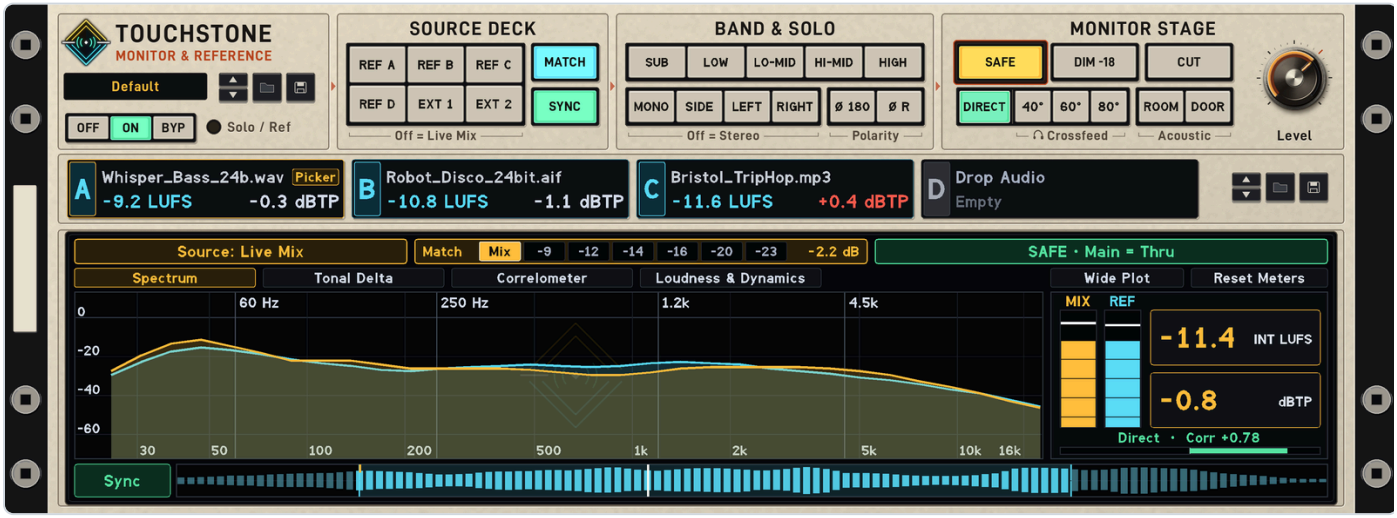
Touchstone Monitor & Reference: Quick Start Guide

Product Identifier: `ca.boraas.Touchstone`
Version: 1.0.1
Rack Format: 4U Studio Effect (collapses to active 1U folded strip)
Requirements: Reason 10.1 or later (macOS Universal & Windows 64-bit, Standalone DAW & Reason Rack Plugin)
Author: Edward Boraas

Touchstone puts a dedicated studio control room, 4-slot loudness-matched reference deck, 5-band audition matrix, headphone crossfeed and acoustic room simulator, and 4-view mastering meter right inside Reason's Master Section. It solves two problems at once: eliminating loudness bias when A/B-ing against commercial masters, and preventing monitoring tools from accidentally printing into your exported bounces.



Touchstone 4U Front Panel — Spectrum RTA, Reference Cartridges & Meter Bridge

---

1. Two-Minute Wiring: Master Insert vs. Standalone Control Room

Choose the wiring that matches your audio interface and mixing workflow.

Option A: Master Section Insert (Fastest Setup, 2-Output or 4+ Output Rig)

1. Drag **Touchstone** into the **final insert slot** of Reason's Master Section (`Insert Send "To"` → `Main Mix In L/R` , `Main Out L/R` → `Insert Return "From"`). Reason auto-routes these cables automatically.
2. **2-output laptop / headphone rig**: Leave `SAFE` **Off** while mixing so you hear Reference A/B, Band Solo, Crossfeed, and Room simulation through your main outputs. Touchstone lights the amber `Solo / Ref` LED and displays `LIVE • Monitor on Main` whenever anything non-flat is active. Click `SAFE` before exporting so `Main Out` locks to bit-exact unity passthrough.
3. **4+ output audio interface (Export-Safe permanently)**: Flip the rack (`Tab`) and patch Touchstone's `Monitor Out L/R` directly to **Hardware Interface Audio Out 3/4** (your headphone or studio monitor bus). Latch `SAFE` **On** permanently (or load `Export Safe Control Room (Phones Out 3–4)`):
   - `Main Out L/R` stays locked to a bit-exact copy of `Main Mix In` . Nothing you solo, match, dim, mute, or crossfeed can ever leak into *Export Song as Audio File*.
   - `Monitor Out L/R` carries your full control room chain, and Crossfeed automatically isolates to `Monitor Out` whenever both outputs are patched.

Option B: Standalone Post-Master / SSL Control Room Hub

Place Touchstone directly in the rack between Reason's **Master Section** and **Hardware Interface** so SSL `PFL/AFL` solos and `FX` cues pass straight through your headphone room and meters:

1. Patch **Master Section** `Master Out L/R` → Touchstone `Main Mix In L/R` (your clean print mix and LUFS anchor).
2. Patch **Master Section** `Ctrl Room Out L/R` → Touchstone `Ctrl Room In L/R` (monitors SSL `PFL/AFL` solos, `FX` cues, and tracks Reason's SSL `Ctrl Room` volume knob automatically).
3. Patch Touchstone `Main Out L/R` → **Hardware Interface** `Audio Out 1/2` (and optionally `Monitor Out L/R` → `Audio Out 3/4` for dedicated headphones with isolated Crossfeed).



Touchstone 4U Rear Patchbay — 4 Stereo Inputs, 5 Acyclic Outputs & Control Room CV

---

2. 60-Second Level-Matched Reference A/B (`Slots A–D` + `Match`)

Comparing an unmastered `−14 LUFS` mix against a `−8 LUFS` commercial master fools your ears into preferring whichever track is louder. Touchstone removes loudness bias automatically:

1. **Load up to 4 references**: Drag MP3, WAV, or AIFF tracks straight onto **Cartridges** `A` **through** `D` in Tier 2, or click a cartridge to target it (`Picker` badge) and browse with the **Sample Browser** on the right. Touchstone runs a background ITU-R BS.1770-4 gated scan and displays each file's intrinsic **LUFS** and **dBTP** true peak. (You can also patch live stems or rough mixes into rear `Ext Ref 1` and `Ext Ref 2` .)
2. **Pick your** `Match` **mode**: Leave `MATCH` lit in Bay 2. In the CRT's top-center `Match` capsule, click `[Mix]` to auto-trim every reference to match your live mix's loudness (`−24.0` to `+18.0 dB` with a `−0.3 dBTP` headroom ceiling), or click a fixed target chip (`[−9]` , `[−12]` , `[−14]` , `[−16]` , `[−20]` , `[−23]`) to calibrate references immediately even when your mix is stopped. Your live mix stays untouched at `0.0 dB` unity.
3. **A/B with one click**: Click `REF A` through `EXT 2` in the **Source Deck** (or click any loaded cartridge card) for a click-free 10 ms equal-power crossfade. Click the lit button again to toggle straight back to `Live Mix` . Even while listening to `Live Mix` , Touchstone keeps streaming your target reference in the background so **Spectrum**, **Tonal Delta**, and **Loudness & Dynamics** update live side by side.
4. **Sync or Cue Loop**: Leave `SYNC` lit (`DAW Sync`) so reference playback follows Reason's song timeline, or turn `SYNC` off (`Cue Loop`) to loop and scrub choruses on the bottom waveform scrubber even while Reason's transport is stopped.

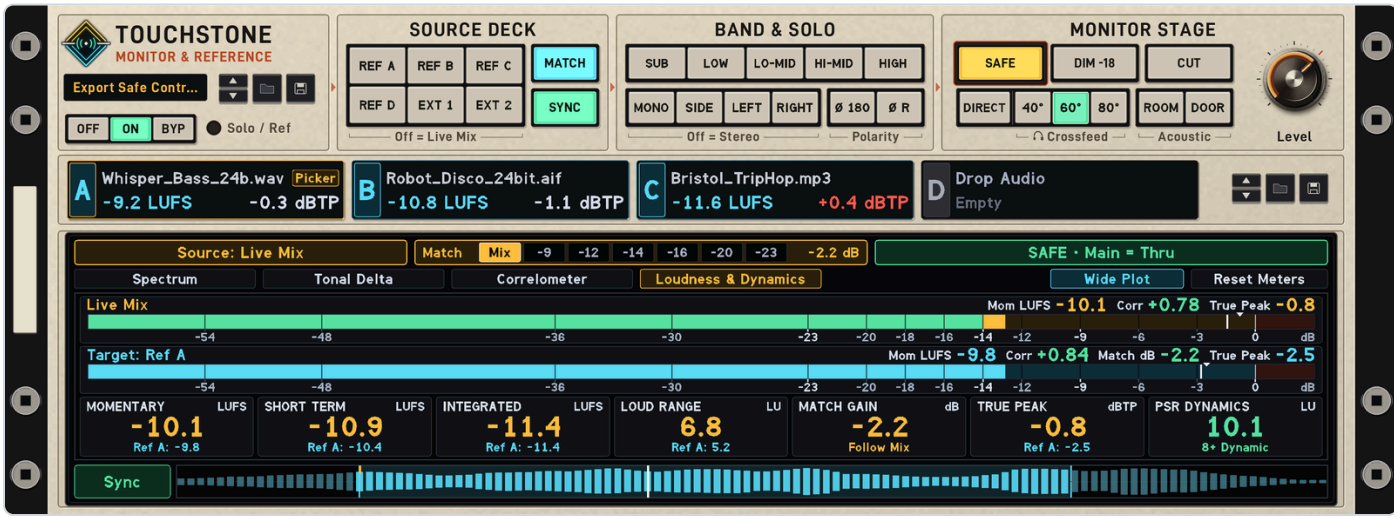
Song File Size Tip: Reason embeds loaded user samples when saving self-contained songs. If you load several full-length 24-bit WAV references, delete unused slots before archiving or sharing your `.reason` file to keep project sizes lean.

---

3. Frequency, Stereo & Phase Diagnostics (`Band & Solo`)

Every filter and monitor switch sits **after** the Mix/Ref selector, so flipping between your mix and a reference auditions both through identical 24 dB/oct phase-aligned slopes.

- **5-Band LR4 Multi-Solo (`SUB | LOW | LO-MID | HI-MID | HIGH`)**: Splits at **60 Hz**, **250 Hz**, **1.2 kHz**, and **4.5 kHz** with exact `0.00 dB` flat allpass reconstruction.
  - **Click** any band to solo it; click the sole lit band again to return to **Full Range**.
  - `Shift + Click` adds or removes individual bands (combining all five returns to Full Range).
  - **Click and drag** horizontally across adjacent pills to sweep a contiguous range (for example, `Low` through `Hi-Mid` for `60 Hz – 4.5 kHz`).
  - Click the amber `Solo: ...` pill in the CRT Mode Bar at any time to clear back to Full Range in one click.
- **Channel Matrix (`MONO | SIDE | LEFT | RIGHT`)**: Check mono collapse, stereo side energy, or isolate Left/Right to both ears. Click the active pill again to return to **Stereo**.
- **Differential Polarity (`Ø 180 | Ø R`)**: Runs immediately *before* the Channel Matrix and Correlometer. `Ø 180` flips both channels (`L+R`); `Ø R` flips only the Right channel so you can diagnose inverted stereo tracks or confirm whether a phase-cancelling synth snaps back into full mono when flipped.



Loudness & Dynamics Wide Plot — Twin Mix/Ref Lanes & 7 LPM Readout Cards

---

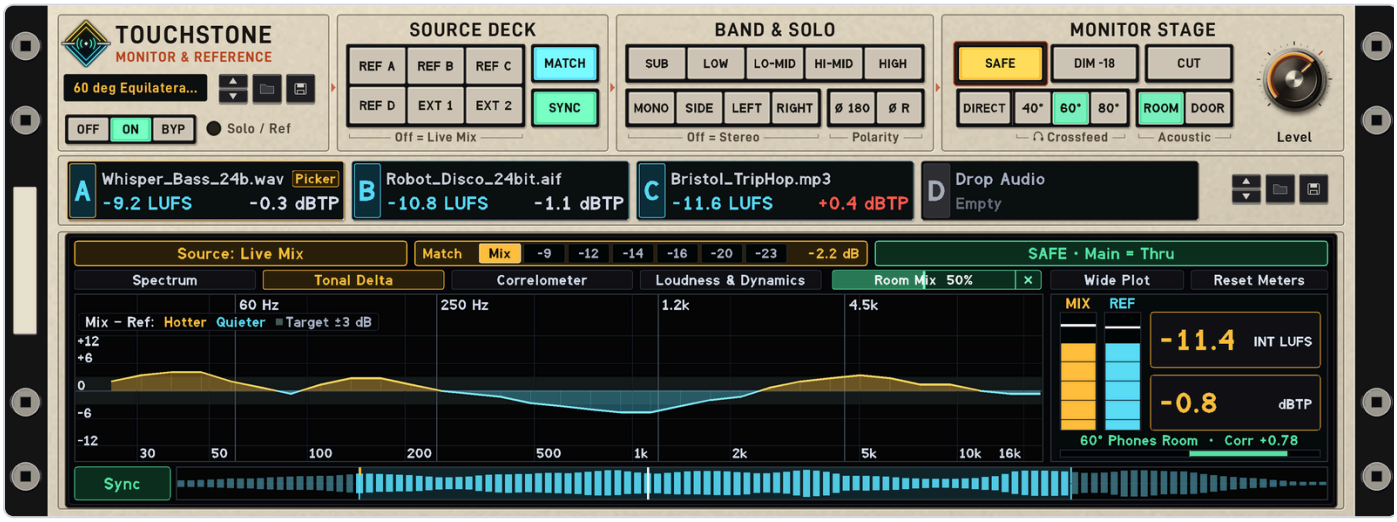
4. Headphone Translation (`Crossfeed` , `Room` & `Door`)

Headphones isolate your left and right ears completely, exaggerating hard panning and making reverb depth harder to judge. Bay 4 (**Monitor Stage**) gives you two complementary translation tools:

1. **Speaker-Angle Crossfeed (`DIRECT || 40° | 60° | 80°`)**: Models spherical-head interaural time delay (Woodworth ITD) and a 700 Hz head-shadow low-pass with `0.0 dB` mono sub-bass calibration:
   - `40°` : Tight nearfield desk focus with strong phantom-center anchoring.
   - `60°` : Standard equilateral studio monitor triangle (great everyday starting point).

- `80°` : Wide midfield/mains arc for checking hard-panned elements and reverb tails.
- Click `DIRECT` (or click the active angle again) to turn Crossfeed off. When both `Main Out` and `Monitor Out` are patched, Crossfeed isolates strictly to `Monitor Out` (`Phones` tag in the CRT footer) so studio speakers stay dry.

2. **Acoustic Environment (`ROOM | DOOR`)**:
   - `ROOM` (Jade): Treated ITU-R BS.1116 control room early reflections and tight ~155 ms decay voiced for closed-back headphones, loudness-neutral within `±0.20 LU` and leaving sub-60 Hz bass untouched. Pair with `60°` Crossfeed for a natural out-of-head monitor feel.
   - `DOOR` (Amber): Closed solid-core studio door and hallway check (`85% Mid / 15% Side` , `48–340 Hz` door mass-law filter, short corridor slap). Use it for quick vocal-to-bass balance checks, just like stepping into the hall outside the control room.



Tonal Delta View with 60° Headphone Crossfeed & Treated Control Room Active

---

5. `Export Safe` , `Dim −18` , `Cut` & Monitor Protection

- `SAFE` **(Armored Amber Guard)**: Locks `Main Out L/R` to a bit-exact `1:1` copy of `Main Mix In` with zero DSP latency. Leave it latched permanently when monitoring off `Monitor Out` (`HW Out 3/4`), or engage it right before bouncing on a 2-output setup.
- `DIM −18` : Instant `−18.0 dB` monitor pad for talking to a vocalist, answering the phone, or checking low-level balance (Fletcher-Munson check).
- `CUT` **(Coral)**: Click-free 5 ms monitor mute. `Main Out` (when `SAFE` is on), `Main Thru` , `Scope Out` , `Ref Out` , and every CRT loudness/RTA meter stay 100% live while your speakers are silenced.
- `Level` **(** `−24.0` **to** `+12.0 dB` **)**: Calibrated monitor trim (`Cmd/Ctrl + Click` resets to `0.0 dB` unity).
- **Ear-Saver Fuse**: Automatically clamps runaway signals above `+6.02 dBFS` , NaN/Inf spikes, or heavy DC offsets on the monitor path (`FUSE! Reset` flashes coral on the CRT until cleared). Normal hot masters pass bit-identically untouched.

---

6. CRT Views, Panel Gestures & Shortcuts Cheat Sheet

Target	Click / Drag Gesture	Modifier / Reset Gesture
Source / Band / Channel / Polarity / Crossfeed / Acoustic	Click pill to engage; click active pill again to toggle back to default (`Live Mix` , `Full Range` , `Stereo` , `Direct` , `Dry`)	`Cmd/Ctrl/Alt + Click` resets group to default
5-Band Solo Strip	Click 1 band; drag horizontally across pills for a contiguous range	`Shift + Click` toggles individual bands additively
Reference Cartridges `A–D`	Click card to target Sample Picker (`Picker`) and toggle auditioning if loaded	Drag MP3/WAV/AIFF directly onto card; `Cmd/Ctrl/Alt + Click` returns to `Live Mix`
CRT Row A (`Source` , `Match` , `SAFE`)	Click `Source` to cycle; click `Match` or gain to toggle; click `[Mix / −9..−23]` chip to pick target; click `SAFE` to toggle	`Cmd/Ctrl/Alt + Click` resets `Source` → `Live Mix` , `Target` → `Mix` , `SAFE` → `Off`
CRT Row B (Mode Bar)	Switch `Spectrum` , `Tonal Delta` , `Correlometer` , `Loudness & Dynamics` ; toggle `Wide Plot` ; click `Reset Meters`	`Cmd/Ctrl/Alt + Click` any tab → `Spectrum` ; `Wide Plot` → default layout; click active `Room` / `Door` / `Solo` badge to clear
CRT Loudness Cards / Matrix	Click anywhere in the Meter Bridge cards, Split Matrix, or Wide 7-Card Strip to flush meters & clear `FUSE!`	Same as clicking `Reset Meters`
Waveform Scrubber (Row D)	Click or drag anywhere along the waveform to move `Cue Position` ; click `Sync` / `Cue` pill to toggle	`Shift + Drag` for `0.2x` fine scrubbing; `Cmd/Ctrl/Alt + Click` resets offset to `0.0%`
Monitor `Level` Knob	Drag vertically to trim `−24.0` to `+12.0 dB`	`Cmd/Ctrl + Click` snaps to `0.0 dB` unity
1U Folded Rack Strip	Direct access to `OFF/ON/BYP` , Patch Browser, `A–D / E1–E2` , `SUB–HI` solo, `XFEED` , `SAFE` , `Level` , and `385×65` scribble tape	Collapses 4U console to 1U without losing essential control room switches



Touchstone 1U Compact Folded Rack Strip