

G2 CCD Camera Driver for MaxIm DL

G2 series of CCD cameras can be operated under MaxIm DL camera control software package using proper camera driver. Driver installation is quite easy – MaxIm DL scans DLLs (Dynamic Link Libraries) matching particular file name conventions in the folder, where it is installed, and checks if the DLL exports required driver API functions. Only DLLs named 'CCDPlug*.dll' are tested, so every driver file name must begin with 'CCDPlug' prefix. When a proper DLL is found, MaxIm DL offers it as a CCD camera driver.

To install the G2 CCD driver for MaxIm DL, just:

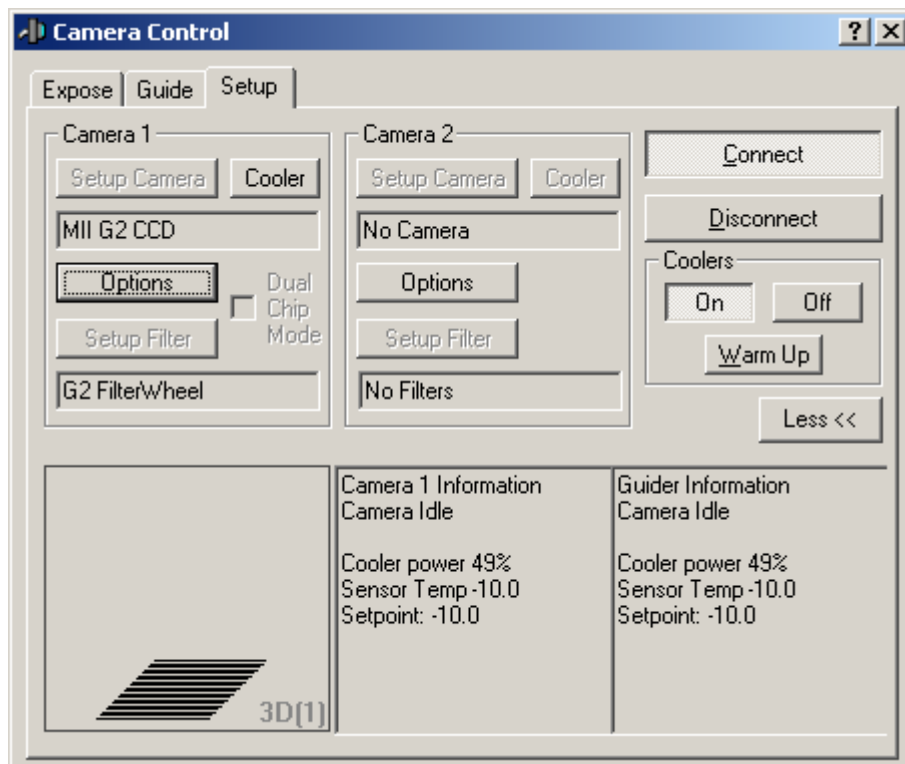
1. Download the package 'CCDPlugG2.zip' from the web site <http://www.gxccd.com/>.
2. Unzip the package into the MaxIm DL folder
(e.g. 'C:\Program Files\Diffraction Limited\MaxIm DL V5').

IMPORTANT:

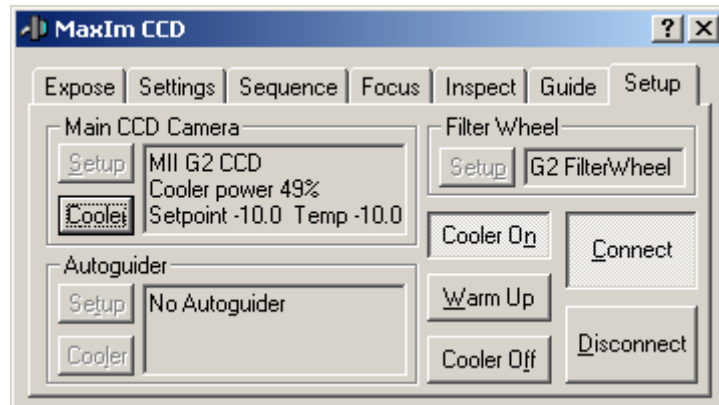
The CCDPlugG2 driver supports G2 cameras of revision 1 and 2 only. G2 cameras revision 3 and higher must use the CCDPlugGx driver, because these cameras are software compatible with the large-chip G3/G4 series of CCD cameras.

Note that the driver file name is 'CCDPlugG2.dll', but the driver needs two more DLLs to work – 'vproc4.dll' and 'vtools4.dll'. Both DLLs are included into the driver package and both must be unpacked into the same folder like the driver DLL itself.

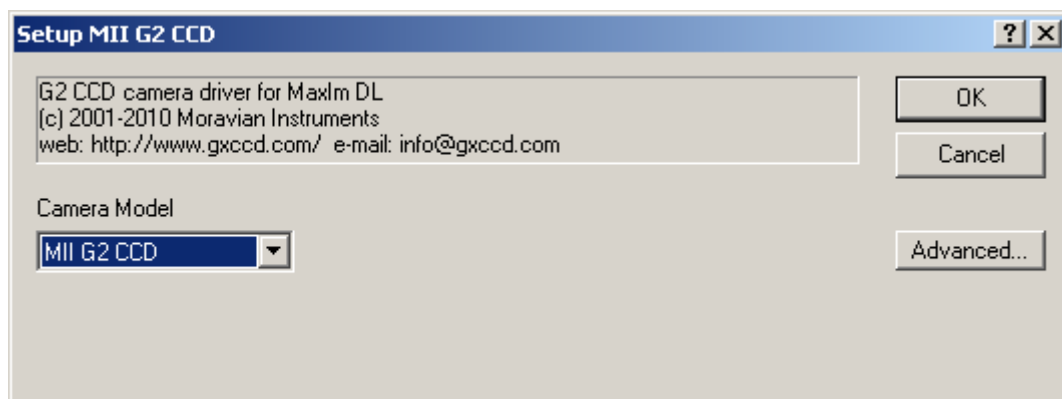
MaxIm DL V5 then offers the MII G2 CCD driver in the CCD Control Window:



This particular window looks somewhat different in MaxIm DL V4:



It is possible to choose one from multiple connected cameras or to set other parameters through the setup dialog. Click the “Setup Camera” (MaxIm DL V5) or “Setup” (MaxIm DL V4) button on either the “Camera 1/Main CCD Camera” or “Camera 2/Autoguider” box to open setup dialog.



Open the “Camera Model” combo-box and choose “MII G2 CCD” camera. The Setup dialog then offers “Advanced...” button, which opens another dialog box allowing the user to choose from all connected G2 cameras. Because G2 cameras can be plugged and unplugged anytime, the driver scans for all currently available (plugged) cameras each time the Advanced setup dialog box is opened. If you plug in the camera while the dialog box is opened, just close the dialog and open it again to reflect these changes.



G2 CCD Internal Filter Wheel in MaxIm DL

Each G2 camera can operate without internal filter wheel or can be equipped with internal filter wheel with 5 or 6 filter positions. The user can order camera with various filters, or he or she can change individual filters or even the whole filter wheel. There is no way how to determine the actual filters in the filter wheel automatically. This is why the G2 CCD camera driver for MaxIm DL reads the 'CCDPlugG2.ini' file to determine actual configuration of filters, which will be then reported to MaxIm DL.

The 'CCDPlugG2 .ini' file is placed in the same directory where the G2 CCD driver and the

MaxIm DL itself is installed. This file is ordinary text file following the .INI files conventions. Here is the example of the 'CCDPlugG2.ini' file:

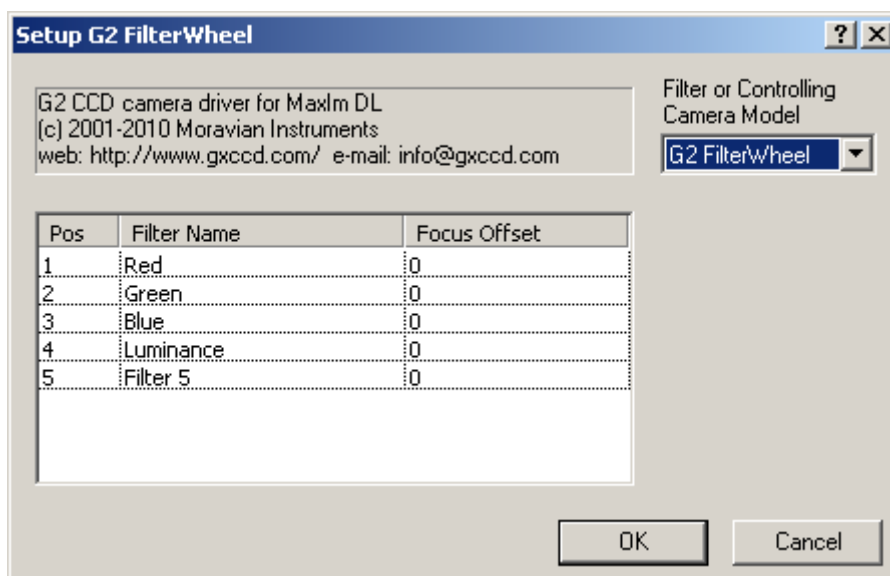
```
[filters]
Luminance, Gray
Red, LRed
Green, LGreen
Blue, LBlue
Clear, 0
```

The file should contain just one section “[filters]” (other sections, if present, are ignored). Every line in this section defines one filter position.

The first string defines the filter name, which can be used within the application GUI or will be part of file name of acquired images (if the user chooses including of filter name to file name). The second parameter, delimited by comma, represents a color by which the string is displayed. The color can be expressed by a name (White, Red, LRed, etc.) or directly by number representing the particular color (0 represents black).

While the driver can report filter names and also colors, which should be used to display these names, MaxIm DL does not utilize this feature and asks the driver only to report number of available filters. Still, the initialization file must be present and the number of lines must correspond to the actual filter count else the G2 CCD camera driver reports zero filters available.

However, MaxIm DL V5 enables user to define filter types in particular filter positions:



Further reference

For the G2 camera documentation, refer to the 'G2 CCD Camera Operating Manual'. This manual is supplied with each camera in the printed form and can be also downloaded as PDF file from the web site <http://www.gxccd.com/>.

Driver revision history

Version 1.0, released on July 21st, 2008

- Supports the following G2 camera models: G2-0402, G2-1600 and G2-3200, revisions 1 and 2.

Dec 2nd, 2009

- Driver tested under MaxIm DL version 5.06

Version 1.1, released on February 23rd, 2011

- Previous version of this driver returned image with coordinate system origin (coordinate 0, 0) in the bottom-left corner. This is the standard, defined by FITS format. But images appeared in MaxIm DL vertically mirrored, because MaxIm DL software obviously uses bitmaps with coordinate system origin in upper-left corner and also requires driver to return images from camera in such format.
- Driver is newly linked with C-runtime library MSVCR90.DLL. This particular library is included with all Windows Vista and Windows 7 operating systems. Older systems must preinstall this library, preferably from “Microsoft Visual C++ 2008 Redistributable Setup” package 'vcredist_x64.exe' for 64-bit systems or 'vcredist_x86.exe' for 32-bit systems. This redistributable package can be downloaded from Microsoft web server.

Because this library is used by many other software packages, it is likely that it is already installed also on older systems.

It is also possible to copy the 'msvcr90.dll' dynamic link library directly to the MaxIm DL folder (where the 'CCDPlugGx.dll' is placed), but it is also necessary to copy appropriate .manifest file 'Microsoft.VC90.CRT.manifest'. Still the best way is to use above-mentioned redistributable package, which installs Visual C++ support libraries for all applications on the particular operating system installation.

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