

## Manual

### DSII Module with “Pressure Tuner” for LS100TH $\alpha$ -Telescopes

Congratulations and thank you on your purchase of a Lunt Solar Systems instrument! The Lunt Solar Systems are a new generation of solar viewing instruments utilizing the most current technologies to provide the highest quality contrast and resolution in their class.

#### Warning

There are inherent dangers when looking at the Sun thru any instrument. Please note the safety instructions in the manual of your LS100TH $\alpha$  telescope.

#### Handling and Cleaning

Please also note the relevant instructions in the manual of your LS100TH $\alpha$  telescope. These also apply to the DSII module.

### The DSII Module with “Pressure Tuner” for LS100TH $\alpha$ Telescopes

The DSII module is an upgrade to the standard LS100TH $\alpha$  solar telescope.

PLEASE NOTE: Only usable at LS100TH $\alpha$  telescopes with red anodized front cell on the scope! Not usable at old LS100TH $\alpha$  telescopes without the red front cell!

The DSII module contains a specially designed re-collimating and refocus lens set that will only work in the LS100TH $\alpha$ . The module contains a precisely tuned narrowband interference filter in a sealed cavity. This filter will reduce the bandwidth of the LS100TH $\alpha$  to <0.5 Angstroms. The DSII system utilizes our advanced “Pressure Tuner” technology, allowing for easy tuning of the finest details.

The DSII module is designed to provide enhanced surface detail, allowing for higher contrast views of the filaments and active regions. Some dimming of the prominence (edge) details will be noted due to the narrowing of the bandwidth.

**Attention: Because the DSII module was designed ONLY for use in LS100TH $\alpha$  telescopes, and in these telescopes all necessary energy filters are already installed, the DSII module has no extra energy filters. Therefore never use the DSII module without a LS100TH $\alpha$  telescope! IR and UV radiation can damage your eyes when the DSII module is used without LS100TH $\alpha$  telescope!**

#### What is delivered with the system?

- DSII module for LS100TH $\alpha$  telescopes
- Internal Etalon with “Pressure Tuner”
- 6 thumbscrews for easy installation and removal
- Shipping box with die cut foam insert
- Instruction manual

### Okay let's get started...

#### **Safety First!**

- **Always check any solar telescope before use. Do not use any telescope or filter that appears to be damaged. Verify that all glass and filters are in place.**
- **The Blocking Filter diagonal or extension tube must always be used with the Lunt telescope or filter.**

At first follow the instructions for your normal LS100TH $\alpha$  telescope. If you have sharp focused the sun you would tune the built-in H-alpha filter. Note of the position of the black handle of the Pressure-Tuner on the brass cylinder.



**Installing the DSII module at the telescope:** Take the LS100THa back from the mount, and put it on a clean table. At the far end of the telescope tube, you will find 3 little allen head screws that hold the focuser and a small extension ring. Unscrew the screws with the small hexagon wrench, which was delivered with the telescope and remove the focuser and the extension ring.

If you have removed the focuser, unscrew the 3 allen head screws completely out and replace it with the 3 at the DSII module delivered thumbscrews.

Now place the DSII module to the point where previously the focuser was and fix it with the just inserted 3 thumbscrews. If you unscrew the thumbscrews again you may rotate the DSII module. This allows to turn the handle of the Pressure-Tuner in any position. Tighten the thumbscrews again. If you want to change the position of the DSII Pressure-Tuner later, you only need to loosen the thumbscrews.

Now place the focuser and the extension ring at the end of the DSII module. Here you will find again 3 allen screws. You can also unscrew these and replace it with the other 3 thumbscrews. With those the focuser can be mounted securely at the DSII. Now the installation of the DSII module at the LS100THa telescope is finished.



**Tuning:** Install the telescope now again on your mount, and point it to the sun. Move the handle of the originally Pressure-Tuner back into the position which you have previously noticed.

Now make a reset at the Pressure-Tuner of the DSII module, like you know it from your normal Pressure-Tuner. Then you look through the eyepiece, and turn the handle of the DSII Pressure-Tuner so far on the cylinder until you can see the surface details of the sun at best. You can also adjust the original Pressure-Tuner some time until the image is optimal.

The DSII system utilizes a unique optical design that works to narrow the bandwidth while also removing the back-ghosting that would normally occur with 2 highly reflective etalons sitting in such close proximity to one another. This ghost removal would typically be done by tilting one of the etalons with respect to the other. But then the Etalons are tilted so much, they are often no longer optimal in the H-alpha line. The optical design of the DSII system works that the "ghost" images are always in an area outside the normal field of view. However, users who have low magnification eyepieces with a wide field of view may notice a "halo". Increasing the magnification or using an eyepiece with a narrower field of view will reduce this effect. While we strive to provide perfect anti-reflection coatings at the Hydrogen-alpha line the residual reflections are reduced to 0.1%. Therefore not all back scatter can be totally removed. Less than perfect seeing conditions will work to increase the background haze of the system.

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