

SC-16 SmartControl *The channel is locked. Your voice is the key.*

Smart gain-sharing automixer · 16 / 8 / 4 / 2 channels · VST3 · AU · Standalone

SC-16 SmartControl is a smart gain-sharing automixer for live speech: Dugan-style share mathematics in up to four independent groups, speech-probability weighting (AI VAD), dynamic plosive control, and FLOORLOCK™ — a voice-keyed channel lock. The audio path is zero samples long: every detector runs in a side chain, so SC-16 adds no latency and no phase penalty. One rule drives the whole design: total system gain never rises with the number of open microphones ($\Sigma G \leq 1$ per group) — feedback margin is engineered, not hoped for.



SC-16 face. The numbers below refer to this view.

TOP PANEL

- 1 MANUAL** — Opens this manual.
- 2 SHARE MONITOR** — Per-channel share history, 0 to -40 dB. Line color = share group; brightness follows speech probability. Header: NOM (microphones currently holding real share), ΣG (largest per-group share sum — stays ≤ 1.00 by design), and the channel count. “share monitor idle” means the host is not sending audio.
- 3 OUTPUT** — Master trim after the automix, ± 12 dB. Double-click any value on the face to type an exact number; Shift-drag is fine adjustment; double-click a knob returns its default.
- 4 ON** — Processing engaged. Pressing it while BYPASS is lit re-engages processing.
- 5 BYPASS** — Full bypass — audio passes untouched.
- 6 LINK · SLOT** — Joins this instance to the family link bus (RP-1 rack). SLOT shows the assigned position (01–16); “—” means the link is off.

AUTOMIX

- 7 DEPTH** — How far below the active talker an idle channel's share sits (-40...-6 dB, default -20 dB). Deeper = drier and more clinical; -20 dB keeps the room natural, and the last mic stays on for free.
- 8 ATTACK** — How fast a channel rises to its earned share (0.5–20 ms, default 2 ms).

- 9 **RELEASE** — How fast a share falls back after speech (20–500 ms, default 90 ms).
- 10 **SC HPF** — High-pass on the detector side chain only (40–400 Hz, default 120 Hz). Rumble, footsteps and stage LF stop earning share; the audio path is untouched.

AI VAD

- 11 **VAD** — Voice-activity detection on/off. Runs on a 16 kHz side chain — zero added latency. The active engine is named in the status block (22).
- 12 **WEIGHT** — Feeds speech probability into the share math. It is a weight, not a lock: the channel opens on level in ~2 ms, and within ~10 ms the VAD pulls back whatever is not speech — coughs, spill, applause.
- 13 **SENS** — Decision threshold (0.20–0.90, default 0.55). Lower = accepts softer, less certain speech.
- 14 **HANG** — How long speech evidence is held across word gaps (50–600 ms, default 180 ms).
- 15 **REJECT** — The share weight non-speech may keep (0.00–0.40, default 0.05). 0 = full rejection.

DE-PLOSIVE

- 16 **DP** — Dynamic plosive control on/off. A dynamic low shelf that engages only while a plosive thump (30–90 Hz) is actually happening. No fixed high-pass — the body of the voice is never thinned.
- 17 **THRESH** — Plosive sensitivity (–12...+18 dB, default 0 dB): how much low-band overshoot against the 100–500 Hz reference counts as a plosive. Raise it if a very low voice triggers cuts on sustained notes.
- 18 **DEPTH** — Maximum shelf cut during a plosive (–24...0 dB, default –15 dB).
- 19 **SHELF** — Shelf corner frequency (60–160 Hz, default 100 Hz).
- 20 **ATK** — Engage speed (0.5–5 ms, default 1.5 ms).
- 21 **REL** — Recovery speed (10–80 ms, default 30 ms).
- 22 **STATUS** — Channel mode (16/8/4/2 CH, taken from the host bus), the active VAD engine, and the latency line: 0 SMP — the audio path is zero samples; all detection is side-chain.

FLOORLOCK™ • VOICE KEY

- 23 **LOCK** — FLOORLOCK on/off. Off: the channel behaves as a plain automixer input.
- 24 **MARGIN** — How far above the tracked room floor the signal must rise to unlock (+6...+15 dB, default +9 dB). The floor is measured continuously (28), so the threshold rides the room: when the crowd gets louder, the threshold climbs with it.
- 25 **RANGE** — Attenuation while LOCKED (–60...–6 dB, default –20 dB). Fully counter-clockwise reads FULL — an exact mute. –12...–20 dB is the natural-sounding zone on stage.
- 26 **ATTACK • HOLD • RELEASE** — Unlock speed (0.5–20 ms), minimum open time (50–500 ms) and re-lock speed (30–500 ms). With VOICE KEY active, staying open is decided by the sound itself — ongoing speech evidence; HOLD only sets the shortest stay.
- 27 **VOICE KEY** — How much speech evidence unlocking requires. OFF — level alone, exact v1 behavior, for rigs tuned before v2. STRICT — the channel stays attenuated until speech is proven; costs a touch of the first onset, made for loud stages. NORMAL — level opens, ~50 ms of evidence confirms; anything that fails the proof is re-locked at once (default). FAST — quickest opening, loosest proof, for quiet rooms and podium work.
- 28 **THRESHOLD • FLOOR** — Live telemetry for channel 1: the tracked room floor and the resulting unlock threshold (floor + MARGIN). “—” = lock off. These are the same numbers the RP-1 telemetry log carries — the face and the log cannot disagree.

- 29 EVIDENCE • STATE** — Why the channel is open, not just that it is. VOICED — larynx harmonics detected. SIBILANT — s/sh/f energy. CHECKING (amber) — the signal passed the level test but has not yet proven speech; the state reads ATTENUATED. Green LED + UNLOCKED = open; LOCKED = closed; LOCK OFF = FLOORLOCK disabled.

CHANNEL STRIPS (01–16)

- 30 CHANNEL • PRESENCE** — Channel number and presence LED: lit in the group color while the channel holds real share (bright = talking, dim = partial).
- 31 METERS** — Left — LVL: input level (–60...0 dB). Middle — SHARE: the earned share (–40...0 dB) in the group color; brightness follows speech probability. Right — DP GR: de-plosive gain reduction (0...–18 dB, drawn top-down).
- 32 SHARE READOUT** — The channel's current share in dB. “–∞” = fully closed; “–” = no audio running.
- 33 WEIGHT** — Chairman priority, ±12 dB: biases this channel's earned share against the others without touching its input gain.
- 34 GRP • B • M** — GRP cycles the share group — four colors, four independent pools (e.g. podium / panel / audience); $\Sigma G = 1$ holds per group. B = bypass: unity gain, outside the share pool (program and playback feeds). M = mute: closed and outside the pool.

NOISE REFERENCE

- 35 NS** — The “17th channel”. Set LEVEL to the room's crowd/HVAC reference. The bar shows the loudest microphone against the reference line; while no mic beats it, the strip flags DUCK — the mixer knows nobody is talking, and ambient noise cannot hold channels open. NS ON arms it.

QUICK START

1. Gain-stage honestly at the console. SC-16 expects real levels, not hot inputs.
2. Assign groups (34): one pool per stage zone — podium, panel, audience.
3. AUTOMIX: leave DEPTH at –20 dB, ATTACK 2 ms, RELEASE 90 ms. Watch ΣG stay ≤ 1.00 on the share monitor (2).
4. Switch VAD and WEIGHT on. SENS 0.55; move toward 0.70 on noisy stages.
5. FLOORLOCK: LOCK on, VOICE KEY NORMAL, MARGIN +9 dB, RANGE –20 dB. Watch 28/29 through a minute of real program; if non-speech still blips through, step VOICE KEY to STRICT.