

CCD Explorer

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Version 2.0

CCD Explorer is a freeware program written in Visual Basic 6.0 to manage your CCD images. This program can be used by film users, but it was designed with CCD imaging in mind. Version 2.0 features include

1. File support for most graphical images including TIFF, BMP, GIF, and JPG.
2. You can filter your selection on what you view by telescope. For example, view all the images taken with a refractor
3. Enter detailed information about your CCD image
4. Easy search options which include direct search, database listing, or a Windows Explorer Tree control. (the Navigator)
5. Includes an image viewer to view any image on your drive.
6. View image properties of an image.
7. You can view the image in Auto Fit mode, which shows the entire image or view full size.
8. Open or Save As dialog shows a preview of the image before you open or save it.
9. Save an image from one format to another.
10. Some 50,000 US cities with location information
11. Astronomy functions for sun, moon, and planets to get set/rise times, magnitudes, and much more.
12. Printing
13. Copy regions of an image to the clipboard or the entire image
14. Version 2 has better zoom and moving the image around

There is no online help with the program but this document should get you started and tell you how to use the program. If you have questions or problems, there is e-mail support. The program will work with Windows ME or higher, not sure about Windows 98. Send e-mail from www.galaxies.com.

Version 2.0 is not backward compatible with version 1.0. You will need to re-enter the images into version 2.0. Sorry about that because there were just too many changes that made 2.0 much better.

Program Installation

Just double click on the msi file which is used by the Microsoft Windows Installer. Windows 98 users will have to download this program from the Microsoft web site.

Just follow the instructions in the setup program. You can change the destination path for the program to C:\CCD Explorer if you like. The database is installed where the program is located. It must stay in the same directory where the CCDExplorer.exe file is located. You can have the images you add to the program anywhere.

How to get started using CCD Explorer.

CCD Explorer is set up to just start entering your images into the database. However, by following these setup steps to load information such as the instruments or CCD cameras you use, you will save time entering in new images into the database.

1. Site Manager

Under the File Menu, choose Site Manager. By default, Tucson is the default favorite site. Look for the city you are located or enter the latitude and longitude under the Site Information area. Be sure to include a Site Name. Next click **Add Selected City to Favorite**. Once you have added the site, select the site and set the favorite as the default. Once you have done that you can delete Tucson.

2. Instrument Setup

Enter the current and past instruments you used. **You only need to setup the past instruments so that the telescope can be used in a filter.** Current instruments that are marked active will be listed when you add new images.

Camera Setup

Enter the current and past cameras you used. This works just like the Instrument Setup worked except you are dealing with cameras.

Object Setup

Object setup has some defaults already which will work out for most users. However, you can add additional ones as needed. This is used to provide a drop down list when adding or updating images in the library.

Program Defaults

This is the last step you need before adding images to the database. The Defined Filters is setup for most users. You can add the additional ones you need. This shows up when adding and updating images. Other defaults can be set up for the most used instrument and camera. Also, you can pick the default path for your images when you add or updated ones you put in the library. I have my images in sub-directories by catalog under a main directory I called C:\CCD Explorer

For setting up the items above or adding images, read on.

Setting up equipment and program defaults

Under the *File Menu* you have three options for setting up defaults for the program. Some of these are required to add new images to the database such as telescope and CCD setup.

Site Manager

The Site Manager is where you can look up latitude and longitude for most cities in the US. It is also used to setup Favorite Sites used in the astronomy functions to get sunrise, sunset, moonrise, and much more. You can also enter the latitude and longitude for a city not in the database

Instrument Setup

This information is used to fill the list box for what telescope was used to take the image. It shows up in the add image feature and the calculator. It is also used for the calculator that comes with the program. Under the *File Menu*, choose *Instrument Setup*. If you have equipment setup, it will show in the list. To add a new item, click New Row and enter the information. If you click Active, the instrument will show up in the list when you add a new image. All Instruments entered here will show up in the filter selection. The Instrument Name is what will show up in the list box when add images and when view information for the image. The size (diameter of the telescope), F-Ratio, and Focal length of your equipment are also needed. These items are used as defaults in the calculator.

Camera Setup

This information works the same way as the telescope setup so I won't go into details. Click the *Camera Setup* under the *File* menu to run this option.

Object Setup

This feature under the File Menu allows you to enter the catalog and type of images you will enter. There are predefined information here already but you can changed it as needed.

Program Default Settings

This section is used to enter the filter you use which show up as a list when you enter a new image. Other defaults are used to default values when you enter a new item. Image path is used as a default when selecting the image to add

Instrument Setup [X]

Save Help Done To convert inches to millimeters (mm), multiply focal length by 25.4

Defined Instruments:

Instrument	Objective	F-Ratio	Focal Length (mm)	Sort Order	Active
MakNewt 8 F/6	8.00	6.00	1219	1	✓
TV 76 F/5 Refractor	76.00	5.00	385	2	✓
Televue 101 F/5.5	101.00	5.50	550	3	✓
10" F/6 Reflector	10.00	6.00	1524	4	✓
105mm Lens	105.00	2.50	105	5	✓
180mm ED Lens	180.00	2.80	180	6	✓
50mm Lens	50.00	2.80	50	7	✓

Clear Reload Delete Row New Row

The CCD Calculator uses the Focal Length in order to work with the entered instrument

CCD Camera Setup [X]

Save Help Done

Defined CCD Cameras:

Camera	Width In Pixels	Height In Pixels	Pixel Size	Sort Order	Active
ST-8 XME	1530	1020	9.00	1	✓
ST-7 XME	765	510	9.00	2	✓
Aundine+ 1603 ME	1536	1024	9.00	3	✓
ST-10 XME	2174	1472	9.00	4	✓
ST-2000 XM	1600	1200	7.40	5	✓
Web Cam	640	480	7.00	6	✓

Clear Reload Delete Row New Row

The CCD Calculator uses the Width, Height, and Pixel Size in order to work with the entered camera

The Toolbar Options

From left to right:

1. This displays image properties including information you entered
2. This icon will allow you to find an image. F3 also will fire off this option
3. Adds a new image to the database
4. Edits the information for the current image
5. Deletes the image from the database. This does not delete the image file from the hard drive.
6. Moves to the first image in the database. If you have a filter on, it will move to the first image in the filter.
7. Moves to the previous image in the database. If you have a filter on, it will move to the previous image in the filter.
8. Moves to the next image in the database. If you have a filter on, it will move to the next image in the filter.
9. Moves to the last image in the database. If you have a filter on, it will move to the last image in the filter.
10. Runs the Image Viewer
11. Allows you to Print an image
12. Opens the Scheduler
13. Opens the Navigator with all of your images in a Windows Explorer format.
14. Toggles the Auto Fit feature to display the entire image or see it in full resolution
15. Toggles Zoom Feature
16. Allows you to select the tool to copy a region of the image
17. Copies, Cut, and Paste a selected image.
18. Set Filter will filter the Instrument and Camera
19. Filter Off turns off the selected filter

Adding an image to the database

This feature allows you to add a new image to the database. When you click the tool bar, the Update CCD Information dialog is displayed. The full screen can be seen on the next page. When this dialog is displayed, most of the information is fairly straight forward. However, there are a few items I need to go over.

1. The **Sort Key** is used to sort the database. This is a required field and how you want to sort the items is up to you. It is a text base input so it will sort by text. For example 01 comes before 20 but 10 will come before 2.
This is what I do:
 - a) For Messier objects, I put M001 for M1
 - b) For NGC objects, I put NGC0023, so on for IC and other types
 - c) For Solar System objects, I put Z<date> where the date is in the format
yyyymmdd
2. An image is required, object name, and sort key. When you pick an image used the small button on the right near the bottom, you can select any image. A preview will be displayed so you can see what you are picking.

Updating information for an image

This works the same way as the Add feature except that it displays the current information when the Update dialog is shown.

Deleting an image from the Database

This feature will remove an image from the database. You will be asked if you want to remove the current image in view. If you click on Yes, the image is removed from the database only. You also have the option to delete the image from the computer.

Add/ Update Image Screen

Add/Update Image

Image Information

Object: IC 434 Constellation: ORION Date: 10/03/2003

Catalog: IC Type: Difuse Nebula Sort Key: IC0434


Color Image: YES Narrowband Image: YES Common Name: Horsehead Nebula

Location: Okie-Tex Star Party Camera: ST-10XME Instrument: Televue 101 F/5.5

Image Path: C:\CCD Explorer\IC\ic434c_4inch.tif

Exposure Filter	Number of Images	Exposure of Each Image	Total of each Image
H-Alpha	9	10	90
Red	3	10	30
Green	3	10	30
Blue	3	10	30
No Filter	0	0	0
No Filter	0	0	0
Exposure Duration: Minutes			180

Notes:



Searching

There are a few ways to see your images and find a certain object. The toolbar has four icons that navigate you from one image to the next. You can view the first, previous, next, or last image. If you have a filter turned on, these icons will show you the first, previous, next, or last image in the filter. There will be more on filters later.

To find an image, you can click the *Search Icon* which is the second one from the left on the tool bar. Just type in the object you are looking for and click OK. **The name of the object to find is what you entered in the Object text box when you added the image.** If more than one item is found you will get a list. If only one image is found, then the image will be loaded

The database viewer is a menu under the Utilities menu.. When the viewer is displayed, you can sort on any column by clicking the column header. To view the image, just double click on the row where the image information is located.

The Navigator is another way to find an image in the database. It is more graphical than the viewer which makes it easier to find an image. When the navigator is displayed, it will load each of the categories and sub categories in a tree like structure. The tree is based on the images you have stored in the system. Just click on the + sign to open the tree branches until you see your objects listed. To preview the object, just click one time on that item. A preview image is displayed with some information. To load the image and display it in the main program, double click on the item.

The Image Viewer

This feature allows you to view images that are not recorded in the data. To load the image viewer, click the icon that looks like a tiny galaxy on the tool bar. The Image Viewer is also found under the *View Menu*. When you run this feature, the first thing that will happen is you will be asked to pick the image. You do not have to pick an image now. There is a help button that will tell you how to use the Image Viewer.

Scheduler

The scheduler feature of the program allows you to enter objects you wish to image. To view the scheduler, click on the second icon from the right. You can sort your items by clicking on the header of any column. To add a new item, click the Add button and enter the information. The scheduler is handy for planning your CCD image session. I sort by constellation or season to see what I can image for a given time of the year.

Tree Navigator

The screenshot shows the 'Tree Navigator' application window. On the left is a hierarchical tree view of astronomical objects. The tree is organized into several main categories: Open Cluster, Globular Cluster, Planetary Nebula, Diffuse Nebula, Galaxy, Planet, Comet, Solar, and Lunar. Under 'Diffuse Nebula', the 'Messier' sub-category is expanded to show 'Black & White' and 'Color' options. Under 'Color', several objects are listed, with 'M20' selected and highlighted in blue. Other objects in the list include M8 and M20, M17, M42, M43, M78, Orion and Horsehead NB, M42 NB, and M42 NB. Below the tree view, there is a panel titled 'Image Information' which displays the following details for the selected object M20:

Image Information	
Object	M20
Instrument	MakNewt 8 F/6
Camera	ST-2000XM
Date	08/22/2004
Location	Tucson, AZ

Below the 'Image Information' panel, there is a text instruction: 'Single click object on tree to display information, Double Click to exit Tree Navigator and load image'. To the right of this text is an 'OK' button. Above the 'Image Information' panel is a large image of the M20 nebula, showing a colorful, multi-colored nebula with red, blue, and green hues against a dark background of stars.

Filters and Other Things

Filters

CCD Explorer has the support to view images taken with a certain telescope. The instruments and cameras you enter in the setup will be displayed in the drop down list on the toolbar. Select the instrument and camera you want to filter on and then click set Filter. Using Set Filter Off removes the filter. When the filter is on, only the images in the filter are seen.

The **CCD Calculator** will compute the field of view for your CCD and the telescope you are using. It also tells you the pixels per arc second

The Auto Fit feature

Under the View menu, you will find two items; full size and fit to screen. The icon on the tool bar that has the letters AF toggles this feature off and on. What Auto Fit does is show you the entire image in the view screen of the main program. When Auto Fit is off, the full size image is displayed and scroll bars will be displayed if needed.

Viewing Information on an Image

The first icon on the tool bar from the left will toggle the CCD information window. The information you entered when you added the image is displayed. The information stays on until you turn it off

Backing Up data

The database that contains all the information you record is called CCD_Explorer.mdb. This is the only file you need to back up. Your image files are not saved in the database, just the information and the directory path and filename of the image.

Contact

Support is my e-mail from my web site at www.galaxies.com