

SMARTGUIDER



Troubleshooting ENG version - FW 1.02

1. Troubleshooting

The Smartguider camera is very simple and intuitive to use. However, as with any setup, when taking long exposure astro-images you may be faced with problems in autoguiding. The following are some error messages which could potentially show during setup or while autoguiding.

For further information, please don't hesitate to contact LVI.

Error Messages

1.1.1 STAR LOST!

This message is accompanied by an audible signal until the star becomes visible again. It is displayed only during autoguiding and may occur if:

1. *The sky has clouded over;*
2. *Dew forms on the guidescope objective;*
3. *The guiding speed is too high;*
4. *The telescope was hit;*
5. *Strained cables*



Cases #1, #2 - The SmartGuider can no longer find the guide star and starts beeping every second, for up to 30 seconds, until the star becomes visible again; otherwise, autoguiding is aborted.

Case #3 - The mount guiding speed is too high and the guide star keeps wobbling in the field of view, so the camera can hardly track it. In this case, the guiding speed should be lowered through the mount control box. Typical suggested values are between 0.125x (12.5% of the sidereal rate) and 0.50x (50% of the sidereal rate).

Cases #4, #5 - If the telescope gets hit or cables strained, the SmartGuider camera can lose the star for a while or permanently, depending how on much the telescope aim has been thrown off.



During operation, the Control Paddle should be kept firmly in place on a stable surface, or hung up onto the mount.

Please do NOT touch or leave it in an unstable position!

1.1.2 STAR NOT FOUND!

This message can be displayed after **STAR SEARCH...** and occurs if:

1. *The guide star is too faint (See page.5: 'Technical Specifications');*
2. *Dew forms on the guide scope objective;*
3. *The guide scope support and/or focuser are not sufficiently stable;*
4. *The guide scope focuser is moved in or out from correct focus position;*
5. *The SmartEye eyepiece is not perfectly parfocal with the camera.*



Case #1 – Pick a brighter guide star.

Case #2 – Clean the guide scope objective and/ or use some dew-removing device (e.g. a dew cap).

Case #3 - Make sure your autoguiding setup is reasonably flexure-free.

Case #4 – If the camera has been previously focused with the SmartEye eyepiece, make sure the drawtube holds firm and **NEVER** move it away from its position. This can easily throw focus off and cause vibrations: either way, the camera is very likely to lose the star, especially if a dim one was being used.

Case #5 - If the guide star is bright enough (see page 5 'Technical Specifications') and all your gear is sturdy enough, then your SmartEye eyepiece might not be perfectly parfocal with the camera. In this case, please return it to either your dealer or LVI for service and fine-tuning.



A rock-solid autoguiding setup is of utmost importance in order to make the SmartGuider camera flawlessly running with your telescope! A too flimsy gear will cause the camera to wobble and a higher chance of failure!

1.1.3 MOTOR NOT MOVING!

The following message is displayed during calibration if:



1. *The SmartGuider camera cannot communicate with your mount;*
2. *The guiding speed is either too high or too low;*
3. *The guide star has been lost;*

4. *There is huge backlash in the declination axis.*

Case #1 - Check your mount compatibility on the chart that can be found in the inner face of the SmartGuider case lid.

Case #2 – Carefully take note of when this message is displayed. If it happens within about a dozen seconds since the start of step *1/6 Moving RA-*, the guiding speed must be lowered through your mount control box.

If it happens in a couple of minutes, the guiding speed must be increased. Suggested values range from 0.10x (10% of the sidereal rate) up to 0.50x (50% of the sidereal rate).

Case #3 - See error message “**1.1.1 STAR LOST**”.

Case #4 – Adjust your mount as to minimize the backlash between the worm and the gear. Such an error could be displayed during *3/6 Moving DEC+* calibration step.

1.1.4 COMMUNICATION ERROR!



The following message is displayed if the cable connecting the Control Paddle and the camera head gets accidentally disconnected, or in case it's too long or faulty. This message could be displayed also in case of a faulty camera. In this occurrence, please contact your vendor or LVI to return the

camera for service.

1.1.5 HOT PIXEL DETECTION



If a “star” about 3 pixels across unexpectedly appears quite far away from the sensor center, it can likely be a hot pixel. This happens most often in summer, when hot temperatures can randomly turn hot pixels on, especially if the camera has been heavily used for a quite long time. To make sure

about the nature of that “star”, power off the camera for a while and then turn it back on with the nosepiece tightly capped. This operation can be performed also at daytime in a dark environment. Run **STAR SEARCH...** in this conditions, and if the **STAR FOUND!** message is displayed, please return your camera to your dealer or LVI for service.

2. Technical Specifications

CAMERA HEAD

Sensor.....	Mono 1/3" Aptina MT9V032
Sensor resolution.....	752x480, 6- μ m square pixels
Exposure time range.....	Auto, 0.001 - 2 seconds
Housing.....	Aluminium, with polycarbonate lid
Nosepiece.....	Standard 1.25-inch (31.8mm) with filter thread
Connectors.....	8-pin RJ45
Size and weight.....	D=65mm, H=50mm, Weight: 110g

CONTROL PADDLE

Case.....	ABS, black color
Keypad.....	Three amber-backlit membrane keys
Display.....	2.5-inch amber graphical LCD, 128x64 pixel resolution
Connectors.....	8 pin RJ45, 12V DC jack, 6 pin RJ12 pin
Size and weight.....	LxHxD: 55x96x28mm, Weight: 220g
Power requirements.....	6~14V DC, 90~200mA

FEATURES

- Automatic guide star search
- Real-time monitoring of guide star position and focus
- Automatic axis calibration with permanent storage of parameters
- Adjustable display backlight and buzzer volume.
- Adjustable dual-axis aggressiveness
- High-precision 2X sub-pixel autoguiding

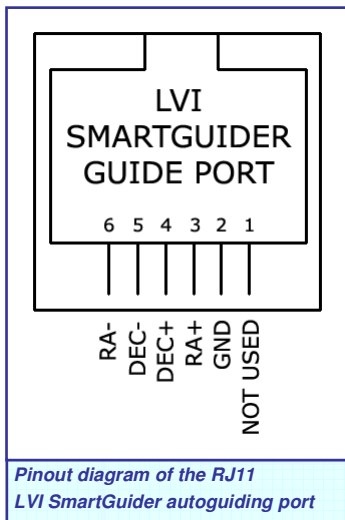
GUIDE STAR BRIGHTNESS

60-mm guide scope.....	approx. 7.5
80-mm guide scope.....	approx. 8.0
100-mm guide scope.....	approx. 8.5

FIELD WIDTH AND IMAGE SCALE

Scope with F = 300mm.....	FOV: 51.7x33.0 arcmin.....	scale: 4.13 arcsec/px
Scope with F = 500mm.....	FOV: 31.0x19.8 arcmin.....	scale: 2.48 arcsec/px
Scope with F = 800mm.....	FOV: 19.4x12.4 arcmin.....	scale: 1.55 arcsec/px

3. Autoguiding Port



The SmartGuider camera comes with an “open collector” autoguiding port, fully compliant with the ST4 standard. This means it can be plugged straight into all most popular equatorial mounts having such an autoguiding port.

However, there can be some exceptions: plugs other than RJ11, different pinout, or even electrical incompatibility could cause communication problems between the mount and the camera.

In this case, an additional cable or adapter is required to ensure compatibility of the SmartGuider camera with such mounts.

A detailed chart is available in the “Download Area” section of the LVI website which shows the compatibility of the camera towards a broad selection of popular mounts, and a list of optional add-ons that are necessary for proper

operation.

The same chart can also be found on the inner face of the Smartguider plastic case.



If this troubleshooting guide didn't help solve your problems, LVI technical support will be glad to give you a timely assistance in getting rid of any kind of malfunction!