# SonaLink

The companion to Sonasync — amplifier and processor health, recorded beside every sweep

1.0.0 beta

## 1 What this is

A program that watches the health of your amplifiers and processors while you measure, and hands that record to Sonasync.

Sonasync tells you *what* the system did during a sweep. SonaLink tells you *why*: which amplifier was limiting, which output was in protect, how hot the heatsink was and what the mains did, at the moment the sweep ran. It runs beside Sonasync on the same laptop, reads each device the way its own software would, and saves the result as a `.sonalink` file that Sonasync imports.

It is also a monitor in its own right. Many engineers simply leave it open through a show: every amplifier and processor is a card, every reading has a live indicator, and anything that limits, clips or protects turns amber or red.

### What it is not

It is not a controller. SonaLink never changes a setting on any device — no gain, no mute, no preset, no EQ (section 11). Settings such as delay, EQ and FIR are Sonasync's job; it imports them from the manufacturers' own files.

## 2 Installing

Windows 10 or later, 64-bit, or a current Linux. No account, and nothing phones home.

The installer offers **Just me** or **All users**; *Just me* needs no administrator. It registers `.sonalink` files, so double-clicking one opens it in SonaLink.

> **YOUR SESSIONS SURVIVE UPDATES**
>
> Sessions are saved in `Documents\SonaLink`. An update replaces only SonaLink's own program files, and uninstalling removes only what was installed. SonaLink refuses to save inside its own program folder, so a session can never end up where an update would replace it.

### On Linux

Debian and Ubuntu take the `.deb`; Fedora, openSUSE and RHEL take the `.rpm`. Both come from the same source and pass the same checks as the Windows build.

```
sudo apt install ./sonalink_<version>_amd64.deb
sudo dnf install ./sonalink-<version>-1.x86_64.rpm
```

They **name** their dependencies rather than carrying Qt inside them, so your distribution's own, updated Qt is used. SonaLink needs **Qt 6.5 or later**: Debian 13, Ubuntu 24.10 and later, Fedora 39 and later. Ubuntu 24.04 and Linux Mint 22 ship Qt 6.4 and cannot run it from their own packages.

> **SERIAL DEVICES ON LINUX**
>
> To read a Phase Lab over a USB serial adapter, add yourself to the `dialout` group once — `sudo usermod -aG dialout $USER` — then log out and back in. Ports appear as `/dev/ttyUSB0` and similar.

Only one SonaLink runs at a time. Starting it again — or double-clicking a `.sonalink` file — brings the running window forward and opens the file there.

## 3 Adding devices

Press **+ Add device** (Ctrl+D). Each way of reaching a device has its own tab.

| TAB | FOR | YOU ENTER |
|---|---|---|
| **Network · AES70** | d&b audiotechnik, Dynacord, Bosch and other AES70 (OCA) devices | IP address and TCP port — or *Find AES70 devices on the network* |
| **SNMP** | Amplifiers, power distribution and switches that publish the standard sensor table | IP address, read community (often `public`), and what kind of device it is |
| **DriveRack PA2** | dbx DriveRack PA2 | IP address and the unit's own password (used once, never saved) |
| **Phase Lab · RS-232** | AD Pro Audio Phase Lab LEGACY 4.8 | COM port and device ID (1–254) |

| TAB | FOR | YOU ENTER |
|---|---|---|
| **Demo** | Simulated devices, for trying SonaLink without hardware (section 12) | — |

### Finding devices on the network

**Find AES70 devices on the network** (Ctrl+F) asks the local network which AES70 devices are present and lists them with an **Add** button each. It only asks; it sends nothing to any device.

> **SOME NETWORKS HIDE DEVICES**
>
> Managed switches that block multicast, and Wi-Fi with client isolation, stop the search from seeing anything. Type the IP address and port by hand instead.

Each device appears in the sidebar with a coloured marker — blue for a processor, green for an amplifier, amber for a powered speaker. Hover a row and press × to remove it.

## 4 Watching the PA: the cards

Processors on the left, amplifiers and powered speakers on the right. One card per device, one tile per reading.

| INDICATOR | SHOWS |
|---|---|
| **Needle gauge** | Mains voltage, load impedance, current, power |
| **Thermometer** | Temperature — green, then amber, then red as it rises |
| **VU bar with peak hold** | Signal level, gain |
| **Downward bar** | Limiter gain reduction |
| **LED** | Clip, protect, mute, faults — pulses when active |

A tile turns **amber** on a warning (the limiter working) and **red, pulsing** on an alert (clip, protect, a fault, heavy limiting). The green dot beside a card's name blinks whenever fresh data arrives — a card whose dot stops blinking has stopped answering.

Click a card's title to collapse it to one line: its channel count and a summary such as *all OK* or *2 warnings*. A collapsed card that needs attention keeps an amber or red

border. *Collapse all* and *Expand all* sit above each column.

| LABEL | MEANS |
|---|---|
| **AES70, SNMP** | Read with an open standard |
| **documented** | Read with the manufacturer's published protocol |
| **decoded, unofficial** (tinted, marked *) | Read with a protocol the manufacturer has not published |
| **DEMO · simulated** | Generated demo data — not a measurement |
| **from file** | A saved recording being viewed; nothing is connected |

## 5 Signal links

Tell SonaLink which processor output feeds which amplifier or speaker, and a problem shows up next to the output driving it.

1. Open **Signal links** in the sidebar.
2. Choose the processor **output** — for example PA2 *Low Left*.
3. Choose the **device** it feeds, if SonaLink reads it too, and type a **label** such as *SUB L* or *D80 ch1*.
4. Press **Link**.

The output now carries a chip, coloured by the live state of the channel it feeds. Click the chip to jump to that amplifier's card. The amplifier channel shows where its signal comes from: ← *DriveRack PA2 Low Left*.

> **LINKS ARE ALWAYS YOURS**
>
> A processor cannot see what is connected after it. Links are never detected; they are what you entered, and they are saved in the recording so Sonasync can follow a sweep's signal path.

## 6 Recording for Sonasync

Record on the same laptop as Sonasync, save one file, import it. Sonasync never connects to anything.

1. Open SonaLink beside Sonasync **on the same laptop** and add your devices. Both programs read the same Windows clock; that shared clock is what lines the two up.
2. Type a **title** in the toolbar — the venue or the show.
3. Press **Start recording** (Ctrl+R) **before the first sweep**. SonaLink always keeps the last 10 seconds in memory, so the recording reaches back 10 seconds before you pressed it.
4. Measure in Sonasync as you always do. Optionally press **F9** at the start and end of each sweep (section 7).
5. When you are done, press **Stop**, then **File → Save** (Ctrl+S).
6. In Sonasync, import the `.sonalink` file — from the same laptop or carried on a USB stick. Sonasync cuts out each sweep's window by its own sweep time.

## What the file holds

| | RECORDED | LETS SONASYNC SAY |
|---|---|---|
| **When** | Start and end time to the millisecond, with the time zone; every reading stamped in milliseconds from the start | which readings belong to which sweep |
| **What** | Each device: brand, model, serial, role; each channel and its name | which unit was involved |
| **Where** | Your signal links | which amplifier sat in this sweep's path |
| **Why** | Temperature, mains, current, power, load, limiter gain reduction, levels, clip, protect, faults, mute, preset — and events: limiter engaged and released, clip, protect, fault, sweep markers | "the low end is 3 dB down because SUB L was limiting 4.5 dB" |
| **How** | Where each value came from: AES70, SNMP, documented, decoded unofficial, simulated | how far to trust it |

Settings — delay, EQ, FIR, crossover — are deliberately not recorded. The file format is described in full in *Help → .sonalink file format*.

> SAME LAPTOP, SAME CLOCK

> The alignment relies on SonaLink and Sonasync reading one clock. Run them on the same laptop, and do not change the Windows time or time zone between the measurement and the recording.

## 7 Sweep markers

Optional marks in the recording where each sweep began and ended.

Press **F9** (or *Mark sweep* in the toolbar) when a sweep starts, and again when it ends. Each becomes *Sweep 1*, *Sweep 2*, … in the file. F9 starts the recording first if nothing is being recorded. Markers are not needed for Sonasync to line a sweep up — the clock does that — but they put named sweeps on SonaLink's own timeline for replay.

**Record on sweep** is reserved for a future version of Sonasync and is not needed with the way of working in section 6. Leave it off.

## 8 Saving, opening and replay

A saved recording opens as a replay: drag through time and the cards show the PA as it was.

**Save** (Ctrl+S) and **Save As** (Ctrl+Shift+S) write a `.sonalink` file; both start in `Documents\SonaLink`. **Open** (Ctrl+O) shows a saved recording: its devices, marked *from file*, with a replay bar along the bottom.

Drag the slider, or press ▶ at 1×, 4×, 16× or 60×. Every card shows the state at that moment — values, limiter, clip, protect and the colours of the link chips. The clock shows the original wall-clock time. On the track, amber marks are the limiter engaging, red marks are clip, protect or a fault, and blue bars are sweeps; click any of them to jump there.

> **NOTHING UNSAVED IS LOST SILENTLY**
>
> Closing SonaLink, *New session* or opening another file with an unsaved recording asks **Save**, **Don't save** or **Cancel**. A recording still running is stopped first, so it can be saved.

## 9 Exporting

For Sonasync, the `.sonalink` file. For anything else, a spreadsheet.

**File → Export → For Sonasync (.sonalink)** is the same as Save As. **Spreadsheet (.csv)** writes every reading as one row — time, device, channel, every value and its source — for Excel or any other tool.

*Export to manufacturer software* is shown, and greyed out: sending anything to a manufacturer's software would mean writing settings, and SonaLink only reads. *Import → Manufacturer export file* is planned: it needs a sample export from each brand.

## 10 Which devices, and how they are read

Any brand, as long as SonaLink can read it the way the manufacturer's own software would, or import a file that software exported.

| ROUTE | DEVICES | WHAT IT READS | LABELLED |
|---|---|---|---|
| **AES70 (OCA)** | d&b audiotechnik, Dynacord, Bosch and others | Whatever sensors the device publishes: temperature, mains, current, load impedance, limiter, levels, clip, protect, faults | AES70 |
| **SNMP v2c** | Amplifiers, power distribution, switches with the standard sensor table | Temperature, mains volts, current, power, clip and fault flags | SNMP |
| **Phase Lab LEGACY 4.8** | AD Pro Audio | Gain, mute and preset, from the manual's RS-232 protocol | documented |
| **DriveRack PA2** | dbx | Preset, input and output levels, input clip, output mutes | decoded, unofficial |
| **Imported exports** | Planned | What the manufacturer's software exported — static, not live | imported export |

Brands whose control protocol is closed or encrypted — for example L-Acoustics and RCF RDNet — cannot be read live. Their own software's exports are the route for those.

## 11 Read-only: what SonaLink never does

It never changes a device, and it never gets round a password, encryption or a licence.

Every driver carries a list of the commands it is allowed to send, and every one of them is a *read*: *get gain*, *get* a sensor, an SNMP *Get*. Anything else is refused inside SonaLink before it reaches the cable or the network, and the tests that check this run on every release build.

Where a device asks for a password — the DriveRack PA2 — SonaLink uses the one you type, once, and does not store it. Values read with a protocol the manufacturer has not published are always labelled *decoded, unofficial*.

## 12 The demo and the licence

Try every part of SonaLink without hardware.

In **Add device** → **Demo**, **Demo system** adds a DriveRack PA2 already linked to a d&b D80 (Low → SUB, Mid → TOP) and an RCF HDL 30-A (High). The values follow a simulated programme with a loud passage every 20 seconds, so limiters engage and the odd clip or protect appears. **Show demo network devices** in the AES70 tab adds more brands, each marked *AES70* or *not AES70 — demo only*.

### The licence

**Watching devices is always free** — the cards, the demos, and opening or replaying saved recordings. **Recording, saving and exporting** — the link to Sonasync — work for a **30-day trial** from the first time SonaLink runs, and after that need a licence. The days left show in the toolbar.

A licence is a small signed file, `<name>.sonalink-licence`. Load it in **Help** → **License** → **Load licence file**; SonaLink keeps a copy in its settings folder, so it survives updates. It is checked on this computer only — no account, no online activation. A Sonasync licence does not unlock SonaLink, and the other way round.

> DEMO DATA IS NEVER A MEASUREMENT
>
> Every demo card says *DEMO · simulated*, and a saved recording marks those values `simulated`, so Sonasync can never take them for real readings.

## 13 When it will not work

What the status line says, and what to do.

| YOU SEE | DO THIS |
|---|---|
| The AES70 search finds nothing | The network may block multicast. Enter IP and port by hand; the port is in the device's manual or its own software. |
| *Cannot reach …* | Check the cable, the IP address, and that the laptop is in the same address range as the device. |
| *SNMP device did not answer* | SNMP may be switched off on the device, or the community is not `public`. |
| *… publishes no usable standard sensors* | The device only publishes its brand's own values. That brand needs its own profile in SonaLink. |
| *PA2 login refused* | Wrong password for that unit. SonaLink does not retry on its own. |
| A card's green dot stops blinking | The device stopped answering — cable, power or address change. |
| *Not saved: the SonaLink program folder …* | Choose another folder; `Documents\SonaLink` is the default. |

## 14 Keyboard shortcuts

The same list is under *Help → Keyboard shortcuts* (Ctrl+/).

| KEYS | DOES |
|---|---|
| `Ctrl+N` | New session |
| `Ctrl+O` | Open a `.sonalink` |
| `Ctrl+S / Ctrl+Shift+S` | Save / Save as |
| `Ctrl+R` | Start / stop recording |
| `F9` | Mark sweep start / end |
| `Ctrl+D` | Add device |
| `Ctrl+F` | Find AES70 devices on the network |
| `Ctrl+T` | Toggle light / dark theme |
| `Ctrl+B` | Show / hide the sidebar |
| `F11` | Full screen |

| KEYS | DOES |
|---|---|
| F1 | This manual |
| Ctrl+Q | Exit |

## 15 Glossary

The words used in this manual and in SonaLink, in plain language. The first part is general sound and network terms; the second is what SonaLink calls its own parts.

### Sound and network terms

| TERM | WHAT IT MEANS |
|---|---|
| **AES70 (OCA)** | An open standard for controlling and monitoring networked audio equipment. Used by d&b, Dynacord, Bosch and others. SonaLink only uses its *get* methods. |
| **Air-gapped** | Never connected to a network. Sonasync is air-gapped: it receives SonaLink's data only as a file you import. |
| **Amplifier channel** | One output of an amplifier, driving one loudspeaker or one way of a box. |
| **Clip** | A signal driven past what a converter or amplifier can handle, so its peaks are cut off. Distorts, and can damage drivers. |
| **Community (SNMP)** | A short name that acts as the read password for SNMP. Often `public` for reading. |
| **COM port** | A serial connection on the laptop, usually a USB-to-RS-232 adapter. The Phase Lab is read over one. |
| **dB, dBFS** | A ratio, not an amount. dBFS is level inside digital equipment against full scale; 0 dBFS is the loudest possible. |
| **Discovery (mDNS)** | Asking the local network which devices offer a service, without knowing their addresses. How *Find AES70 devices* works. |
| **DSP / processor** | The unit that splits, delays, equalises and limits the signal before the amplifiers — the DriveRack PA2, the Phase Lab, a Lake. |
| **Fault** | A condition the device itself reports as wrong: a failed fan, a power supply rail out of range, an amplifier module error. |
| **Firmware** | The software inside the device. |

| TERM | WHAT IT MEANS |
| --- | --- |
| **Gain reduction (GR)** | How many dB a limiter is turning the signal down right now. 0 dB means it is not working. |
| **IP address** | A device's address on the network, such as `192.168.1.101`. |
| **Limiter** | A protection that turns the signal down above a set level, so drivers and amplifiers are not overdriven. It changes what a measurement shows — which is why SonaLink records it. |
| **Load impedance** | The resistance, in ohms, the loudspeakers present to an amplifier channel. A sudden change means a driver failed or a cable was unplugged. |
| **Mains voltage** | The AC supply at the amplifier, in volts. A generator sagging under load shows up here. |
| **Meter** | The signal level the device itself measures at an input or output. |
| **Mute** | A channel switched off. A muted output during a sweep explains a missing band at once. |
| **Port (TCP/UDP)** | A number that picks one service on a device's address, like an extension on a phone number. |
| **Powered speaker** | A loudspeaker with its amplifier and DSP inside, such as the RCF HDL 30-A. |
| **Preset** | A stored set of processor settings, recalled as a whole. Recorded so you know which tuning was loaded. |
| **Protect** | An amplifier or speaker switching an output off, or holding it down hard, to save itself — from heat, a short or a fault. |
| **RS-232** | An old, simple serial connection, still common on processors. |
| **SNMP** | Simple Network Management Protocol, an open standard many network and power devices use to report their state. SonaLink only sends its read requests. |
| **Sweep** | The rising tone Sonasync plays to measure a system. |
| **Thermal** | Heat. Amplifiers turn down or protect when their heatsink gets too hot. |

## SonaLink's own words

| TERM | WHAT IT MEANS |
|---|---|
| **.sonalink file** | A saved recording: devices, readings, events and markers, as plain JSON text. What Sonasync imports. |
| **Access label** | How a value was read: *AES70*, *SNMP*, *documented*, *decoded, unofficial*, *imported export*, *simulated*. |
| **Card** | One device on screen, with its channels and tiles. Click its title to collapse it. |
| **Chip** | The small label on a processor output showing what it feeds, coloured by that channel's state. Click it to jump there. |
| **Decoded, unofficial** | Read with a protocol the manufacturer has not published. Shown tinted and marked *. |
| **Demo** | Simulated devices for trying SonaLink. Always marked *DEMO · simulated*. |
| **Event** | Something that happened at a moment: limiter engaged or released, clip, protect, fault, a sweep marker. |
| **From file** | A device shown from an opened recording; nothing is connected. |
| **Licence** | A signed file that unlocks recording and saving after the 30-day trial. Help → License. |
| **Live dot** | The green dot beside a card's name; it blinks when fresh data arrives. |
| **Pre-roll** | The last 10 seconds SonaLink keeps in memory, so a recording begins before you pressed Start. |
| **Read-only guard** | The list of allowed read commands each driver checks before sending anything. |
| **Record on sweep** | Reserved for a future version of Sonasync. Leave it off. |
| **Replay** | Moving through a saved recording in time; the cards show the state at that moment. |
| **Role** | What a device is: processor, amplifier or powered speaker. Decides which column its card sits in. |
| **Session** | Everything since the last *New session* or *Open*: the devices, the links and the recording. |
| **Signal link** | Your note that a processor output feeds a given amplifier channel or speaker. |

| TERM | WHAT IT MEANS |
| --- | --- |
| **Sweep marker** | A mark in the recording where a sweep started and ended. F9. |
| **Trial** | 30 days of recording and saving without a licence, counted from the first run. Watching stays free after it ends. |
| **Tile** | One reading on a card, with its own indicator. |

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**SonaLink 1.0.0 beta.** Developed by Master Pro Sounds and Lights Services, Cebu City, Philippines · the companion to Sonasync.

Record while you measure. The sweep shows what the system did; SonaLink shows why.