

## **Maxim DL Pro Version 5.08**

1. Using the “Set Calibration” dialog box, set up calibration groups for dark frames, flat frames, and bias frames, as needed.
2. Display the “Stack” dialog box by clicking on the “Process > Stack...” menu items.
3. On the “Select” tab, uncheck the “Auto Calibrate” and “Auto Color Convert” boxes and leave all other boxes unchecked.
4. Click the “Add Files...” button and select the light frames to use for this operation. Wait for the files to be scanned then rename the Group to a descriptive identifier.
5. Click the “Quality” tab and make sure all boxes are unchecked to use all light frames for this operation.
6. Click the “Align” tab and set the *Mode* to “Manual 2 stars”. Check the “Use Centroid” and “Auto Next” boxes then click on the “Next Image” arrow button. Proceed through all images selected the first alignment star then proceed through all images again to select the second alignment star.
7. Click on the “Select” tab again and right click on the file group name. Scroll down the context menu and click on “Auto Calibrate”. Repeat this operation and click on “Auto Color Convert”.
8. Click the “Combine” tab and set *Combine Method* to “SD Mask”, *FITs Format* to “IEEE Float”, *Number of Passes* to “3”, *Sigma Factor* to “0.50”, *Normalization* to “Delta-Level”, *Area* to “50%”, and check the “Ignore Black Pixels” box.
9. Click the triangle beside *Options* and check the “Combine to Folder” option. Also, click on “Choose Folder” to select where the output file will be stored.
10. Click the “GO” button to start the process.
11. After the process completes, click the “Close” button to close the “Stack” dialog box. Determine the success of the operation by examining the log file in the “Maxim DL 5 \Log” directory found under “My Documents”.
12. Open the FIT file just created by the stack operation and re-save as a 16-bit, uncompressed TIFF image. The TIFF image can now be opened in Photoshop for further manipulation.

## **Photoshop CS3:**

1. Open the TIFF image previously created using Maxim DL Pro. (The file size should be approximately 70.1 MB in size.)
2. Open the “Levels” dialog box and lower the white point slider very aggressively until a few stars become faintly visible.
3. Open the “Curves” dialog box and invoke a very aggressive “Standard Curve”.
4. Boost saturation by about +20.
5. Open the “Levels” dialog box again and raise the black point slider to about half-way between the left edge and the beginning of the dark pixels “hump”.
6. Repeat steps 3 through 5 for two more iterations using progressively less aggressive curves and saturation boosts.
7. Duplicate the background layer then select the eyedropper sample tool (5 by 5 Average) and scatter several sample points around the image to sample the image background level.
8. Gray-balance the background by raising the black point slider on the individual RGB channels on the “Levels” dialog box. (Generally, only need to change the Red and Blue channel black point slider.)
9. Flatten the image and save as a 16-bit TIFF intermediate image.
10. Duplicate the background layer and run the “Increase Star Color” Action. After the action completes, examine the results.

11. Flatten the image and save as a 16-bit TIFF intermediate image.
12. Duplicate the background layer and run the “Select Brighter Stars” Action. After the selection is made, expand the selection by 2 pixels then feather the selection by 2 pixels.
13. Invoke the “Smart Sharpen” filter with default settings. (100%, 1.5 pixels, Gaussian Blur)
14. Deselect the selection then fade the opacity of this layer back to about 60% to 70%.
15. Flatten the image and save as a 16-bit TIFF intermediate image.
16. Crop the image as needed to eliminate any border areas exposed during the stacking operation then resize the image to a 100 pixels per inch resolution and a size of approximately 2145 pixels by 1428 pixels. Save as a final 16-bit TIFF image.
17. Duplicate the background layer then open the “Curves” dialog box and use a contrast enhancement curve to enhance the stars and lower the background level to approximately RGB = 25,25,25. Flatten the image then save as a final 16-bit TIFF image.
18. Save this image for the web as an optimized JPEG image with Quality = “60” and name the image using the following name format: **<object><dash><mmddyyyy>.jpg**
19. Close without saving this image then reload the final TIFF image.
20. Crop out the object of interest to a image size of 875 pixels by 600 pixels. Save this cropped image as an optimized JPEG image with Quality = “60” and name the image using the following name format: **<object><dash><mmddyyyy><dash>red.jpg**
21. Create a new layer then draw a 1-pixel wide circle around multiple objects of interest. Use the following color for the circle: RGB = 219,6,6.
22. Label multiple circled objects in the field using Arial 24-point font with the following color: RGB = 219,128,10. Save the resulting image as an optimized JPEG image with Quality = “60” using the following name format: **<object><dash><mmddyyyy><dash>red<dash>not.jpg**
23. Close without saving this image then reload the final TIFF image. Crop out a thumbnail version of the object of interest to a size of 240 pixels by 190 pixels. Save this image as an optimized JPEG image with Quality = “60” using the following name format: **<object><dash><mmddyyyy><dash>tn.jpg**
24. Close without saving the image created in the previous step then reload the final TIFF image. Crop out a version of the object of interest to a size of 1200 pixels by 800 pixels. Save this image as an optimized JPEG image with Quality = “60” using the following name format: **<object><dash><mmddyyyy><dash>close.jpg**