CURSOR / generation 2 — User manual

Library: `lib-set-01/src/lib2/cursor/2/` · Member source folder

Status: SOURCE-ADMITTED / EXPERIMENTAL — 23 November 2026. This generation is accepted as exact source from Chapter 08 R012C, within the donor's bounded owner-built and owner-reported functional scope. This does **not** certify a generic caller-safe ABI, independent second client, exhaustive PB-2000C/AI-1000 target parity or physical-machine behavior.

Admission receipt and source SHA-256 ledger · Chapter 08 donor.

Purpose and source

Nonblocking underscore cursor with display-underlay restoration, visibility state and timer-phase tracking. **Two exact donor files:** `sysv540.s` (9,733 bytes) and `sysv540.inc` (1,550 bytes), verified against the R012C manifest. Unlike the older retained `cursor/1`, generation 2 has **no internal `ORG &H7000`**: the application assembler controls placement. No application or platform origin is set by this library.

Supported public entries

Call	Effect / caller inputs
`SYS540_INIT`	Initialize cursor state once per application entry; inactive initially.
`SYS540_PLACE`	`$6` = LCD cell `00h..7Fh`; `$16` = underlying ASCII `20h..7Eh` or `00h` blank. Reposition/show underscore with underlay restoration.
`SYS540_POLL`	Nonblocking: return `$18=1` when a transition is due, else 0. No LCD write.
`SYS540_TOGGLE`	Render transition **after** polling has returned.
`SYS540_HIDE`	Restore underlying character; safe if already hidden.
`SYS540_SHOW`	Show underline if active.
`SYS540_STOP`	Hide and disable cursor before exit.

ABI and owned resources

Every public call returns in UA14h. The caller **must reselect UA54h** before any subsequent operation that requires monitor RAM1. Calls other than `POLL` preserve `$0..$29` and IX; `POLL` returns `$18` while preserving `$0..$17`, `$19`, `$29` and IX. Flags are **not preserved**. Valid stack/SSP and the TM timer are required.

Private RAM: RAM1 `2F20h..2F2Bh`, owned exclusively by this generation. **ROM dependency:** ROM0 text-cell output service `0197h`. Consumers shall neither access `_SYS5_*` private labels nor reuse the cursor RAM. The first partial timer interval is discarded for synchronization; visible frequency is dependent on polling cadence.

Integration example

```
        CAL     SYS540_INIT
        LD      $6,&H20       ; absolute LCD cell
        LD      $16,&H20      ; underlying space
        CAL     SYS540_PLACE
; in the caller's regular UI loop:
        CAL     SYS540_POLL
        ; when $18 is 1, call SYS540_TOGGLE
; before exit:
        CAL     SYS540_STOP
```

The example illustrates call order; it is **not** an independently built client. Before changing a character under the cursor: HIDE, update the glyph, PLACE again with the new underlay. Do not call private labels.

Qualification and upgrade limits

The exact generation participates in Chapter 08's owner-built **R012C** ROM (`lab.bin`, SHA-256 `29fb321716d9a590ba6c5abbe21f29fbf386596a911a8ee19610662877788681`), which the owner reports working. The earlier R011 listing observed relocation at `62B8h`, but this is **not** a fixed library address. A complete per-function, dual-emulator cursor restoration matrix, second consumer and physical hardware tests remain open. **Do not auto-upgrade `cursor/1` consumers** or infer that fixed-layout code is compatible without review.

Praeteritum ad futurum servamus.