

Considering ChargeOrbit with Seestar S50/S30 within 1.0 feet height limitation

2026/7/12

Naoki Ueda

stellartech.science

This document considers Seestar S50/S30 with EQ Wedge and ChargeOrbit, under 1.0 feet height restriction.

1. Measure actual height range.

Measuring possible height range of Seestar with SkyWatcher EQ Wedge

In EQ mode setting, the highest part can be the corner circled in following photo.



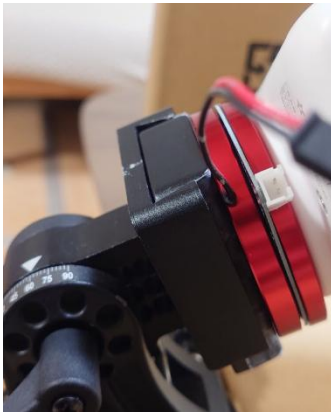
I set Latitude = 30.0° as an example, set the circled corner to be the highest position, and measure the height.

The highest height of S50 is 298mm, which is 0.98 ft.
S30 is 293mm, which is 0.96ft.

If height limitation is 1.0 feet, they are already very close to the limit.



2. Height increase by adding ChargeOrbit



ChargeOrbit has 14mm thickness. Thus, total height will be increased by

$$14\text{mm} * \sin(\text{latitude in radian})$$

Example:

If latitude is N30.0 degree, it become 7mm taller.

S50 become 305mm.

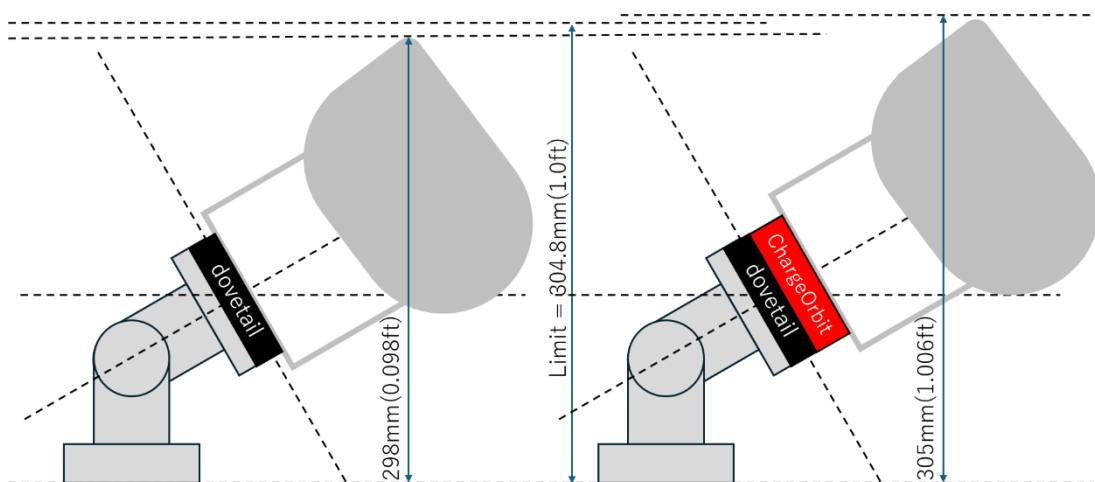
That may exceed 1.0 ft (304.8mm) limit.



Original



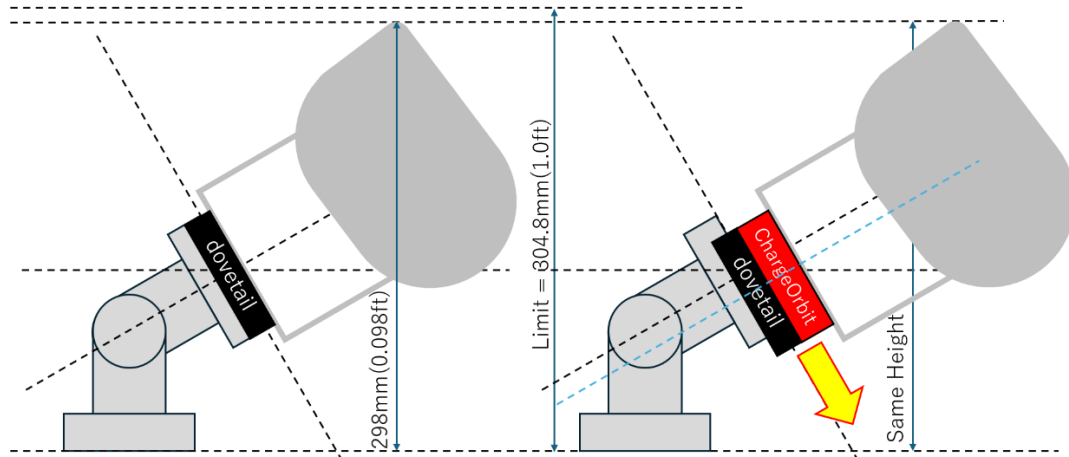
With ChargeOrbit



3. Solution

Use a little longer dovetail.

Sliding dovetail down certain offset makes entire system back to the original height.



How much offset is needed to slide down?

Slide down Offset = $14\text{mm} * \sin(\text{latitude in radian}) / \cos(\text{latitude in radian})$

Example:

If latitude is N30.0 degree, Slide down Offset = 8.1mm(0.027ft)



4. Other considerations

Adding ChargeOrbit and Sliding dovetail down does not change height. However, it cause horizontal shift.

How much horizontal shifts occur?

Horizontal shift = $14\text{mm} * \cos(\text{latitude in radian}) + (\text{Sliding down offset}) * \sin(\text{latitude in radian})$

Example:

If latitude is N30.0 degree, Horizontal shift = 16.16mm(0.053 ft)

If horizontal shift cause another issue, then adjust horizontal position.

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