GNSS Binary Dashboard — One-Page Summary

Arduino UNO Q · 8×13 LED Matrix · Grayscale

Purpose

A number-free GNSS health indicator conveying availability, signal quality, geometry, motion, and data freshness at a glance using binary encoding, bars, motion, and timing.

Display Regions (Authoritative)

Matrix geometry: columns x=0…12 (left→right), rows y=0…7 (top→bottom).

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Columns →   0   1   2   3   4   5   6   7   8   9  10  11  12
Rows ↓
0         [SV] [PVT][PVT][   ][   ][   ][   ][   ][   ][   ][   ][   ]
1         [   ][   ][BAR][BAR][BAR][BAR][BAR][BAR][BOX][BOX][BOX][BOX][BOX]
2         [   ][   ][BAR][BAR][BAR][BAR][BAR][BAR][BOX][BOX][BOX][BOX][BOX]
3         [   ][   ][BAR][BAR][BAR][BAR][BAR][BAR][BOX][BOX][BOX][BOX][BOX]
4         [SV] [   ][BAR][BAR][BAR][BAR][BAR][BAR][BOX][BOX][BOX][BOX][BOX]
5         [SV] [   ][BAR][BAR][BAR][BAR][BAR][BAR][BOX][BOX][BOX][BOX][BOX]
6         [SV] [   ][BAR][BAR][BAR][BAR][BAR][BAR][   ][   ][   ][   ][   ]
7         [SV] [   ][BAR][BAR][BAR][BAR][BAR][BAR][   ][   ][   ][   ][   ]
```

Legend

- **SV**: satellite count (binary, max 12)
- **PVT**: PVT status indicator (2×1) — blink=no PVT, pulse=2D/degraded, solid=3D
- **BAR**: CN■ bars (ranked, top-N). Height and brightness encode strength.
- **BOX**: heading & speed motion box (direction=heading, rate=speed).

Encodings (Summary)

- Satellite count: 4-bit binary (LSB at bottom).
- CN■: top-N ranked bars (not PRNs).
- PVT: 2×1 status LED pair.
- Freshness: pulse rate increases when data is stale.