Compliance sheet — star-polar

Everything a supplier qualification, a legal review or an export check usually asks about star-polar 0.1.0, in one document.

1. Identity

Document	STAR-PKG-STAR-POLAR-EN · v2.3 · 2026-11-14
Package	star-polar
Version	0.1.0
Capability	star.geodesy.polar-stereographic
Maturity	Released & Verified (RELEASED)
Python	>=3.9
Source commit	dc09f61d
Source	https://github.com/Andrea07072000/S.T.A.R.-/tree/main/packages/star_polar

2. Licence and obligations

Apache License 2.0. You may use, copy, modify and distribute it, also commercially, and you receive a patent licence from the contributors. When you redistribute it: keep the LICENSE file and the copyright notices (and a NOTICE file, if a future version adds one), and state in modified files that you changed them. You may not use the S.T.A.R. name to endorse your product.

3. What it needs at run time

Nothing beyond the Python standard library: it works offline.

4. Integrity

SHA-256 fingerprints of the files published on this website. Check a downloaded file with:

```
python -c "import
hashlib,sys;print(hashlib.sha256(open(sys.argv[1],'rb').read()).hexdigest())" star_polar-
0.1.0-py3-none-any.whl
```

FILE	SHA-256
star_polar-0.1.0-py3-none-any.whl	77483b9e14a9521a1ff6de08743a77355610e51d7042161a87d3eb092b0038e9
star_polar.py	bb9766d610909103690216cf054a71c10459517903d5bc66a254df2f1347afff
star_polar-0.1.0-source.zip	ef743d0479b448d2884295a76370c1194cceff2b7fbdd745142294f3d12c8154

5. What it does, and its limits

Polar stereographic projection at either pole with any parallel of true scale, forward, inverse and scale factor, and the UPS grid; within 7e-8 m of PROJ and 5e-9 m of PyGeodesy on 600 cases; reproduces Snyder's published example and refuses out-of-range input.

Polar aspect only: no oblique or equatorial stereographic. `ups_forward` does not restrict the latitude to the UPS zones (north of 84 N, south of 80 S): it is the caller's choice of grid. No MGRS letters. PROJ's `+proj=ups` differs from PyGeodesy and from this module by up to 4.4e-5 m while PROJ's `+proj=stere` agrees to 7e-8 m: recorded as a candidate observation about a third-party library, not investigated and not reported.

- `ps_forward`, `ps_inverse`: Snyder's formulas (USGS PP 1395, 21-33 ... 21-41) for either pole, with the parallel of true scale given by the caller (or the pole) and a scale multiplier k0; the isometric latitude is written without cancellation. Reproduce Snyder's numerical example to the printed 0.1 m.
- `ps_scale`: point scale factor, exactly 1 on the parallel of true scale. `ups_forward`, `ups_inverse`: UPS on WGS-84 (k0 = 0.994, 2,000,000 m false easting and northing).
- Measured on 600 cases at both poles (latitudes 20 to 89.999 deg, true scale at 50 to 90 deg): forward within 7e-8 m and inverse within 5e-8 m of PROJ, scale within 6e-11; UPS within 5e-9 m of PyGeodesy (forward and inverse) and 4.4e-5 m of PROJ's `ups`.
- Every function returns finite floats or raises `ValueError`: non-numeric, boolean, NaN or infinite input, a pole other than 'N' or 'S', a latitude more than 60 deg beyond the equator, a parallel of true scale in the other hemisphere or within 1 deg of the equator, an ellipsoid or scale outside the stated ranges.

6. Export, use and certification

The package is published and freely available. That usually takes software out of export-control lists, but not every use of it: read the page on space activities and export control before using it in a controlled programme. It is not certified or qualified for flight; the evidence describes what was tested and how.

7. Citation and bill of materials

```
@software{cavazzini_star_polar_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-polar}: Polar stereographic projection and UPS},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_polar/},
  note    = {Apache-2.0. Source: https://github.com/Andrea07072000/S.T.A.R.-, commit dc09f61d}
}
```

CITATION.cff · BibTeX · SBOM CycloneDX 1.5 · SBOM SPDX 2.3

8. Warranty and liability

Provided "as is", without warranties or conditions of any kind (Apache License 2.0, sections 7 and 8), to the extent the law allows. This never excludes liability that the law does not allow to exclude.

Related: space activities and export control · acceptable use · evidence and limits · licence texts