (both Main and Remote units.) During a reset phase, all templates are re-initialized with factory settings – check default values listed in **1.1**.

In practice, the Template Erase feature can be useful when the SwitchMan system is moved to different application area. It might be more convenient to start with known and neutral system settings rather than go through many check/modify operations.

3.5 Sticky Templates

This feature offers a modified Template Load mode. Sticky Templates are enabled through DIP switch (**OPTIONS**) on the Main Unit's back panel - the actuator on position **4** should be ON.

Important: SwitchMan Main Unit reads **OPTIONS** switch only at start-up time. Set the desired configuration before powering up your system.

The initial procedure is similar to the "normal" Template Load mode: press **TEMP** button and then one of template selector buttons. However, when the template is loaded in, your system does NOT return to Volume Control mode. The **TEMP** LED and the template selector LED stay on.

At this point, another template can be loaded immediately, just press another template selector button. New template settings are effective immediately. The master volume display and input system indicator LEDs are updated.

The main rotary knob is active, and the master volume is adjustable. The MUTE function is active.

The only way to cancel this mode is to press the **TEMP** button again. The system will return to Volume Control mode.

3.6 Soft Mute

This feature offers Mute with reduced attenuation. Pressing MUTE button will drop the Master Volume by 26 dB on all channels.

Normally, the Mute applies full attenuation to all channels. Enabling Soft Mute feature allows the program to be still audible.

Soft Mute is enabled through DIP switch (**OPTIONS**) on the Main Unit's back panel - the actuator on position **3** should be ON.

Important: SwitchMan Main Unit reads **OPTIONS** switch only at start-up time. Set the desired configuration before powering up your system.

4. Hints and Tips

- Selecting another input (**A** to **D**), or reselecting the current input again, immediately puts the system into Volume Control Mode, thus escaping any other mode the system is currently in. The only exception to this rule is the Sticky Template mode where the only active buttons are:
 - **TEMP** (toggles back to Volume Control Mode)
 - template selection buttons
 - **MUTE button**.
- When inspecting settings of a given channel, you may choose to adjust that channel right away. Press the **TRIM** button at this point - the channel selection stays the same, but now the system is in Channel Trim Mode.
- The **RESET** button on the back of the Remote Unit restarts the Remote only; however, the system returns to Volume Control mode at this point.
- The Remote Unit can be unplugged and plugged-in at any time. You may use this as a sure-fire variant of System Lock feature.

Set up and adjust your system, then disconnect and hide away the Remote. When the Remote is re-connected again, the display and LED indicators shall update immediately. Pressing the **RESET** button on the back of the Remote ensures that both units are synchronized.

- If you save the current settings (in a template of your choice,) your system set-up survives power-down/power-up events.
- While in Volume Control Mode, press **SHIFT-TRIM** button on the Remote to verify the profile selection. The numerical display will show a **P0** or **P1** symbol. After approx. 1 second, the display returns to normal operation.