ASTRO BEAR LIVE SKY

# 21,600 *Arc Minutes*

*The tropical zodiac as one circle of 21,600 arc minutes.*

The tropical zodiac is a 360 degree circle. Each degree holds 60 arc minutes, so the full circle is **21,600 arc minutes** (360 x 60). Astro Bear's daily ledger ephemeris stores each body's ecliptic longitude as a whole number from 0 to 21,599, plus a retrograde flag. Every sign is 30 degrees, which is 1,800 arc minutes. A value of 21,600 is the same point as 0, the Aries cusp, so 0 is what gets stored.

THE 12 TROPICAL SIGNS

## Where each sign sits on the circle

| SIGN | INDEX | DEGREES | ARC MINUTES |
|---|---|---|---|
| ♈ Aries | 0 | 0° to 30° | 0 to 1,799 |
| ♉ Taurus | 1 | 30° to 60° | 1,800 to 3,599 |
| ♊ Gemini | 2 | 60° to 90° | 3,600 to 5,399 |
| ♋ Cancer | 3 | 90° to 120° | 5,400 to 7,199 |
| ♌ Leo | 4 | 120° to 150° | 7,200 to 8,999 |
| ♍ Virgo | 5 | 150° to 180° | 9,000 to 10,799 |
| ♎ Libra | 6 | 180° to 210° | 10,800 to 12,599 |
| ♏ Scorpio | 7 | 210° to 240° | 12,600 to 14,399 |
| ♐ Sagittarius | 8 | 240° to 270° | 14,400 to 16,199 |
| ♑ Capricorn | 9 | 270° to 300° | 16,200 to 17,999 |
| ♒ Aquarius | 10 | 300° to 330° | 18,000 to 19,799 |
| ♓ Pisces | 11 | 330° to 360° | 19,800 to 21,599 |

Each row is a half-open span: the sign begins at the first number and runs up to, but not including, the next cusp. Aries is 0 to 1,799. Taurus begins at 1,800.

Aries sits at the left, as on Live Sky. Numbers on the cusps are arc-minute boundaries. Gold marks inside the wheel are the computed 13 November 2026, 00:00 UT positions. A pink mark means retrograde.




THE CONVERSION

## How to get the arc-minute number

arc minutes = sign index x 1,800 + degree x 60 + minutes

Aries is index 0, Taurus is 1, and so on, through Pisces at 11. The degree and minutes are the position inside the sign, the way you already read a chart (for example 20 degrees 37 minutes of Scorpio).

WORKED LINE

## Sun at 20°37′ Scorpio

Scorpio is index 7.

7 x 1,800 + 20 x 60 + 37

= 12,600 + 1,200 + 37 = 13,837

WORKED EXAMPLE

## Daily ephemeris for 13 November 2026, 00:00 UT

**Computed, not yet read back from the ledger.** These positions come from the same Live Sky ephemeris code that writes the daily snapshot (sky.js: apparent geocentric, true ecliptic of date, rounded to whole arc minutes). When this sheet was made, the testnet account had no readable ephemeris memo, so the numbers below are computed for that UTC day, not recovered from a transaction. They are exactly what the memo would store.

| BODY | CODE | POSITION | ARC MINUTES | SIGN INDEX X 1,800 + DEGREE X 60 + MINUTES |
|---|---|---|---|---|
| ☉ Sun | Su | ♏ 20°37′ Scorpio | 13,837 | 7 x 1,800 + 20 x 60 + 37 |
| ☽ Moon | Mo | ♑ 1°45′ Capricorn | 16,305 | 9 x 1,800 + 1 x 60 + 45 |
| ☿ Mercury R | Me | ♏ 5°05′ Scorpio | 12,905 | 7 x 1,800 + 5 x 60 + 5 |
| ♀ Venus R | Ve | ♎ 22°53′ Libra | 12,173 | 6 x 1,800 + 22 x 60 + 53 |
| ♂ Mars | Ma | ♌ 24°25′ Leo | 8,665 | 4 x 1,800 + 24 x 60 + 25 |
| ♃ Jupiter | Ju | ♌ 25°36′ Leo | 8,736 | 4 x 1,800 + 25 x 60 + 36 |
| ♄ Saturn R | Sa | ♈ 8°37′ Aries | 517 | 0 x 1,800 + 8 x 60 + 37 |
| ♅ Uranus R | Ur | ♊ 4°13′ Gemini | 3,853 | 2 x 1,800 + 4 x 60 + 13 |
| ♆ Neptune R | Ne | ♈ 1°52′ Aries | 112 | 0 x 1,800 + 1 x 60 + 52 |
| ♇ Pluto | Pl | ♒ 3°15′ Aquarius | 18,195 | 10 x 1,800 + 3 x 60 + 15 |
| ⚷ Chiron R | Ch | ♈ 27°33′ Aries | 1,653 | 0 x 1,800 + 27 x 60 + 33 |
| ☊ North Node R | NN | ♒ 25°24′ Aquarius | 19,524 | 10 x 1,800 + 25 x 60 + 24 |


```
{"v":1,"d":"2026-11-13","p":{"Su":[13837,0],"Mo":[16305,0],"Me":[12905,1],"Ve":[12173,1],"Ma":[8665,0],"Ju":[8736,0],
"Sa":[517,1],"Ur":[3853,1],"Ne":[112,1],"Pl":[18195,0],"Ch":[1653,1],"NN":[19524,1]}}
```


XRPL TESTNET

## How to read the snapshot on the ledger

1. Open the testnet explorer page for the ephemeris account: https://testnet.xrpl.org/accounts/rnN1GhbLvoQWHC5Y7RzWvuyzyks92qzuRr
2. Open a daily AccountSet transaction and find the Memos section.
3. MemoType is **astrobear/ephemeris/v1**. MemoFormat is application/json. Hex-decode MemoData to recover the JSON object above. The first number in each pair is the arc minute (0 to 21,599). The second is 1 if retrograde, 0 if not. South Node is not stored; it is 180 degrees from the North Node.

This snapshot is written to the XRP Ledger testnet. Test XRP has no value, and a testnet reset can clear history. Birth data is never written to the memo or to the ledger. On the Live Sky site at sky.astrobear589.com, open the Ephemeris view and follow the On ledger badge once a day has been written.