Compliance sheet — star-vec3

Everything a supplier qualification, a legal review or an export check usually asks about star-vec3 0.1.0, in one document.

1. Identity

Document	STAR-PKG-STAR-VEC3-EN · v2.3 · 2026-11-14
Package	star-vec3
Version	0.1.0
Capability	star.geometry.vec3
Maturity	Released & Verified (RELEASED)
Python	>=3.9
Source commit	dc09f61d
Source	https://github.com/Andrea07072000/S.T.A.R.-/tree/main/packages/star_vec3

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_vec3-0.1.0-
py3-none-any.whl
```

FILE	SHA-256
star_vec3-0.1.0-py3-none-any.whl	7884ba73fc6b5a589db0f2c618daa58cda8b0810ff7efdf2870c13030c177b58
star_vec3.py	6fb84ab460f69ff4d86e203000ef517d426a57288cbc10432a4b8e9c9ed71a00
star_vec3-0.1.0-source.zip	d7c35125dd9d6783a253044e11776561409838a45de4043aa74d68f54bcc0e9b

5. What it does, and its limits

Dot, cross and triple product, length, distance, unit vector, accurate angle between directions, projection and rejection of three-dimensional vectors; within 6e-16 of SPICE and ERFA and 8e-15 of NumPy on 600 triples of vectors, nearly parallel pairs included; malformed vectors and zero directions refused.

No matrices, no rotations (see `star_quaternion` and `star_euler`), no vectors of other dimensions. The triple product is compared with one library (NumPy) only. Products of components below 1e-154 underflow to zero in `dot`, `cross` and `triple` as in any double-precision code; `norm`, `unit` and `angle_deg` are not affected.

- `dot`, `cross`, `triple`, `norm`, `distance`, `unit`: the definitions, with the length computed without intermediate overflow or underflow and the sums compensated.
- `angle_deg` as atan2(|a × b|, a · b) on unit vectors: in [0, 180], accurate near 0 and near 180 degrees and independent of the lengths; `project` and `reject`, which add up to the first vector.
- Measured on 600 triples of vectors (lengths 1e-3 to 1e9; 200 pairs within 1e-9 to 1e-3 rad of parallel or antiparallel): within 6e-16 of SPICE and ERFA relative to the lengths involved, angles within 5e-14 deg; the triple product within 8e-15 of NumPy's determinant.
- Every function returns floats or raises `ValueError`: a vector that is not a list or tuple of exactly three finite real numbers within ±1e100 (booleans refused), or the zero vector where a direction is needed.

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_vec3_0_1_0,
  author  = {Cavazzini, Andrea},
  title   = {{star-vec3}: The three-dimensional vector operations of orbit and attitude code},
  version = {0.1.0},
  year    = {2026},
  url     = {https://andrea07072000.github.io/S.T.A.R.-/software/star_vec3/},
  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