

### VCA Groups Explained

VCA groups provide an important alternative to audio subgroups for simultaneously controlling the level of more than one channel using a single fader.

Unlike an audio subgroup the signal is not routed through the group fader itself. Instead, you route the signal directly to the main output. The VCA group fader sends a DC voltage to remotely control the assigned channel levels, so providing the group control. This is possible because each channel has a pre-pan VCA (voltage controlled amplifier) which can be controlled by both the channel fader and group faders. This means that all post-fade outputs from assigned channels will be affected by the VCA master faders. Note that the channel pre-fade (monitor) sends are not affected by VCA groups.

Note that the channel fader always controls the signal level. If the channel is assigned to one or more VCA groups then both the channel and the group faders control the level as if they were in series. Refer to the diagrams over the page.

The **ML5000** has 8 VCA groups. Mono and stereo input channels can be assigned to one or more groups. The VCA group assignments can be stored as part of the console snapshot memory system. This can be disabled if you want the snapshots to control the mutes only.

### The benefits of VCA grouping

**Effects balance is maintained.** Because the channel post-fade sends are affected, the reverb level returned elsewhere in the console also follows the group fader movements.

**Stereo groups on one fader.** Because the level is controlled before the channel pan circuit, a single VCA group fader is all that is required to control a stereo or LCR group. This would take 2 or 3 faders using audio groups if the channel pan image is to be maintained.

**Multiple output control.** The relative balance between all outputs is maintained when moving VCA group faders.

**Multi-level grouping.** A channel can be assigned to more than one VCA group. This lets you assign multi-level groups, or even a 'grand master', impossible with audio groups.

Conventional audio groups are still useful when you need to insert a signal processor such as a compressor to affect a group of signals, or you need to feed different groups of signals into the matrix. However, fewer such groups are usually required on a VCA equipped console. For this reason the **ML5000** provides the mode switching to reconfigure unused audio groups as full featured aux sends.

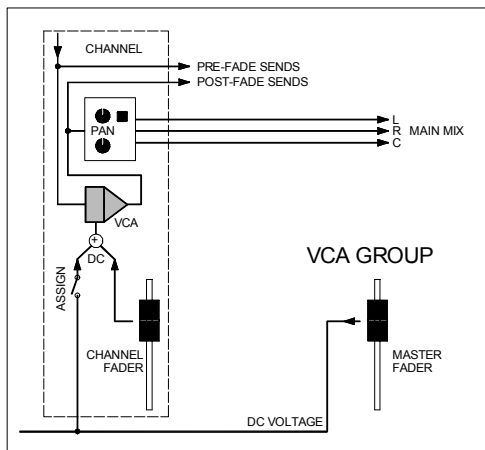
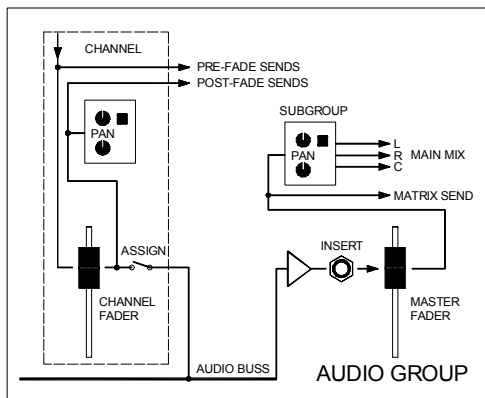
## Using VCA Groups

Use audio groups where you want to insert group signal processing or send groups of signals to the matrix. Use VCA groups if you want grouped level control only.

Route the channels to the mix by pressing the MAIN MIX switch **[C1]**. Adjust the PAN and BLEND controls for the image required. Assign the channel to the required VCA group using the edit groups routine described on the next page. Check the channel VCA assign LEDs next to the fader for correct assignment. Once assigned, the group fader affects the channel level. Start with the group fader set to its nominal '0' position.

You can assign the channel to more than one group. Take for example a theatre musical production. Here, you may have stage microphones assigned to Group 1, radio mics to Group 2, and all microphones to Group 3. You may also have all channels assigned to Group 8 as a 'grand master' to control the overall volume. In this case, a radio microphone would be assigned to Groups 2, 3 and 8. Note that the VCA groups affect all channel post-fade sends such as effects and direct outputs but not the pre-fade monitors.

Refer also to section **[M]** for details on storing the channel VCA group assignments in the snapshot memories.



**[K1] MUTE.** This momentary action switch turns all assigned input channels on or off. It acts as a remote control for the mute switches on those channels. The channel pre-fade, post-mute sends are also affected. The mute switches on assigned channels light when the group is muted.

The switch also functions as a solo select when the console is in SIP mode or as a group select key when in EDIT GROUPS mode.

The VCA group mute cannot be assigned to a mute group or snapshot memory. However, channels which have been muted by the group can be stored in the memories.

**[K2] SAFE / EDIT.** This green LED has a different function according to console mode:

**Normal** No function

**Solo-in-Place** The LED lights when the group has been made safe from solo-in-place.

**Edit Safes** Indicates that the group is safe from solo-in-place in SIP mode.

**Edit Groups** No action.

**Preview Snapshots** No action.

**[K3] PAFL.** Press this switch to listen to the group signal in the headphones or engineers monitor without affecting the main outputs. It acts as a remote control for the PAFL switches on assigned channels. It actions either all channel PFL or stereo AFL in-place depending on the setting of the master section INPUT PAFL switch **[P2]**.

## Using PAFL

Set the master section INPUT PAFL switch for either PFL or stereo AFL in-place when you select a VCA group PAFL.

Use PFL to check for signal presence while the group fader is down. This is useful when you need to check that all is well before raising the fader and bringing the assigned channels into the mix. The channel PFL switches are turned on and the signals mixed together at the same level. Turn down the master PFL TRIM control **[N1]** if the signal is too loud in the monitor.

Use AFL to check the balance and contribution of the group of channels to the mix. The signal follows the fader levels and image controls with C mixed into the L and R so that you can listen to the LCR mix in stereo.

**K4 VCA GROUP FADER.** The fader adjusts the level of all channels assigned to the group. The '0' position is referred to as the 'nominal' operating setting. At this position the channel levels are as marked on the channel faders. Any adjustment made to the group fader offsets the channel level by that amount. It is best to start with the group faders set to their '0' position.

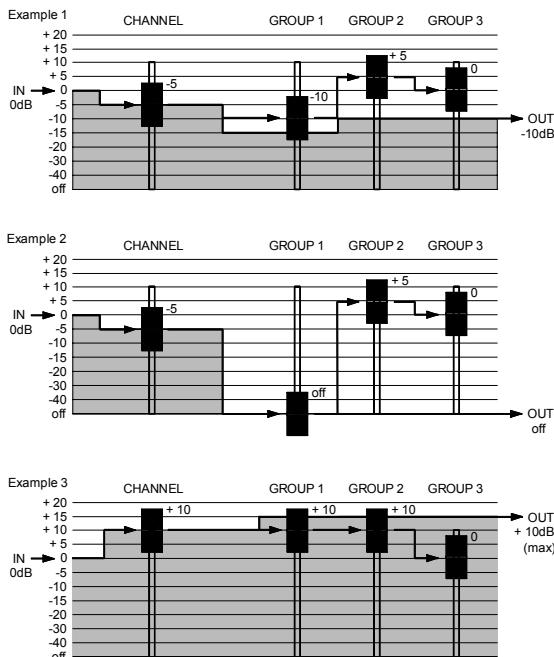
At minimum position the fader shuts off all assigned channels. At maximum position it provides a further +10dB boost. Note that the maximum boost that may be applied to the channel VCA is +20dB regardless of how many group faders are assigned and set above '0'.

The following diagrams illustrate the combined channel gain when assigning more than one VCA group. In this case the final gain is affected by the channel fader and three VCA groups.

**Example 1.** A 0dBu signal is passed through the channel. The fader attenuates this by 5dB. Group1 attenuates it by a further 10dB to -15dBu. Group2 boosts by 5dB bringing it up to -10dBu. Group3 is set to '0' resulting in the final level of -10dBu.

**Example 2.** Once again the channel fader attenuates the signal to -5dBu. However, Group1 is set to minimum turning the signal off. There is no output regardless of the setting of Groups 2 and 3.

**Example 3.** Here the channel fader and Groups 1 and 2 faders are set for +10dB boost. The result is the channel VCA reaching its maximum of +10dB regardless of the combined 30dB boost. It is best to work with the faders around '0' and avoid excessive boost.



**K5 EDIT GROUPS.** Press this switch to put the console into edit groups mode. The red LED flashes to warn that the console is in edit mode. Press at any time while the LED is flashing to restore normal operating mode. All the VCA group MUTE LEDs **K1** and channel SAFE/EDIT LEDs **D3** turn off when edit mode is first entered. This means that no group is selected for editing.

The same edit groups mode is used to edit both the mute and VCA groups. Pressing the associated master switch while in edit mode selects the mute group or VCA group you want to edit.

Only one group may be edited at a time. The current assignments for all groups are always displayed on the channel VCA assign LEDs **D6**.

### To Assign a VCA Group

Press EDIT GROUPS **K5**. Next, press the MUTE switch **K1** for the group you want to edit. Both switches flash. The channel SAFE/EDIT LEDs **D3** display which channels are currently assigned to the group. Now press the channel MUTE switches **D2** to toggle channels in or out of the group. Press EDIT GROUPS again to exit edit mode, or press another group mute switch to edit a different group.

### To clear all channels in a VCA group

While in edit mode, hold down SHIFT **M9** and press RECALL **M7**. The recall switch flashes and the display flashes **CLr**. Release shift and press RECALL again to confirm. All channel SAFE/EDIT LEDs turn off indicating that the group is cleared.

### To assign all channels to a VCA group

While in edit mode, hold down SHIFT **M9** and press RECALL **M7** two times until the display flashes **SEt**. Release shift and press RECALL again to confirm. All channel SAFE/EDIT LEDs turn on indicating that all channels are assigned.

