

## CEM25 Firmware Upgrade History

### V20150312 Initial Release (Hand Controller, R.A., DEC motor control boards)

V20150818 Firmware upgrade for hand controller, R.A. and DEC board

V20150818 Initial release of CEM25EC R.A. board

- Added Abell catalog
- Added Chinese Named Star catalog
- Binary Star catalog now displays two magnitudes
- Added support for the incoming iOptron Commander and ASCOM driver
- Improved overall stability
- Fixed a bug cause "?" button sometimes do not display correct stars
- Other minor issues

V20151020 Firmware upgrade for hand controller

#### New features:

- Alignment model will be "remembered" all the time, same as the coordinates. This means if you powered on the mount after a sudden power loss, your pointing accuracy remains the same!
- Alignment model will roam between the hand controller, RS-232 port connection and Wi-Fi connection now. If you want to use any pointing enhancement software, such as T-Point, make sure there is no alignment model in the system!
- Guiding rate of RA and Dec could be set separately now. RA guiding rate could be set from 0.01X to 0.90X sidereal rate, Dec guiding rate could be set from 0.10X to 0.99X sidereal rate.
- Added support for the iOptron Commander 5.0 for Windows and iOptron Commander 1.0 for iOS.

#### Improvements:

- Sync procedure in hand controller has been reworked.
- User Defined Objects /Comets in hand controller has been reworked.
- More stars have been added into the Named Star list, and now covers 100% stars which are brighter than visual magnitude 3.
- All Named Stars are using the data extracted from UCAC4 or Hipparcos Catalog, instead of the old SAO catalog.
- Chinese Named Star list has been refreshed, now with cross reference to the Named Star.
- Star list used for 1,2 and 3 Star Alignment and Polar Iterate Align has been reworked.
- Comets list updated, now including 15 brightest comets in the next 3 years.

#### Bug fixes:

- LIGHT button sometimes do not work.
- Meridian setting in CEM25/CEM25-EC has been changed to 10 degrees instead of 30 degrees.
- Sometimes 2 and 3 Star Alignment and Polar Iterate Align may not work as expected in CEM25/CEM25-EC.
- Other bug fixes.

V20160218 Firmware upgrade for hand controller, R.A. and DEC boards, for both EC and non-EC version

#### New features:

- Added an option to let users change maximum slewing speed to adapt to low temperature

#### Bug fixes:

- Sync via RS-232 port does not work.
- Sometimes the moving rate is incorrect when using arrow buttons.
- In some rare circumstances, CEM25-EC will not tracking and/or guiding properly.

#### V20160523 Firmware upgrade for HC

##### **New features:**

- A new option of Altitude Limit is available (applies to both slewing and tracking), which replaces the "Tracking below the horizon".

##### **Bug fixed:**

- After One/Two/Three Star Alignment, the Sync function may not work as expected.

#### V20170109 Firmware upgrade for Hand Controller

#### V20170106 Firmware upgrade for R.A. and DEC boards

##### **New features:**

- Added support for iOptron electric focuser.

##### **Improvements:**

- Modified the on screen instruction of Polar Iterate Align;
- Expanded User Defined Tracking Speed from [0.9x, 1.1x] to [0.5x, 1.5x];
- Coordinates of Constellations have been updated;
- The Binary Star has been renamed to Double/Multi-Star, and has been rebuilt. The new list includes all pairs of stars which both stars are brighter than magnitude 7.0. The data is extracted from UCAC4, Hipparcos and Washington Double Star catalog;
- The algorithm for calculating Polaris or Sigma Octantis has been improved, now matched with iOptron Polar Scope app for iOS;
- The algorithm for calculating stars/stellar objects has been improved;
- Implemented new HC font.

##### **Bug fixed:**

- Some stars in Named Star list have incorrect coordinates and/or names;
- Herschel Catalog has been rebuilt and corrected;
- For CEM25-EC, using guiding command to dither failed to work after a short period;
- For CEM25, PEC stopped working after several minutes;
- For CEM25, sometimes change Hemisphere made the mount inoperable.

#### V201705018 Firmware upgrade for Hand Controller and CEM25EC RA board

##### **Improvements:**

- Adjusted button sensitivity

##### **Bug fixed:**

- Fixed a bug that sometime Align menu would freeze the hand controller.
- Revisited rare tracking drop during guiding.

#### V201904022 Firmware upgrade for Hand Controller and RA board

##### **Improvements:**

- Addressed possible GPS roll over bug
- Improved one star alignment accuracy
- Improved meridian flip procedure