

## **INTELLIGENT HANDSET RELEASE V1.700 FIRMWARE UPGRADE from V1.4 HANDBOOK**

The firmware release contains DATABASE and LIST functions. A replacement memory chip must be fitted into the Intelligent Handset. Additionally the optional DATABASE needs a second chip to be fitted.

**PLEASE READ ALL THIS THEN DO THE INSTALLATION BELOW THEN SET ALL THE NEW REGISTER VALUES**

The whole presentation of the menus has changed with this release. A MENU TREE is available as a download. Basically the OBJECT (GOTO) menu has been brought out to the top level, as has the CALIBRATION menu. They are both accessed by using the 'M' button. There are also more calibration options with two menu screens. The other changes are:

- PARK is the new name for SHDN. When calibrated with CAL1 and SETPARK has been done, the telescope will GOTO the PARK position the motors will stop completely and the display will turn off. It will stay calibrated for the next observing session at power up. Periodic error calibration (timed) also remains correct at power up.
- COORD is the new name for GOTO
- SETPK is a new function required to use the PARK function. When the telescope is calibrated and it is at the required ALT / AZ then press SETPARK to store the location. In GEM mounts it is suggested this is at least 1 hour from the meridian so that the counterweight will always be on the same side.
- INFO is the new name for STATUS in the USER menu. It retains the name STATUS in the FACTORY menu.
- PREV accesses previously entered coordinates and is available in GOTO, CAL1, CAL2.
- LIST – CLEAR clears the stored points in the PREV list
- LIST – LOCK stops extra points being added to the PREV list. Toggle action.
- HORIZ enters a local horizon value that you cannot reach with GOTO's because of local restrictions you may have - such as an observatory. Should normally be set to 0 degrees elevation.
- MAXDEC in the FACTORY - USTEP menu allows you to enter a maximum declination that your mount will withstand. If it is not set to +/-90 then the telescope will not operate over the poles. You may need to set it to 89 degrees or lower if you have a FORK mount and you do not want to swing under the fork. GOTO's will then operate the long way round always. Make sure the default setting is 90. If you do not set this at installation you will not be able to do any GOTO's.
- MAX-HA in the FACTORY – USTEP menu allows you to enter the Maximum Hour Angle for GOTO's to operate. Make sure this is set to 12h 00m 00s for GOTO's to work properly. Restrict the range if your mount requires it.
- CAT is for database with a whole list of menus and functions which require the Database chip to be fitted before it can be accessed. For further information on these menus see the database descriptions on the website.
- CAL3 is a means of assessing the value for non-perpendicular error and optical misalignment error in the mount. A further explanatory note is on the way.
- PER – INDEX is the new name for MECH and toggles between TIME and MECHANically generated index pulse.

- PER – PLAY is the new name for INHIB when the playback of periodic error traces was inhibited or not.
- RAMP is the new name for ACCEL (both axes need to change.) It is now the total time to accelerate from rest to slew speed. The value needs fresh data when this function on an update chip is installed for the first time.
- TRACK is the new name for DRIVE and contains the menu for adjustments for KING SOLAR LUNAR TRACK
- RATES is the new name for GUIDE and contains the menu and adjustments for GUIDE CENTER and MOVE rates
- Extra serial functions for the host computer protocol. See separate document describing the full set.

## **CAL2**

After a two point cal and if the residuals (MAZ, MEL) are small then it is intended that you will be able to USE the results to alter the normal tracking rates to compensate for drift when following at your selected tracking rate (KING etc). However we ran into accuracy problems in the tracking offsets and these are not present in this release of chip.

## **LIST**

The list function works by storing in non-volatile memory the coordinates entered from the following sources -

- By direct entry in the COORD, CAL1, CAL2 screens.
- By point and click GOTO operation with the HOST computer connected.
- By computer SYNC on an object (does a remote CAL1)
- By ADDing an object from within the Database menus.

Retrieval is by pressing PREV in the menus where coordinates can be entered. The last 16 coordinates are stored and you can recall any one of these by successively pressing PREV. There is an entry number that comes up but every time you enter a coordinate manually the list shifts down by 1. By using a previously stored value it will not get added to the list.

A suggested mode of use is to enter all the coordinates needed for that planned evenings activity, including the calibration stars, then LOCK it. This can be done away from the telescope entering manually or by computer (AWR has the required cables / power supplies etc). You will have to put a name tag against each coordinate to remember what each one is.

In practise it makes two star calibration very easy in that you can zip from star to star very quickly now that you only have to enter the coordinates once! Select first star do CAL1 with coord from list. GOTO second cal star, do CAL2 with coord from list. If result means you need to move the mount, do this, re-acquire the cal2 star and do a CAL1. GOTO the first star you had and call it CAL2. Etc.

## **INSTALLATION**

- 1) Measure the total time it takes to reach slew speed from rest (both axes.)
- 2) Power down and replace the IH chip. The mechanical instructions for replacing the firmware are included in the Intelligent Handset manual.
- 3) At power up it is a good idea to check the values for RATIO (RA and DEC) and XTAL as these have fundamental importance on the accuracy of the handset.
- 4) Finally check / enter values for MAXDEC MAX-HA and HORIZ and RAMP (both axes)

**DO NOT under ANY CIRCUMSTANCES do FACTORY – TEST – FLASH as you will ERASE THE DATABASE which is the FLASH chip.**

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