LIGHTFORGE

MULTI-TRACK DMX RECORDER

Record your lighting console once — replay it forever, straight from the Q-SYS Core. Up to 64 tracks of Art-Net and sACN, frame-accurate, timecode-ready. A multitrack tape machine for light.

V1.0.1 · Q-SYS DESIGNER 9.0+ · ART-NET + SACN · PERPETUAL LICENSE

01 · OVERVIEW

What is LightForge?

LightForge captures the DMX your console sends over the network and plays it back — **identical, frame by frame** — with no console needed. Think of it as a **multitrack tape machine for light**: one track records one DMX universe to a file on the Core, then replays it on cue. Record the show once, send the console home.

SETUP — ONCE, IN DESIGNER

1

Drop it in

Drag LightForge from the plugin list into your design.

2

Set the count

In Properties, set **Track Count** — one track per universe you want to record (1–64).

3

Point it

On the **Config** page: pick the **NIC** that sits on your DMX network, keep storage at **media/**.

4

License & go

Push to the Core and enter your key. In **Designer emulation** everything is free.

THREE KINDS OF PAGES

MAIN

The show view: **global transport** that drives every track at once, master output & fader, live stats (RX / TX / FPS / timecode), and the **512-channel monitor**.

CONFIG

Set once, forget: **NIC**, **storage path**, **timecode source**, license status & Core ID, and the **config backup** buttons.

TK 1-16 · 17-32 …

The track banks — 16 tracks per page, created automatically from your Track Count. Each row is one full record-and-replay chain.

THE SIGNAL PATH

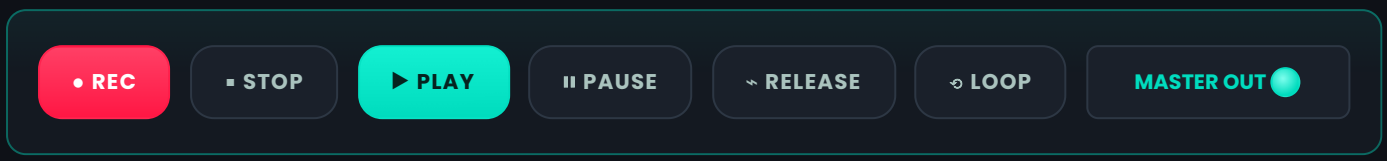
CAPTURE	STORE	REPLAY	MERGE	SEND
Art-Net / sACN in	.dmxr on the Core	frame-accurate	HTP · LTP · PRI	network out

> **One idea to keep in mind:** everything on the left of this chain is per-track and independent. Tracks only meet at the **MERGE** step — and only when they aim at the same output universe.

02 · TRANSPORT

Six Buttons, Two Levels

Every track has six transport buttons. The Main page has the **same six** — they drive **all tracks at once**.



CONTROL	WHAT IT DOES
● REC	Starts recording (or arms, if a trigger is set — page 04). The file is **auto-named** (`rec_001.dmxr`, `rec_002…`) and saved on the Core.
■ STOP	Stops recording (writes the final frame, finalizes the file) or stops playback.
▶ PLAY / ❚❚ PAUSE	Plays the loaded file. PAUSE freezes the output where it is; PLAY resumes exactly there.
⌁ RELEASE	Stops **and blacks out** — zeros every channel and pulls the track off the air. Your per-track panic button.
⟲ LOOP	Playback restarts from the beginning when the file ends. Perfect for all-night ambiances.
POSITION	0–100% slider — jump anywhere in the file. Set it before PLAY to start mid-file, or scrub live during playback.

THE MASTERS — MAIN PAGE

MASTER OUT

One switch that gates **all** outgoing DMX. Off = the whole plugin goes dark, instantly — recording and monitoring keep working.

MASTER FADER

Scales every output channel `0–100%` — a grand master over everything LightForge sends. Great for a slow whole-rig fade.

TRACK STATUS — READ THE ROW

READOUT	SHOWS
STATE	`Idle` · `Armed` · **Recording** · **Playing** · `Paused` · `Stop` — what the track is doing right now.
TC	Current position while recording or playing (`HH:MM:SS.FF`).
DURATION / FRAMES	Length and frame count of the loaded file.

Remote control: transport buttons, masters and status readouts also exist as **pins** — fire PLAY from a UCI button, a schedule, or any Q-SYS logic. What you can click, you can wire.

03 · RECORD

Capture the Console

Tell the track what to listen to, press ● REC, press ■ STOP. Everything else below is optional refinement.

INPUT — WHAT THE TRACK LISTENS TO

SETTING	CHOOSE
INPUT PROTOCOL	**Art-Net** or **sACN** — whatever your console speaks.
INPUT UNIVERSE	Art-Net counts from `0` (range 0–32767) · sACN counts from `1` (range 1–63999). The #1 source of "nothing recorded" is an off-by-one here.
CHANNEL MASK	Which of the 512 channels to record. Empty or `*` = all.

1-24
a continuous range

32,33,45
individual channels

1-10,20,30-40
mix ranges and singles freely

*** or empty**
all 512 channels — the default

HOW RECORDING WORKS

44 FPS
captures at full DMX rate — every fade, every chase step

SKIP-FRAME
only frames that *change* are written — a static look costs almost nothing on disk

AUTO-NAME
files are numbered `rec_001.dmxr`, `rec_002…` — rename later via the file manager

CLEAN STOP
■ STOP writes one final frame so the duration is exact to the frame

REC TRIGGERS — HANDS-FREE RECORDING

With a trigger set, ● REC **arms** the track (state: `Armed`) and recording starts by itself:

TRIGGER MODE	RECORDING STARTS WHEN…	YOU SET
MANUAL	…you press REC. The default — no automation.	nothing
ANY CHANGE	…the first DMX value changes on the input universe. Arm before doors, walk away.	nothing
DMX LEVEL	…a chosen channel reaches a threshold (value `>=` trigger value). Let the console itself start the take.	Trigger universe · channel (1–512) · value (0–255)
TIMECODE	…incoming TC enters a window; stops when TC leaves it. Frame-accurate takes.	TC start · TC stop (`HH:MM:SS.FF`)

> **Global REC:** the Main page ● REC arms/starts **every enabled track at once** — record 8 universes with one press. Each track still applies its own trigger mode.

04 · REPLAY

Play It Back, Anywhere

Pick a file, press ▶ **PLAY**. The output side is fully independent from the input — **re-map protocol, universe and destination freely**.

LOAD & PLAY

FILE

Every recording on the Core appears in the **FILE** dropdown. Selecting one loads it **instantly** — even hour-long shows — and fills in DURATION and FRAMES.

LOOP · SCRUB · SYNC

⟲ **LOOP** repeats forever. **POSITION** jumps anywhere, live. **TC SYNC** slaves the track to incoming timecode (page 06).

OUTPUT — WHERE THE REPLAY GOES

SETTING	CHOOSE
OUTPUT PROTOCOL	**Art-Net** or **sACN** — does **not** need to match the input. Record Art-Net, replay as sACN: free conversion.
OUTPUT UNIVERSE	Any universe — replay universe 0 as universe 12 if you like.
OUTPUT MODE	**Broadcast** (Art-Net default, whole network) · **Unicast** (one device — set OUTPUT IP) · **Multicast** (sACN default, E1.31 group computed automatically).
OUTPUT IP	The destination node's IP — Unicast mode only.
OUTPUT MASK	Which channels to transmit — same syntax as the record mask. The two masks are combined: a channel plays only if it passes **both**.
PRIORITY (sACN)	E1.31 priority `0–200`, default `100`. How your sACN receivers arbitrate between sources.

THREE WAYS TO SEND

BROADCAST

Everyone on the network hears it. Simple, works everywhere — the Art-Net habit.

UNICAST

Straight to **one node's IP**. Clean networks, no noise — best for big rigs and managed switches.

MULTICAST

The sACN way: receivers subscribe to the universe's group. Zero config — LightForge computes the address.

> **Enable matters:** a track only records, plays and transmits while its **ENABLED** toggle is on. A disabled track is invisible to the merge bus and to global transport.

05 · MERGE

When Tracks Share a Universe

Tracks aimed at the **same output universe** are merged automatically before transmission — nothing to wire. Each track's **MERGE** mode decides who wins, channel by channel.

TIER	MODE	PER CHANNEL, WHO WINS	USE IT FOR
1	**HTP**	The **highest value** wins.	Washes, backgrounds, blending looks
2	**LTP**	The **most recent change** wins.	Cue-based control — last action counts
3	**PRI**	The **highest priority** wins (tiebreak: highest value).	Overrides that must always win

The tier rule: a higher tier **always beats** a lower one, whatever the values — PRI beats LTP beats HTP. Within a tier, that tier's own rule applies.

WORKED EXAMPLE — THREE TRACKS ON UNIVERSE 5, CHANNEL 1

TRACK	MERGE	SENDS	WHAT THE RIG RECEIVES
A	HTP	180	—
B	HTP	220	220 — within HTP, 220 > 180
C	LTP	100	**100** — LTP is a higher tier, it beats both HTP tracks

If Track C now writes 50, the output becomes 50 — latest takes precedence. Switch C off (or ↘ RELEASE it) and the output snaps back to 220, the HTP winner.

PICKING A MODE IN PRACTICE

HTP

Two ambiance loops on the same rig, brightest wins — they blend instead of fighting.

LTP

Scene A playing, fire scene B — B simply takes over, like cues on a console.

PRI

A house-lights track that must win over everything, no matter what else is playing.

After the merge: the **MASTER FADER** scales the merged result, then **MASTER OUT** gates it. That's the complete output chain: merge → fader → gate → network.

06 · TIMECODE & MONITOR

Lock It, Watch It

TIMECODE — ONE SOURCE, SET ON THE CONFIG PAGE

TC SOURCE	WHERE THE TIME COMES FROM
Art-Net	Art-Net TimeCode packets from the network (your console or TC generator).
External Component	Any component **in your Q-SYS design** — a media player, an LTC reader, a TC generator. Pick it in the dropdown; press **TC REFRESH** if it's not listed.
None	No timecode. TC features simply stay off.

Check it's alive: the **CURRENT TC** readout on the Main page must be running. Frame rates `24` · `25` · `29.97` · `30` are detected automatically.

TWO WAYS TO USE IT, PER TRACK

TC SYNC — chase mode

The track's position **slaves to incoming TC**, frame-accurate. TC jumps → playback jumps. TC stops → the track pauses by itself (half a second later) and resumes when TC returns. Your show computer owns the clock.

TC WINDOW — trigger mode

Trigger mode **Timecode** + a start/stop time: the track runs **only while TC is inside the window**. Combine both: a track that chases TC, but only from `01:00:00.00` to `01:04:30.00`.

MONITOR — SEE EVERY CHANNEL, LIVE

Pick a track with **MON SELECT** (1–64) and the Main page grid shows all 512 values in real time — zeros are dimmed so a live rig reads at a glance.

VIEW	SHOWS
Input	What the track is receiving right now
Output	What it transmits — after merge and master fader
Recorded	The last frame written to disk

255	000	187	042	000	255	098	000
000	124	255	000	064	000	201	033
176	000	000	255	012	090	000	145

Channels 1–24 shown — the real grid goes to 512.

The pro workflow: Input to verify the universe before recording → **Recorded** to confirm the take → **Output** to check the merge does what you expect.

07 · FILES & LICENSE

Your Shows, Safe

WHERE RECORDINGS LIVE

STORAGE PATH	WHEN
`media/`	**Recommended** — survives firmware updates and design changes
`design/`	Tied to the current design — travels with it

REFRESH FILES

Press it after any change made **outside** the plugin — files uploaded via the Core's file manager, renamed, or deleted. The dropdowns re-scan instantly.

MOVE A SHOW TO ANOTHER CORE

1. **Download**
   Designer → File Manager on the source Core: grab the `.dmxr` files from the storage path.
2. **Upload**
   Put them in the **same storage path** on the destination Core.
3. **Refresh**
   In LightForge on the destination: **REFRESH FILES**. They appear in every FILE dropdown.
4. **Load & play**
   Pick the files on the tracks you want. Recordings are Core-independent.

CONFIG BACKUP — THE WHOLE SETUP IN ONE FILE

CFG EXPORT writes every setting — all tracks, masks, triggers, merge modes, global config — to `lightforge_config.json` in the storage path. **CFG IMPORT** restores it. Snapshot before big changes, or template one Core and import on its siblings.

> **Not included:** the `.dmxr` recordings (copy them via the file manager) and the license key (locked to each Core).

LICENSE

LICENSED

Designer emulation: everything works, free, no key needed. Design and rehearse at will.

LICENSE REQUIRED

Physical Core: enter your key (`DMXR-XXXX-XXXX-XXXX`) in the License Key property. Without it, the monitor still works but nothing records or transmits. Keys are locked to one Core — contact BV Factory with your **Core ID** (Config page). Perpetual, no subscription.

Quick Recipes

I WANT…	DO THIS
Record a look from the console	Set the track's **INPUT** to the console's protocol + universe → ● **REC** → ■ **STOP**. Saved as `rec_001.dmxr`.
Replay it all night	Pick the file in **FILE**, switch ⟲ **LOOP** on, press ▶ **PLAY**. The console can go home.
Record 8 universes at once	8 tracks, one universe each → global ● **REC** on the Main page. One press, eight takes.
Record the whole show hands-free	Trigger = **Any Change**, press REC before doors — capture starts on the first DMX change.
Fire playback from my show timecode	Trigger = **Timecode** with a start/stop window, or flip **TC SYNC** on so the track chases TC.
Feed one fixture node only	Track **OUTPUT MODE** = Unicast, type the node's IP.
Keep house lights on top of everything	Put them on a track with **MERGE = PRI** — it wins over every HTP/LTP track, always.
Clone this setup to a second Core	**CFG EXPORT** → copy the JSON + the `.dmxr` files → **CFG IMPORT** on the twin. New license key needed.

TROUBLESHOOTING

PROBLEM	FIX
No DMX comes out	**MASTER OUT** on? **License** valid? Right **NIC** on the Config page? Track **ENABLED**?
Nothing gets recorded	Watch the monitor in **Input** view — if it's dark, the universe number is wrong (Art-Net starts at 0, sACN at 1).
Track says NO LICENSE	Enter your key in the plugin Properties. Your Core ID is on the Config page.
The file list is empty	Check **STORAGE PATH** (`media/`) and press **REFRESH FILES**.
Output values look low	**MASTER FADER** below 100%? A brighter HTP track winning the merge?
TC SYNC track won't move	Check **CURRENT TC** on the Main page is running. Frozen = the TC source stopped; re-pick it and press **TC REFRESH**.
My console fights over universe 0	Update to **v1.0.1+** — LightForge no longer claims any universe on the network.

Need a key, another Forge, or a Bridge?

bvfactory.dev

BRIDGE CONNECTS · FORGE CREATES · MIND ORCHESTRATES