

# LACERTA M-Gen Stand-Alone AutoGuider

Notes on Firmware ver. 2.12.  
2014.09.26.

The Firmware ver. 2.12 is functionally almost identical to the previous release (2.10 or 2.11), some bugs have been fixed and tiny features inserted. Use the 2.10's manual for this version.

New features of 2.11:

- ✓ nothing, only bugfixes.

New features of 2.12:

- ✓ Capable of saving the autoguiding data (star drifts) into the open file controlled by an external exposure-state (got through USB). PC App. generates diagrams also for these.

The external tool that can do this is **Astro Photography Tool's** (APT) suitable release. Check the latest or forthcoming versions for this feature. Using APT's exposure controller, M-Gen will know when to store guiding data into its open file.

In the HTML generated by PC App., there will be sections called:  
Guided external exposure #n

These diagrams and info are the same as controlled by the internal AutoExposure, except that there is only info about the approximated exposure time (the time of the star drift data). The internal and external exposures are numbered separately from 1.

## **IMPORTANT:**

Never use the internal AutoExposure and an external exposure controller (APT) at the same time! M-Gen will be confused and will save data in bad format, so the PC App. may not be able to generate Your guiding diagrams accurately.

- ✓ A new, emulation mode is available. In this mode the Camera works as it should but the HandController will override the star information and use an emulated one instead. This is a single "star point" at the center of the CCD area and the firmware emulates a mount and a little bit of seeing too. The emulated guiding setup has a fix configuration as listed below:

- RA is horizontal (X axis), DEC is vertical (Y axis)
- The „emulated” optics’ focal length is 180 mm.
- Autoguiding speed is 0.5x.
- RA is 80% speed of DEC (like the star was at DEC coordinate of 37 degrees)

Using the emulation mode, You can learn the usage, effects of parametrization etc. in room. (Integration time effect on position (noise) is also emulated.)

The “gui mask” display will show a single dot as the emulated star. There is a cross mark that shows the current guiding center position. (This way You can easily check how dithering (RD) works.) The guiding window does NOT change and follow the dot, it’s fixed to the CCD center, regardless to where the Camera uses this window in real.

The Star Search function will find only this dot anyway, but simply turning on the Camera gives the same guiding window.

The emulation mode switch can be found at the “Misc./Mode settings” menu.

- ✓ When the calibration procedure fails (or cancelled by the user), the HC will automatically restore the mount to the start position, by the applied correction signals. Note that this may not be precise enough if there is backlash in the system.
- ✓ The current firmware version has been put into the main menu’s header.
- ✓ The input DC voltage is displayed on the guiding screen, page 5/5 (extra2, inside the more... item). The value shown is lower with 0.2-0.3V due to the polarity protector diode (depending on the load) and the absolute precision may be  $\pm 10\%$ .
- ✓ BUGFIX: Camera in LiveView mode timed out (“Camera off”) when using at least 4x4 binning and at least ~3 seconds exposure time.