

gradbars: documented source

SuFan (Tape5try)

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1 Source organization and reproducibility

`gradbars` uses PGF/TikZ for inline data graphics. The editable runtime modules live in `sty/`; the generated `gradbars.dtx` bundles the same modules with this source guide. Generate it with `texlua scripts/source.lua`. Check for drift with the `-check` option. The `l3build check` target extracts every module using `docstrip` and compares its contents with the runtime sources (line endings and trailing whitespace are normalized).

Run `tex gradbars.ins` in the source archive directory, retaining its `sty/README.md` directory marker. All 22 matching runtime modules are extracted into `sty/`, not the source root; no shell escape is needed. Plain $\text{\TeX}$ cannot create a missing directory. Install the complete set together. Run `pdflatex gradbars.dtx` from the repository root for this guide; the illustrated bilingual manuals are built separately by `l3build doc`. The default driver prints the guide only. Replace `\OnlyDescription` with `\AlsoImplementation` in a working copy to inspect the complete implementation with `l3doc`.

2 Four responsibilities

User commands and keys select data and scoped settings. The model validates input, resolves shared scales, and produces normalized geometry. The TikZ renderer draws paths and labels from that geometry. Integration modules manage alternative text, table measurement and external formatting.

The model uses normalized positions in $[0, 1]$ after the configured overflow policy. It retains raw input separately. Zero, start, stop and endpoint are not formatted labels. Projection to physical dimensions happens in the drawing font context so that `em/ex` retain their established meaning. The private `\__gradbars_render_tikz:` function is the default backend boundary, not a public callback. No second backend is supplied.

3 Stable extension contract

The public library, scalar type and numeric formatter registration commands documented in `docs/stability.md` are stable in version 1. Library registration is global and loading is confined to the preamble; repeated loading is harmless. Type and formatter names cannot be replaced. Scalar callbacks receive a validated number or `NA`. Formatter callbacks receive a display number, precision and number format; the engine appends units separately. Opaque formatters cannot participate in decimal alignment. Private variables and functions are not covered by the contract.

4 Validation and accessibility

Run `l3build check` and `texlua scripts/check.lua` for semantic and three-engine regression tests. Run `texlua scripts/pdf-check.lua` on a current tagging-capable TeX distribution to verify Figure descriptions, measurement suppression and table header spans/scopes using its pdfc library. Automatic alternative text does not establish PDF/UA conformance for a complete table or document.

The optional `tblrlibgradbars.sty` is included in the same docstrip source. With `tabularray 2025C` or newer, `\UseTblrLibrary{gradbars}` loads cell helpers and dedicated columns. Its public trial hooks suspend tagging during measurement; fixed and X widths are tested in the PDF structure checks.

The Chinese and English manuals contain tutorials, option and library references, rendered examples and source. The developer reference documents the private data boundary; `docs/migration-v1.0.0.md` documents upgrade and compatibility rules. The build and archive checks are separate, allowing validation without creating a CTAN zip.

5 Distribution and legend additions

Optional `distribution` and `legend` libraries implement scoped statistics and shared explicit visual configurations. Type-7 quantiles and observed whiskers are separate from display formatting. Table tagging creates logical rows before rendering; repeated tagged headers require LuaLaTeX and become artifacts after the first page by default. An explicit `describe` mode rebuilds each header with new marked content under the same logical cells. Explicit multilevel header associations use actual structure IDs. See `docs/accessibility.md` for limits, and `docs/migration-v1.1.0.md` for the complete matching runtime.

6 Domain recipes and public backends

The opt-in reports library packages correlation, ablation and metric layouts. The backend module publishes scalar schema 1, capability negotiation and a scoped native continuation while keeping model storage private. Compound graphics require native rendering or an explicit fallback. The third-party starter in `docs/libraries/starter/` includes public-only source, a minimum-version guard, an example and a three-engine checker.