



Dugan Speech

For eMotion LV1 \ User Guide

The screenshot displays the Dugan Speech software interface for 16 channels. The top bar shows 'Channel 32', 'PRESET*', 'CLEAR SOLO', 'TALK', and navigation buttons for 'MIXER1', 'MIXER2', 'CHANNEL', 'SHOW', 'PATCH', and 'SETUP'. The right side of the top bar indicates 'No Scenes', a time of '03:24:45PM', and the software version 'EMOTION LV1'. Below the top bar, there are 16 channel strips, each labeled 'Dugan SP'. Each strip includes a gain knob, a 'group override' dropdown (set to 'auto'), and a 'mute override' dropdown (set to 'a'). The gain values for channels 1 through 16 are: -1.1, -7.0, -6.1, -3.0, 0.0, 0.0, 0.0, 0.0, -4.4, -3.0, -1.5, -1.5, -4.8, 0.7, and -3.9. Below the gain controls, there are 16 'MUTE' buttons. The bottom section of the interface features a 'USER' section with 8 buttons (1-8) and a 'MUTE' section with 8 buttons (MUTE 1-8). The right side of the interface contains a 'MODES' section with 'DUGAN' selected, and a 'LAYERS' section with 'CUSTOM' selected. The 'LAYERS' section also includes a 'RACK' section with 'DYN/EQ', 'AUX / EFX', 'AUX / MON', and 'ALL AUX' buttons, and a 'ROUTE' section with 'ROUTE' and 'CHANNEL' buttons. The bottom right corner shows a 'MASTER' section with 'LR', 'C', 'M', and 'MUTE' buttons, and a 'MUTE' section with a 'MUTE' button. The interface is dark-themed with green and blue highlights.

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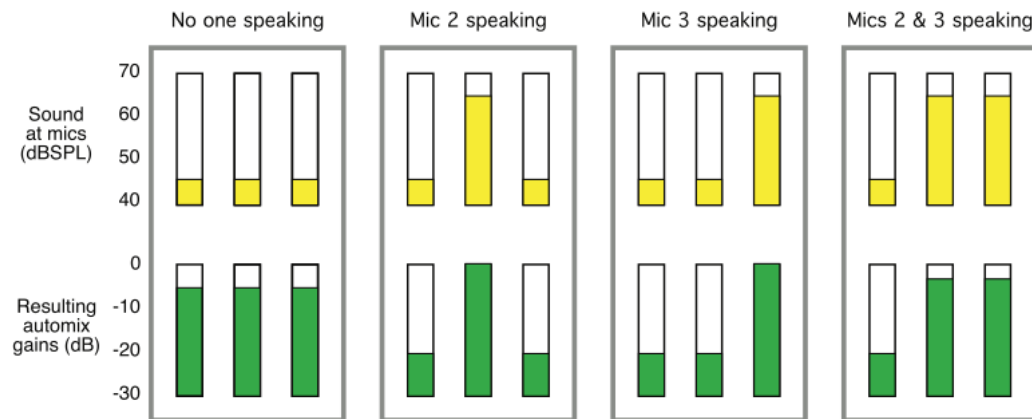
Introduction

The Dugan Speech automixer is a way to control a group of microphones in a live setting, where speech is unscripted and interaction between speakers is unpredictable. It's commonly used in situations such as roundtable discussions, talk shows, debates, and the like. Dugan Speech is based on the Dugan Automatic Microphone Mixer hardware devices, and was developed in cooperation with Dan Dugan Sound Design.

Dugan Speech is a feature of the eMotion LV1 input channel strip. Dugan Speech's control panel appears as a mixer mode within eMotion LV1. The Dugan automixing process is inserted into the signal flow after the channel fader and mute, and before the pan/balance/rotate control. It is available on all input channels.

Theory of Operation

Dugan Speech automatically manages any number of live microphones that are in unpredictable dialogue situations. When one person speaks, that microphone's gain level fades up instantly, while the gains of the other microphones are reduced. If the speaker pauses, all microphone input levels adjust to medium gain in order to collectively match the level of one microphone at full gain. When several people talk at once, the gain is shared across the relevant channels. This action balances the room tone so that the ambient sound of the space remains stable. It sounds as if all talkers are sharing one microphone.



These four frames demonstrate how Dugan Speech automatically controls a three-microphone situation.

- In the first frame no one is talking. The sound levels at all microphone inputs are low. The system fades all channels to medium gains, adding them all up to match the level of one microphone at full gain.

- The second frame shows one person talking. The system automatically fades his or her gain to full level, while the other two inputs are turned down.
- The third frame shows a different person talking. The system automatically fades his or her gain to full level, while the other two inputs are turned down.
- The fourth frame shows two people talking simultaneously. The system shares the gain between them, while the other mic is turned down.

Quick Start

Dugan Speech is controlled from the Layer Modes section in the middle of the Mixer window.

1. To access the Dugan Speech automixer, click the Modes arrow above the Layer selection buttons. The Dugan button replaces the Input button. Click to open.
2. While Dugan Speech is used as part of eMotion LV1, it is purchased and licensed as a separate plugin. Your Dugan Speech license can be activated in Waves Central, which is the Waves software and license management tool. If the Dugan button is not available inside your eMotion LV1 mixer, make sure that the Dugan Speech plugin is installed and that the license is activated.
3. Set the channel fader to 0 dB. Use the channel's preamp analog gain or input trim to provide enough gain ahead of the Dugan so that the input level light (above the gain bar graph) remains green when no one is talking. Low-sensitivity mics, such as dynamic microphones, will require higher input gain settings.
4. To turn on the Dugan Speech engine, click the ON button in the Global Control panel (left side).
5. Use the Dugan Speech Plugin button at the top of each panel to enable the automixer on all channels for which Dugan Speech automixing is desired. Disable all non-live-talking channels where automixing will not be used. Disabled channels are grayed out.

6. Activate the Auto button for all automixing channels. Use this button for smooth in/out control of automixing during production.
7. Balance the Weight settings of the live mics so that the fluctuating ambient noise yields approximately equal readings on all automix gain meters. The Weight control does not affect the mix level, just the interaction of the channels while automixing. If you need to raise the gain of a preamp, you can lower the weight to compensate, and vice versa.
8. When Dugan Speech is activated, leave the faders up for all talkers; let the Dugan deal with turning up the active talker's mic and ducking the others. Make small adjustments to each talker's fader to balance the mix while they are talking. You only need to mute a channel or pull a channel's fader down when there is unwanted noise, or a wireless mic is offstage. The automix gain displays are helpful in finding the source of an unwanted noise, even if it's low-level.
9. Assign channels to one of the three Dugan Speech groups. Each group functions as a separate and individual automatic mixer that can span across several Dugan channels.

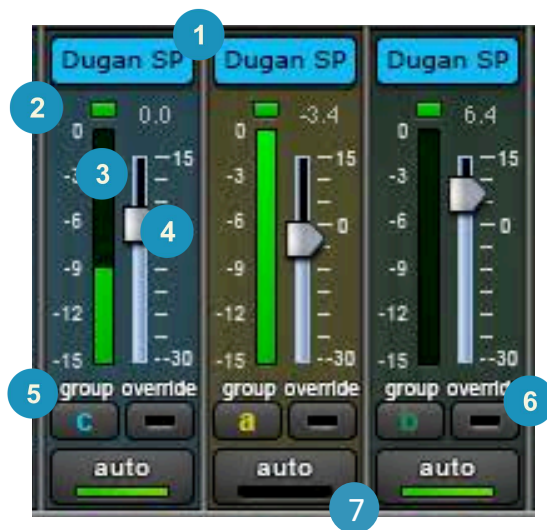
It's usually not necessary to adjust the controls during the show. However, you will likely want to adjust the channel faders to refine your mix. Since the Dugan Speech system manages gain, there is no need to mute live microphone channels unless there is undesired noise.

Note: If channel clipping occurs, lower the preamp gain on the input channel and increase the channel's Weight setting on the Dugan Speech automixer to re-establish the correct ambient noise balance.

Controls and Displays

Dugan Speech consists of two sections: Channel strip controls and Global controls.

Channel Strip Controls



- 1 Dugan Speech Plugin Icon
- 2 Level LED
- 3 Gain Bar Graph
- 4 Weight Control
- 5 Dugan Speech Group Assignment
- 6 Channel Automixer Override
- 7 Operation Mode Select

Dugan Speech Plugin Icon

Enables/disables the Dugan Speech plugin component for the channel. Functions like the enable/disable switch of a plugin.

Dugan Speech Input Level Light

Each channel has a LED that indicates the input level of the automixer.

Flashing Green	Level too low
Steady Green	Correct level
Red	Level too high

The button should remain green, even when no one is talking. To maintain proper balance, adjust mic preamp gains or channel trim levels of all the relevant microphone channels. This can be done in the Mixer or Channel windows. If this does not result in sufficient gain, try raising all the Weight controls by the same amount.

Gain Bar Graph

This meter shows the activity of the Dugan Speech processor. A higher meter level means that this channel's microphone has a priority over other microphones. Use the Weight controls to balance the channel automix gain indicators when no one is talking.

Weight

The Weight controls are used to set the side chain levels for each channel. Adjusting Weight does not change the mix levels, only the priority among channels—who is more and who is less likely to be heard in the foreground. When Weight controls are balanced, all microphones are given the same opportunity to take over the system. Someone talks into a mic, and that mic is assigned the bulk of the automix gain while all other microphones are lowered. Increasing the Weight of one microphone channel will favor it over the other mics when several people are speaking simultaneously.

Dugan Speech Groups

Each channel can be assigned to one Dugan Speech group: a, b, or c. A group functions as a separate and independent automatic mixer that can span multiple Dugan Speech channels and tabs. To assign a channel to a Dugan Speech group, toggle its Group button between a, b, and c. The group letter appears on the button. Groups are coded with a color tint in the control panel and a color bar next to the pan/balance/rotation control.

Speech groups are used to manage mutes and overrides. This is useful when talkers are in different rooms. Assign the microphones in each room to different groups so that they can function as separate automatic mixers. Speech groups also enable stereo panning. Assign the microphones panned left, right, and center to groups a, b, and c, respectively, to maintain a stable stereo ambience.

Dugan Speech Override

Override is used to smoothly mute all microphones in a Dugan Speech group—except for specified speakers, such as the host or chairperson. Any number of microphones within a Dugan Speech group can be included in the override group.

- Engage the Override button of a channel to assign it to an override group.
- Press a Master Override button to mute specific channels in a Dugan Speech group: Channels of that Speech group that are set to Override will not be muted with the group.
- Press the Master Override button again to restore the previous condition.

Dugan Speech Operation Mode

A channel can be in one of two automix modes, which are set with the Auto button at the bottom a Dugan channel control panel:

Auto ON

This is the normal Dugan Speech automix mode.

Auto OFF (Manual Mixing mode)

The automix process is ignored and the signal passes through the processor at unity gain. The gain bar graph stays at 0 dB.

When you press the Auto button, there is a smooth transition to unity gain (off), or back to automix (on). During production, the Dugan Speech action can be turned on and off smoothly using this button.

Master Pane: Global Controls:



Dugan Speech On/Off

Enables/disables the automix processor for all Dugan channels. This is akin to enabling/disabling multiple plugins. It is not advisable to switch this during the show, as it may call for readjustment of the DSP processor, which can result in a brief mute.

Recall Safe

When Recall Safe is engaged, Dugan Speech settings will not change when a scene (snapshot) changes. This is a global control that affects all Dugan channels. Dugan Recall Safe can also be set in the Show window.

Reset

Click the Reset button to restore the Dugan Automixer to factory default settings.

This resets the following:

- Channel Modes to Auto
- Channel Override Assignment buttons to Off
- Weights to 0 dB
- Groups to Group a

Controls that are not affected by the reset button and that maintain their current states:

- Master On
- Recall Safe
- Master OVERRIDE
- Master MUTE

Dugan Speech Groups—Global Controls

Two sets of buttons control the behavior of all members of a channel group:

Global Mute

The Global Mute button is similar to a mute group activate button on the mixer. When Global Mute is selected, all members of the selected Dugan Speech automix group are muted. Their mute lights flash, indicating that the channel is part of a muted group. As with mixer channel mute groups, you can separate a channel from a muted automixer group by clicking its channel mute switch.

- Click once to unmute the channel.
- Click again to keep the channel muted, even when the automix group is no longer muted.
- Click a third time to return the channel to the behavior of the automix group.

Channels outside the automix group are not muted.

Override

This group master button mutes all channels in the group except for the channel whose Override is on. This can be used to let the host or chairperson take control of an unruly discussion. There is a separate master Override button for each group in the master section at the left of the control panel.

Clicking a master override button has the following effect on individual channels:

If a channel's Override button is on, this puts the channel in manual mode with full gain (no automixing);

- OR -

If the channel Override button is off, that channel will be muted.

This combination enables the user to focus manually on a specific speaker while temporarily muting other microphones.

The transition to manual control of the focused microphone—and muting of all others—is smooth and can be carried out in the middle of a show. To return to normal automix behavior, click the Master Override button again.

Using the Weight Control to Get the Best Results

Dugan Speech will give satisfactory performance when all the Weight controls set at 0 dB. You can use the Weight controls to further refine the automixer action.

Weight is the priority given to a specific channel, and thus to a specific talker. The Weight controls set the sidechain threshold for each channel into the automixing calculations. This establishes the relative sensitivity of how a channel will “claim” gain and duck other channels. They do not change the levels of the channels in the mix! You do that on the faders in the normal way.

Be aware that Dugan Speech works by detecting the ratios of the levels between channels, and ignores the absolute level.

The Weight controls should be used to balance the channel automix gains when no one is talking. If a channel's preamp analog gain or input trim is changed, its Weight control can be used to re-balance the automixing. Weights can be changed by dragging the faders up or down, or by entering dB values in the value boxes below the Weight controls. A higher Weight setting provides a lower sidechain threshold for that channel, so the talker on that channel will have a disproportionate influence over the conversation.

Raising the Weight control for one channel:

1. Increases that channel's automix gain display during quiet periods and decreases it slightly for the other channels.
2. Makes it more difficult for others to interrupt that talker.

Lowering the Weight control for one channel:

1. Decreases the automix gain display during quiet periods for that channel and increases it slightly for the other channels.
2. Makes it more difficult for that channel's talker to interrupt others.

Results of changing a channel's weight setting:



- 1 Channels 1, 2, and 3 Dugan Weight settings are equal
- 2 Channel 1 Weight setting is higher than channels 2 and 3
- 3 Channels 1, 2 and 3 output levels are equal
- 4 Channel 1 output level is higher
- 5 Channels 2 and 3 output levels are lower
- 6 Input level is the same for each channel



When Weight is increased—when channel 1 has a greater priority—its output level increases and the output level of the other channels is lowered. The overall room tone level remains the same.

For optimal performance, balance the Weight controls so that the channel gain shows approximately equal levels on all channels when no one is talking. If there is ongoing noise near one microphone (e.g., computer fan or air vent), suppress it by reducing that channel's weight. Of course, you will hear that noise increase when a person speaks into that microphone.