Signature Camera

[Version 2.0] Michael Burns Rock Mallin



Signature User Manual

This document will introduce you to the wonders of the Mallincam Signature Camera. It will include instructions on how to connect the Signature to your computer along with explanations of the camera's various settings. Imaging techniques with the various hardware and software options will be covered. Both the standard CVBS video output and SDI video output will be discussed along with hints and suggestions on how to resolve any problems that you encounter with this camera. Enjoy the adventure with Rock Mallin's professional SDI video camera, this his Signature masterpiece.

Revision History

| Version | Date | Revision Description |
|---------|-----------|--|
| 1.0 | 3/22/2014 | Template Creation |
| 1.1 | 3/23/2014 | Typo's |
| 1.2 | 3/24/2014 | Added Appendix F specifically for RS485 Adapters |
| 2.0 | 2/20/2016 | Updated Graphics |
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1. Introduction

Welcome to the world of the Mallincam Signature Camera. Your purchase will provide you with years of discovery and adventure as you view, record, share, and broadcast the wonders of the Solar System. The Signature is a professional video camera that can provide broadcast quality live images in the HD-SDI format along with standard quality video for non-broadcast needs. This document will guide you in the connection options of the Signature to your computer, along with recommendations on configuring the camera for specific Solar System objects. Many special thanks to Rock, Jack, Bob, Bryan, Shevill and others whose advice and techniques are incorporated in this manual. This manual is based on the RED LED version of a NTSC Signature Camera which also includes RS485 control capabilities.

The Contents of the Signature Package

You purchase will include the following items:

- Signature Camera in Box
- > c-adapter to 1.25" eyepiece holder
- > 120V AC to DC adapter
- 25ft dual cable power/video (BNC male /RCA male)
- ➤ Signature RS485 Port connector

These accessories will provide you with the ability to connect the Signature camera to your telescope, Power the Signature while connecting it to a 120V AC power source, and displaying your image on any device that accepts analog video via a RCA connection.

The Camera (Just the Facts)

The Mallincam Signature Camera is the ultimate Solar, Lunar, and Planetary Video Camera ever made. This scientific instrument contains the following specifications:

| Image Sensor | sCMOS | |
|------------------------|--|--|
| CCD Pixels: | 1384(H) by 1076(V) with 3.25 μ m Pixel size for a total of | |
| OOD TIXCIS. | 1.49 Mega Pixels | |
| CCD Size: | 1/3" | |
| | | |
| Lux: | 0.1 | |
| Video Output Format: | NTSC/PAL | |
| Multi Format Video | Image Aspect: | |
| Output | Full/Normal | |
| | HDV: 16:9, SDV: 4:3/16:9 | |
| | 720p60, 1080p30,720p30,1080i60 | |
| | 720p50, 1080p25,720p25,1080i50 | |
| Analog Video Out | CVBS | |
| Digital Video Out | HD-SDI | |
| HD-SDI Bit Rate | 1.485 GBits/sec | |
| Gain Control: | Auto/Manual | |
| Exposure Control: | Auto/Manual/Iris Priority | |
| Auto Iris: | AES (Rolling Shutter), ALC | |
| Fix Shutter (s) | 1/30, 1/50, 1/100, 1/120, 1/180, 1/350, 1/500, 1/750, | |
| | 1/1000, 1/2000, 1/4000, 1/10000 | |
| Slow Shutter (s) | 1/15, 1/8, 1/4, 1/2, 1, 2, 4, 8 | |
| S/N Ratio: | 48dB | |
| Gamma Correction | 0.45/0.7/1.0 | |
| Digital Zoom | 4 times | |
| Communication Protocol | RS484 (Red LED Version only) | |
| Operating Temperature | -20°C to 50°C (-4°F to 122°F | |
| Power Supply | 12±1V DC at 3000mA | |

The Camera (its Anatomy)

The Signature camera is 4.5" x 2" x 2" and weighs in at about 1 lb







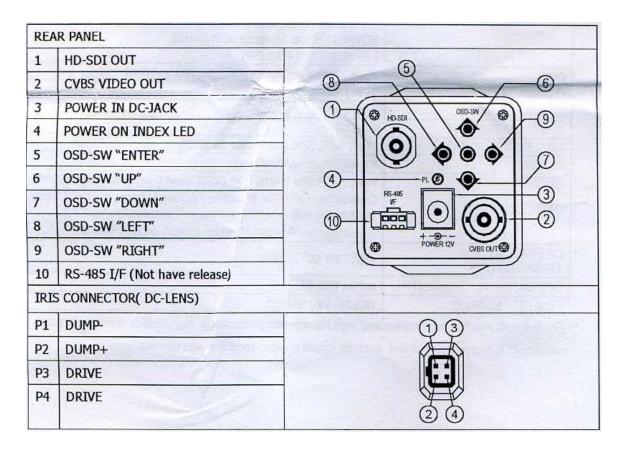
The Signature Camera also comes with comes with 120 Volts AC Power Supply, 1.25" Eyepiece Adapter, 25 foot Power / Video (analog) Combination Cable and RS485 connection cable.







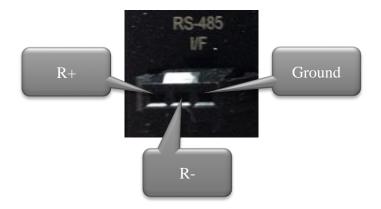
The Camera (Connection Diagram)



The Camera (RS-485 Connection)

The Signature communicates via a 3 pip RS485 port on the back of the camera

Note: Only the Red LED Version of the Signature has communication capabilities.



Hooking up Hardware

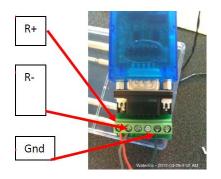
To control the camera through the Signature RS485 Port you will require a USB to RS485 Adapter Cable. I have had great success with the US Converters RS485/422 cable converter Model XS890 (other users also have had success with US Converters RS485 to RS232 converter Model XS201A).

See **Appendix F** for detailed instructions of how to attach the Signature Camera to Specific RS485 Adapters.

Your RS485 adapter must come with a means to connect it to the wires from the Mallincam RS485 Port Connector. You need to connect the Mallincam RS485 Port Connector to the back of the Signature Camera and then connect the three cables to the green thingy (this is the technical term we use in the industry) that came with your purchased "RS485 Adapter". Make sure you match the cables in the correct order.



RS485 Port Connector



US Converter RS485 Cable

After you have connected the pieces on your RS485 Cable and secured them together to insure the 3 wires from the Mallincam RS485 Port connector cannot come loose from the Green Thingy (I used electrical tape to wrap them together). All you should need to do next is plug the cable into a free USB Port on your computer. Windows should automatically download and install the correct drivers from internet that are needed to run the converter.

Software

There are two free programs that are available to you to use:

- Buttons Control with Protocol –this program allows you to control the Signature by
 using the OSD menu just as if you are pressing the
 buttons on the back of the Signature (There is a nonprotocol version of this program).
- Signature Application with Protocolthis program provides menus that allow you to connect to and control most of the functions of the Signature by clicking on choices of moving sliders.

These Software programs are located in Folder named **Signature Camera Applications and Documentation**. The folder is located at http://sdrv.ms/Lb3wV3

See below in **Chapter 3** on how to install and use these two programs.

Overview

The Signature Camera was designed for imaging Solar System Objects. The Fixed Shutter ranges from 1/30s to 1/1000s which allows you to capture images of the bright Solar System objects (major planets, Sun and Moon). The Signature does provide a Slow Shutter capability that allows longer exposures from 1/15s to 8s to capture those dimmer objects. The Signature was not designed for Deep Sky Objects, but that is still not out of its capabilities with the end user's expertise.

Functional Description

The Signature provides two BNC video outputs ports. One is labelled HD-SDI which produces a true digital SDI output, while the other is labelled CVBS OUT and this produces an analog signal.

HD-SDI

Serial digital interface (SDI) is a family of digital video interfaces first standardized by SMPTE (The Society of Motion Picture and Television Engineers) and is used for broadcast-grade video. High-definition serial digital interface (HD-SDI), was also standardized in SMPTE; this provides a nominal data rate of 1.485 Gbit/s.

The display and capture of a HD-SDI signal requires the use of a specialized BNC ended cable that meets the SMPTE standards and a HD-SDI capture device.

A Google search can find various lengths of specific HD-SDI cable from many broadcasting vendors. I purchased mine form **Markertek.com**.



To capture or display the HD-SDI video signal requires the use of both a HD-SDI capture device and a very fast computer. Since the signal standard is about 1.5 Gbit/s the capture devices will either be an internal computer card, or a box that connects to the computer using either a USB 3.0 or Thunderbolt connection. A couple of the major players in this arena are **Blackmagic** and **Magewell**. They provide a variety of capture/display devices which will match your requirements.





For those of you need to just display the output on a HDMI monitor, **Sewell** provides a very inexpensive SDI-HDMI converter called the Spector that will do the job for you.



CVBS

The CVBS OUT BNC connector on the back of the Signature Camera produces an analog signal that can be captured by any analog capture device such as the **Mallincam MCV** video capture device. CVBS stands for **C**omposite Video, **B**lanking and **S**ync and is nothing more than the standard composite signal and thus requires the use of a composite video cable with a BNC male connector at one end and a RCA male connector at the other end. When you purchased the Signature camera, Rock will have provided you with a 25 foot Power/Video dual cable for you to use with the camera. The video portion of this cable is for the analog (CVBS) port on the back of the camera.



For those of you who want to display the analog signal from the Signature on a HDMI monitor, Mallincam provides an analog to HDMI upscaler.

This device Up-Scales Composite Video, S-Video, and HDMI to 720p/1080p (selectable) HDMI. It provides Motion Compensated 3D Wavelet Video Coding Technology is applied to make the converted picture rich in color and more vivid. Input video systems - NTSC and PAL is automatically detected and adjusted and it provides a built-in Time Base Correction (T.B.C) for signal synchronization.



3. Instructions

Connecting Signature to Computer (CVBS)

Requirements:

- Computer with video display software such as AMCAP
- USB Video capture adapter such as Mallincam MCV
- > Mallincam dual power/video cable
- Signature AC to DC power adapter
- Signature camera

Procedure:

- 1. Power on your computer.
- Connect Signature Camera to Telescope and connect Video cable (BNC end) to the CVBS video jack on the back of the Mallincam (do not power Signature).
 Keep lens cap on Telescope.
- Connect the USB Video Adapter to computer (see Installing MCV in the Appendix for instructions on how to install the Mallincam MCV Video adapter).
- 4. Connect other end of Video cable (RCA) to the Video Capture Device (MCV).
- 5. Power the Signature (plug in the AC to DC adapter and connect to the Signature).
- 6. Start the video display software (AMCAP).
- 7. Choose the Video Source for the software (USB 2828x Device for the MCV).
- 8. If necessary, select **Crossbar** from AMCAP to choose the RCA connection on MCV rather than the S-video.
- 9. Hold down the **Centre** button on the back of the Signature for about 2 seconds (release when you see OSD menu on your Video Display Software)
- Using the back buttons on the Signature, ensure that Signature is using Fix
 Shutter at a reasonable setting (see Appendix A OSD Menu for instructions).
- 11. Remove Lens cap from Telescope.
- 12. Adjust settings using the OSD menu to match viewing object

Connecting Signature to Computer (HD-SDI)

Requirements:

- Compatible Computer with software to display a SDI image (Blackmagic Media Express which is included free with the purchase of the UltraStudio SDI from Blackmagic)
- > Signature Camera
- Power Supply for Signature Camera
- SDI Video Capture Device (Blackmagic UltraStudio SDI)
- ➤ HD-SDI Cable (SD59-BB50 dual BNC connectors)

Procedure:

- 1. Power on your computer.
- Connect the Signature Camera to Telescope and connect Video Cable (BNC end) to the SDI-HD video jack on the back of the Mallincam (do not power Signature). Keep lens cap on Telescope.
- Connect SDI Video Adapter to computer (see Installing Blackmagic Ultrastudio in the Appendix for detailed instructions on how to install and connect to the Blackmagic Ultrastudio Video adapter).
- 4. Connect other end of SDI Video cable to the Video Capture Device (Blackmagic Ultrastudio).
- 5. Power the Signature (plug in the AC to DC adapter and connect to the Signature).
- 6. Start the Video Display Software (Blackmagic Media Express).
- 7. Choose the Video source for the software (Blackmagic Ultrastudio).
- 8. Ensure all resolutions match from the Signature camera to the Video Capture Device to the Video Display Software (1030p).
- 9. Hold down the **Centre** button on the back of the Signature for about 2 seconds (release when you see OSD menu on your video display software)
- 10. Using the back buttons on the Signature, ensure that Signature is using **Fix Shutter** at a reasonable setting (see **Appendix A OSD Menu** for instructions).
- 11. Remove Lens cap from Telescope.
- 12. Adjust settings using the OSD menu to match viewing object

Controlling Signature using the Buttons

The Signature Camera has an OSD (On Screen Display) menu system that allows you to control every aspect of the camera. You activate the OSD by holding down the Centre Button for 2 to 3 seconds. When activated the following screen overlay will be presented.

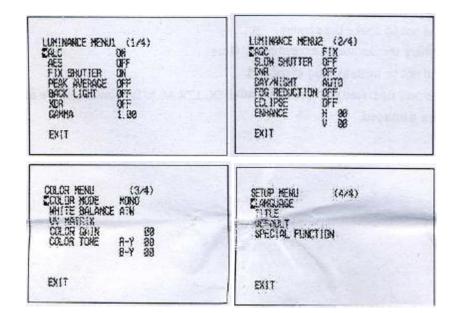




You control the arrow (see beside the ALC setting on the image above) by using the UP and DOWN Arrow Buttons on the back of the camera and you select an option by pressing the CENTRE (ENTER) Button. The LEFT and RIGHT Buttons take you other related screens. For example, with the LUMINANCE MENU1 (1/4) displayed press the RIGHT Button and you will see LUMINANCE MENU2 (2/4), Hit the RIGHT Button again and it will display the COLOR MENU (3/4) and finally hit RIGHT Button one more time to display the SETUP MENU (4/4). To can use the LEFT and RIGHT Buttons to cycle through the Main Menu screens.



When the OSD is activated and NO Button activity has been detected by the Signature Camera for about a minute, the Signature will EXIT the OSD screen automatically.



To close the OSD, look for an **EXIT** option at the Bottom of a Main Menu, move the arrow to **EXIT** and press the **CENTRE** Button.

Some Menu options may have its own SUB MENU (for example SPECIAL FUNCTIONS on the SETUP MENU (4/4)), when you are inside the SUB MENU you choose the RETURN option to return to MAIN MENU that called the SUB MENU. Again you can use the LEFT and RIGHT Buttons to move from one SUB MENU to another if multiple SUB MENU's are available.



As an example to become familiar with the operation and use of the Buttons, we fill activate the FIX SHUTTER option from the LUMINANCE MENU1 and will set it to 1/2000.

If the OSD is not activated, then activate it by holding down the **CENTRE** Button.

Step 1

Using the DOWN Button move the Arrow so it is next to the FIX

SHUTTER Option on the

LUMINANCE MENU 1



Step 2

Press the **CENTRE** Button to select this Option. The OSD will display the **FIX SHUTTER** Menu.



Step 3

Press the **CENTRE** Button and the arrow will jump to the **OFF** or **ON**Option (depending upon what the Signature is set to). Using the **UP**or **DOWN** Button select **ON** and hit the **CENTRE** Button to select it.

Step 4

The arrow should be pointing to the **SHUTTER SPEED** selection.

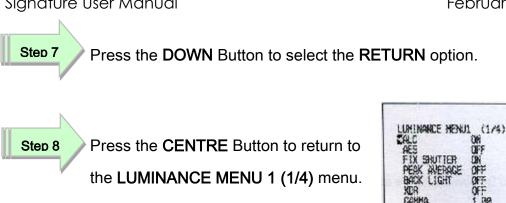
Use the **UP** and **DOWN** Buttons keys to scroll through the Speed options, (Play and get familiar how to change the **SHUTTER SPEED** option. Stop when you had **1/2000 SEC** displayed in the OSD window.

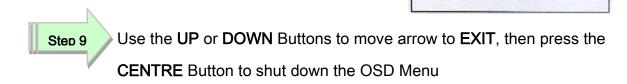
Step 5

Press the LEFT Button to step back into the ON OFF options

Step 6

Press the LEFT Button to step back to the FIX SHUTTER option





EXII

It is worth your time to become familiar on how to move around the OSD menu choices using the Back Buttons on the Signature Camera, as you will notice the amount of settings you can adjust on the Signature is astronomical (sorry), and each specific setting will be unique to you and your equipment and seeing conditions.

See the **APPENDIX A – OSD MENU** for explanations on what the specific settings do and how that may be helpful to improve your image.



Some settings deactivate other settings automatically while others affect the operation of the camera. These quirks will discussed in APPENDIX A. So if the Signature is behaving strangely after you make a setting change review the specific OSD choice in the APPENDIX A for a clue.

Using "Signature with Buttons" Software

One of the first things I noticed when using the Signature Camera is that I would make small experimental setting changes by using the Back Buttons on the camera. But, the act of touching the Signature affected the image, and sometimes I would press too hard on the back of the camera and would nudge to scope.

To resolve this, I wrote my first simple program to control the Back Buttons from software using a RS485 to USB adapter and cable. Below you will find the technique and hardware I used to connect and control just the Buttons of the camera.

There are two versions, one that listens for the Signature to respond (this version is called **Back Buttons with Protocol**), while the other version (**Back Buttons**) just sends the command and assumes the Signature is working.

Why two versions? Some simple RS485 adapters and cable don't have flow control capabilities to manage the data that can return from the camera. This is not an issue when just controlling the Buttons of the Signature since no important response is sent back, but when you want to capture a response from the Signature then a RS485/USB cable adapter must have flow control. This is needed for the Signature Application Software that is discussed in the next section.

Requirements:

- Compatible Computer with USB 2.0 Port
- ➤ US Converters USB to RS485/422 Cable converter Model XS890
- Signature Buttons Software

Procedure

- ➤ Connect the constructed RS485 USB cable (as per **The Camera (RS485)** section at the beginning of the manual) to the Signature and a USB Computer Port.
- Visit http://sdrv.ms/Lb3wV3 and open the folder "Signature Camera Applications and Documentation"
- ➤ Right click on "Signature Button Control with Protocol" and select download from the pop-up menu.
- Place this program in your location of choice.



I had to let my security software (Norton) know that this program was safe. It quarantined it the first time I ran it.



Connect all cables between the Signature and the Computer first. Then connect power to the Signature Camera. Although you may be connecting the cable using a USB port on your PC, the PC will see the connection as a Serial connection. The computer needs to know that you have a Serial cable and what *port* it must activate (this is done automatically when you plug in your Serial cable to a USB port on your computer). The Signature camera looks for a Serial connection when powered up.

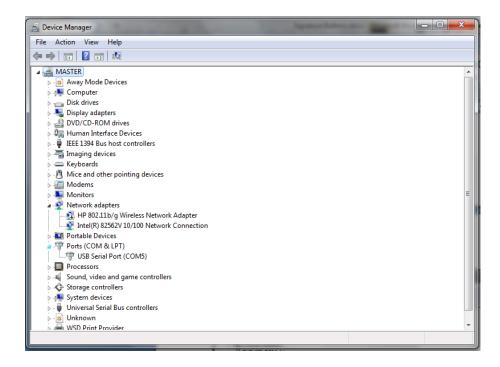
Start your Video Display Software (AMCAP) and connect to Video Adapter

You will need to know what COM port the RS485 Cable Adapter is connected to.

To determine this:

- Windows 7: Click on the Start Button
 Windows 8.1: Hold down the WIN key and press the X key
- > Choose and enter into the Control Panel
- Go into Hardware and Sound
- Click on the Device Manager
- > Click on Ports (COM and LPT) to open

You should see the USB Serial Ports on your computer with the **COM** port number following. Note how mine says **COM5**.



You can select that port and modify the properties if required, (my software will do that automatically) but if you feel the urge then the following are the settings for the Signature Camera:

Communication Speed: 19200

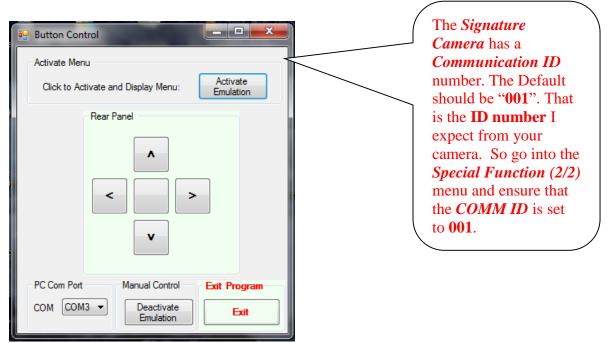
Data length: 8 bit Parity: None Stop Bit: 1 bit Flow control: None



If you get a popup message about a "connection error with serial I/O in the message" whenever you press a button, this means that the COM port is not communicating with the program. Just recheck connections.

- When the Signature Camera is powered up and your Video Display Software (AMCAP) is running (so you have a wonderful image of something in your display, for me it is always corn in the farmer's field).
- Double click on application: Signature Button Control.exe or on Signature Button
 Control with Protocol.exe (depending upon which version you downloaded)

The following image should appear on the screen.



Notice that the *Rear Panel* box is shaded red (this indicates that software does not yet allow you to control the camera (patience, my friends, there is a reason for this).

I, hopefully, have the software reading the available COM ports on your computer and it should display them in the *PC Com Port* Box (On the above sample image, it is displaying **COM3**). You will need to click on the *COM* button to display all of the available *Com Ports*, then click on the *Com Port* that your Signature Camera is connected to. (In my case, my Signature is actually connected to *COM5*, so I would choose *COM5* from the drop down list, and now my *PC Com Port* would display *COM5*.

Note: we still have not activated the software control yet, so a little more patience.

When you are ready to control the camera with this software, just click on the *Activate Emulation* button in the *Activate Menu* box at the top of the screen.

Three things should happen (if the gods are on our side):

- ➤ The *Real Panel* box will turn green and the buttons will be activated.
- The Signature Menu should now appear over your Signature image on the display software of your video software you are using.
- You may hear a beep (if your computer has speakers connected to windows driver).

If no menu pops up on your display software:

- ➤ Double check my **Connecting Signature to Computer** section on the last page. Double check everything.
- ➤ Is your COM port the correct one?
- > Is the Camera Id set to "001"
- > Try clicking on the **Activate Emulation** button again
- You must have irked the gods at some point in your life. I find screaming helps.

If you obtain the Menu on your display software, then you can use the buttons in the *Rear Panel* just as you would on the back of the Signature. Happy pressing.

To turn off the Menu display, just maneuver to the **EXIT** choice on the Signature OSD display as you would if you were controlling the Signature by pressing buttons on the back. To bring back up the Menu choice, just click on the *Activate Emulation* button on my software. Remember the Signature Camera will automatically close down the OSD Menu if it senses no activity.



When any piece of software has control of the buttons (such as this one), I found that the Signature will deactivate the manual control of the buttons on the back on the Camera (a safety measure I guess). If you need to get back manual control of the camera; click on the *Deactivate Emulation* button in the *Manual Control* box on my software and you have full manual control (notice that the *Rear Panel* will turn red to remind you that software does not control the buttons). You will need to click on the *Activate Emulation* to reactivate software control of the buttons.

When you are finished with the software (hopefully for the evening, not forever), Click on the *Exit* button in the *Exit Program* box. This will reactivate manual control to the Signature, deactivate the COM port, and shut itself down.

You then can control the Signature just like you were pushing the buttons at the back of the Signature Camera. See chapter **Controlling the Signature using Buttons** except rather than holding the **CENTRE** button own for three seconds to activate the OSD, you need only press the **Activate Emulation** button on the software.

Using "Signature Application Software"

This is a simple program that allows me to control the RED LED version of the Signature camera from my computer using a USB to RS485 Cable (see: "Hooking up Hardware" in Chapter 1 of this manual).

Before Starting the Software

Use the back buttons on the Signature and go into the second **Special Function Menu** and set the COMM ID to 001. This is required as the Default 000 Signature setting disables the Communications.



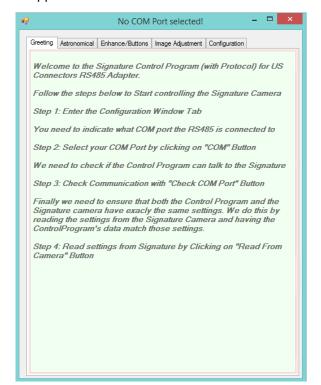
The Signature will remember this new COMM ID the next time you start the camera. Only when you do a Factory reset, does the Signature revert back to COMM ID 000.

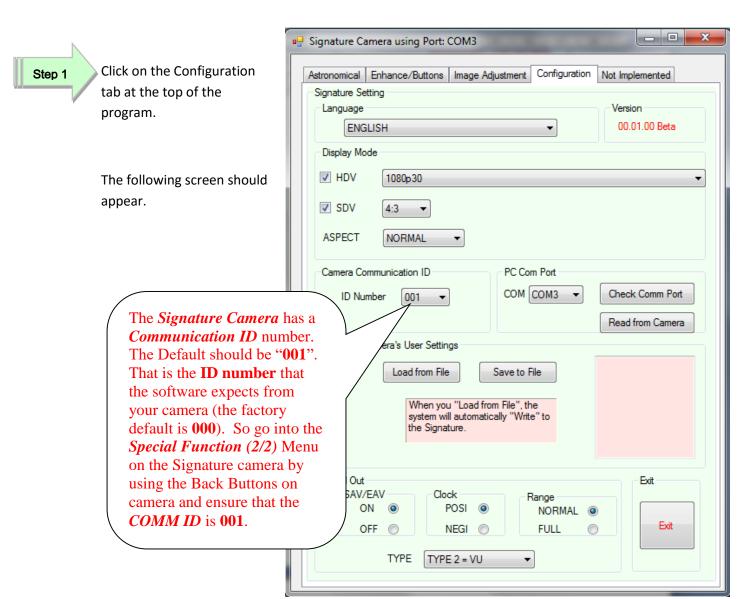
Starting the Software

When the Signature camera is powered up and your video software is running (so you have a wonderful image of something in your display, for me it is always corn in the farmer's field).

Double click on application: Signature Control.exe

The following image should appear on the screen:





I, hopefully, have the software reading the available COM ports on your computer and it should display them in the *PC Com Port* Box (On the sample image, it is displaying **COM3**). You will need to click that button to display all of the available *Com Ports*, then click on the *Com Port* that your Signature Camera is connected to. (In my case, my Signature is actually connected to *COM5*, so I would choose *COM5* from the drop down list, and now my *PC Com Port* would display *COM5*.

Note: The current *Com Port* also appears at the top of the screen by the Program name.

Step 2

Step 3

Click on the "Check Comm Port" button.

The software will respond with a message letting you know if the software and the Signature are communicating

If you get the message "I said Hello, and the Signature didn't like me", then there is a communications problem between the Signature and the software double check the procedure "Connecting the Signature to Computer"

Some Notes

- You can load the Signatures current values so that the software matches the Signature by using the "*Read from Camera*" button (it can take up to 30 seconds). I recommend doing this unless you are going to issue a "*Load from File*"
- You can save your current Software camera settings by clicking on "Save to File" and giving it any name you choose. (can take up to 30 seconds)
- You can load a previous setting file into the Signature by clicking on "Load from File" and choosing a previous settings list to load. (Can take up to 30 seconds)
- You can activate the back buttons simulator on the Signature by clicking on the "Enhance/Buttons" tab and clicking on the "Activate Keypad" check box (note: you will have to use these buttons to get to the EXIT menu choice for the Signature onscreen Buttons commands to deactivate). Remember if you change a value by using the back buttons (either through software or actually pressing the buttons), the Software will not know what changes you made (you can do a "Read from Camera" to synch them up)
- ➤ Be gentle with the program as the Signature has to send an acknowledgement command back to the software every time you click on the button, and depending upon how much buffer is available, this will indicate how fast the camera can respond without getting confused.

Note: When any piece of software has control of the back buttons on the Signature (such as this one), I found that the Signature will deactivate the manual control of the buttons on the back on the Camera (a safety measure I guess). If you need to get back manual control of the camera; click on the *Deactivate Emulation* button in the *Manual Control* box on my software and you have full manual control (notice that the *Rear Panel* will turn red to remind you that software does not control the buttons). You will need to click on the *Activate Emulation* to reactivate software control of the buttons.



If you had the software running and the computer hangs up (of cause not because of my software, I regularly sacrifice cookies to the gods), then just wait a few minutes and the Signature will automatically deactivate the Menu display on the display screen and you will again have manual control. Unplugging the Camera also works. Worst case, selecting factory defaults from the back of the Signature

When you are finished with the software (hopefully for the evening, not forever), Click on the *Exit* button in the *Configuration tab*. This will reactivate manual control to the Signature, deactivate the COM port, and shut itself down.

Connecting the RED LED Signature to Computer:

See the **Appendix F** for more details.

Broadcasting on Night Skies Network

Step 1

Start your Web Browser of Choice

You may have to play with a number of Browsers to see which one works well with your particular computer setup. I have had success with 3 browsers: *Chrome, Internet Explorer*, and *Maxthon*. My current favorite browser to use for NSN broadcast is *Maxthon*.

Step 2

Log into Night Skies Network (NSN)

Have your Web Brower go to the location: http://www.nightskiesnetwork.ca. Locate and click on the *Login* button on the top of the Welcome to NIGHT SKIES NETWORK screen.



The *Login* screen will pop-up and you will be asked to enter your *username* and *password*. Enter them and *Click* on *Login Button* to accept.



You will be presented with the Night Skies Network Channel Lineup Screen. Click on the Login Button located at the top right side of the screen to activate the Channel Sign-In Screen.



You will be presented with the *Channel Broadcast Sign-In* screen for NSN.

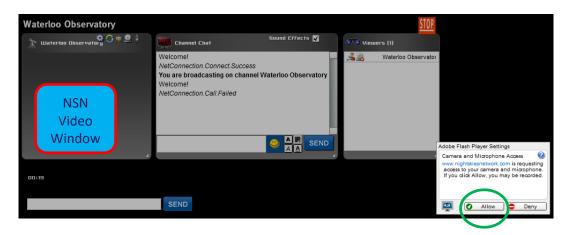


Again enter your *Username* and *Password* and *Click* on *Publish Channel* button.

Step 3

Allow Adobe Flash to use your Video Adapters

The *Adobe Flash Player Settings* window will pop up on your screen asking you for permission to use your camera and your microphone. Select *Allow*.



Step 4

Turn off your Microphone

Until you have your microphone figured out, it is best to initially turn it off. If you do not, the viewers on NSN may hear an extreme loud buzzing (feedback noise). Later on we will look at using the microphone, but until then I recommend *CLICKING* on the little *microphone symbol* on the upper right corner of the NSN video display window to disable the microphone.





Set a message for the NSN observers

It is a good idea to display a message above the NSN display window, so that the other NSN views understand what you are doing. When initially setting up (which usually takes longer when you are learning), I usually type the message "Setting Up the Camera" then CLICK on the SEND button to have it displayed.





When you are up and running and everything is working as it should, you will change the message to indicate, what telescope, mount, and camera you are using. For that is the most frequently asked question from the NSN viewers.



Select the Camera

Now is the time to activate the camera, or in our case have NSN driver point to our Video Adapter Card's video output.

> RIGHT CLICK inside the NSN Video Window to bring up a Settings Window



CLICK on the Settings choice and you will be presented with the Adobe Flash Player Settings Window.



CLICK on the Camera Icon and you will be presented with a pull down menu to select your camera.



CLICK on the Pull Down list to select your camera video driver.



> CLICK on CLOSE to Continue.

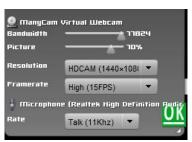
NSN will remember what camera you chose from the last visit. So usually you only have to go through this process whenever you want to change what camera device you would like the *NSN flash driver* to use.

Step 7

Choose your Camera Settings

We will now select the settings for our camera. We have the option of changing: The *Bandwidth*, *Picture*, *Resolution*, *Framerate*, and even the *microphone rate* (when you are ready). The changes will **not be activated** until you *CLICK* on the Green *OK* symbol in the window.

LEFT CLICK inside the NSN Video Window to bring up the Camera Settings Window.



- Use the sliders for Band Width and Picture values. I usually have both of my sliders way on the right. Over time you will find the sweet spot for your system.
- Select your *Resolution* from the *Pull Down Menu*. I select *HDCAM (640 x 480*) for my system. Again, play with these to see what settings the NSN viewers say is the best.
- > Select your *Frame Rate*. From its *Pull Down Menu*. I usually leave it at 15 fps, but I have used 30 fps at times. Again trial and error for your system.
- > CLICK on the green OK symbol to accept these settings.

That's it, you are done. If everything is working well and the Window's gods are in a good mood, you should be broadcasting whatever object the XTERMINATOR is capturing. You should now enter another Message and **SEND** it out to indicate what system you are using and what object you are viewing.



There is a time delay on what you say (if you have your microphone activated) and do on your computer as compared to what others see (and hear) on the NSN broadcast.



You will freeze (and I don't mean like what Chris does when he broadcasts in winter till 3am), I mean from time to time your NSN connection will freeze for no apparent reason. It happens to us all. When this happens, you can simply terminate the Web browser program (Ctrl—Alt-Del). Then restart your browser and Log back into NSN. This usual is a very quick process. But, sometime we all have to restart our computer (this takes longer for we need to power down hardware and software) and reactivate everything before login back in. Don't worry, the NSN viewers sense what is happening and will keep the conversations going while waiting for you to come back on.

Don't be afraid to ask for advice by typing in on the **Video Chat Window**, as we are all learning and are willing to assist whenever we can.

When ready, try activating the microphone (click on the microphone symbol located on the upper right of the **NSN Video Window**). Others will let you know if they can hear you, or if there is noise. Remember there are settings for the microphone in the camera settings window (**Right-Click** on **NSN Video Window**, look for Microphone Tab).

Video Real-estate can become an issue with all of the program open at the same time, and most broadcasters will migrate to a dual monitor system. Placing the **Xterminator Camera Control Software** on its own monitor (the second monitor), you can make it full screen to see all the detail, while the first monitor has the browser's NSN connection screen with its preview and chat windows comfortably opened.



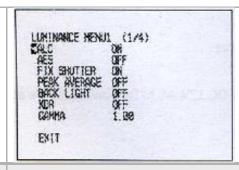
When you are finished with your session, you simply say your good nights to the crowd of NSN viewers to let them know that your session is ending. *CLICK* on the red *STOP* button on your NSN Window and NSN will shut down your channel and you can power down your system and call it an evening (It won't force the NSN viewers off the channel and some viewers will continue chatting long after you have gone to bed).



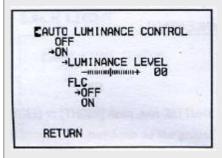
4. Reference

Appendix A - OSD Menu

LUMINANCE MENU1 (1/4)



ALC



This control will try to control the camera but was designed for daytime use.

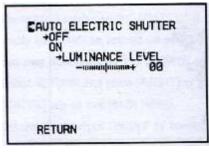
Automatic Luminance Control is one of the three Luminance Control Modes used by the Signature (the other two are FIX SHUTTER and AES Control).

You can Turn it ON (and adjust the Luminance Level), OFF, or select FLC (Flick Less)

If ALC is set to ON, then AES is automatically set to OFF

For Astronomy use: **OFF**

AES

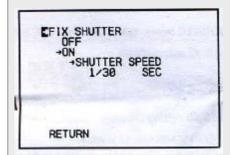


This control will try to control the shutter, but was designed for daytime use. Auto Electric Shutter is one of the three Luminance Control Modes used by the Signature (the other two are FIX SHUTTER and ALC).
You can Turn it ON (and adjust the Luminance Level), or OFF

If ALC is set to ON, then AES is automatically set to OFF

For Astronomy use: **OFF**

FIX SHUTTER



Use this to control the Shutter, the 1/30 is longer so objects may appear bright while 1/10000 is a shorter exposure so objects may appear dim. Play with exposure settings to give correct brightness of object

Fix Shutter is one of the three Luminance Control Modes used by the Signature (the other two are AES and ALC).

You can Turn it ON (and adjust the Shutter Speed), or OFF.

Shutter Speed settings in seconds: 1/30,1/50,1/60,1/100,1/120,1/180,1/350, 1/500, 1/750, 1/1000, 1/2000, 1/4000, 1/10000

If FIX SHUTTER is set to ON, then AES is automatically set to OFF

'

For Astronomy use: ON

EPEAK AVERAGE +OFF ON →PEAK MIX LEVEL Approximation 10%

PEAK AVERAGE

Peak detecting mode is a way to determine exposure index by average value of the whole image.

System will adjust image brightness. BLC and XDR turn off when PEAK AVERAGE set to on

BACK LIGHT



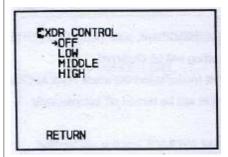
For Astronomy use: OFF

The backlight correction is useful when the background is brighter than the subject. It adjusts the exposure.

I don't touch this command in Signature Application Software

For Astronomy use: **OFF**

XDR



Extended Dynamic Range is used to increase the ability to see objects in dimmer area of the screen.

When XDR is set to LOW then the GAMMA setting automatically sets to 0.45 (at least is says so, But I don't see it changing on the Signature).

For Astronomy use: Experiment

GAMMA



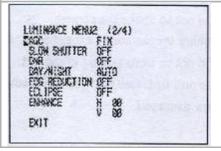
Adjusts the brightness of image. It is actually the exponent on a power function thus CRT's and Laptops may require different settings to enhance signal.

For dimmer objects set GAMMA to 1.00 for Medium set GAMMA to 0.7 and brighter objects set GAMMA to 0.45.

When set to 1.00 then XDR, FOG, ECLIPSE are automatically set to OFF (at least that what is says in the manual. But I don't see it doing it. I do set them OFF in my software.

For Astronomy use: YES

LUMINANCE MENU2 (2/4)



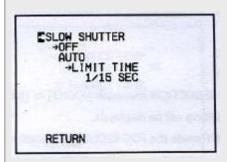
AGC



Auto Gain Control tells the camera how much amplifier gain you would like it to apply to the signal coming out of the CCD. It's similar to cranking up the ISO setting on your digital camera. The trick is to get the best image with smallest value.

For Astronomy use: set to FIX and adjust

SLOW SHUTTER

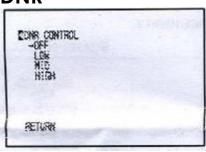


Slow Shutter allows you to set exposures to: 1/15s, 1/8s, 1/4s, 1/2s, 1s, 2s, 4s, and 8s. This setting is used for those dim planets.

This Slow Shutter affects the timing of everything in the camera. If set to say 2s, then it will take 2s for the Menu Buttons to respond and display. Use caution when using due to response delay.

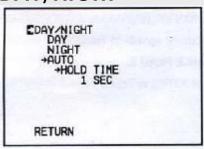
For Astronomy use: Optional

DNR



Digital Noise Reduction this setting has 4 levels (OFF, LOW, MED, HIGH) which may assist is removing noise from image or actual image details. Experiment with this setting.

DAY/NIGHT

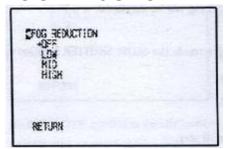


For Astronomy use: **Experiment**

This setting adjusts the Signature to expect to be imaging either bright objects (DAY) or dim objects (NIGHT). Since most Solar Systems objects are bright, set to DAY and leave it there.

For Astronomy use: DAY

FOG REDUCTION



The Fog Reduction setting has 4 levels (OFF, LOW, MID, HIGH).

It provides the ability to reduce the I/R component (capture) of the image.

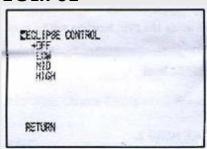
When activated it automatically sets

ECLIPSE to OFF and sets GAMMA to

0.45 (at least that's what the manual says, but I don't see it happening on the camera. I do turn Gamma to 0.45 is my software).

For Astronomy use: **Experiment**

ECLIPSE

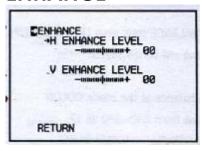


Eclipse acts like a coronagraph which tries to block out bright components on the image.

When activated FOG REDUCTION is automatically set to OFF and GAMMA is set to 0.45 (at least that's what the manual says, but I don't see it happening. I do turn Gamma to 0.45 in my software)

For Astronomy use: Optional

ENHANCE



Acts like APC (Advanced Pixel Control) on other cameras. It controls the amount of internal digital signal processing. If the values are too high, then the stars look too blocky or may have Halos around them. ENHANCE lets you manipulate sharpness and the rendering of fine detail. The effect is much like unsharp masking.

You can control either the horizontal or the vertical component of the pixel. The higher the level the more "blocky" the pixel looks.

For Astronomy use: Experiment

COLOR MENU (3/4)



COLOR MODE

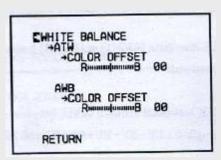


When set to ON the Signature will display Colour. When set to AUTO, you can adjust the AGC SUPPRESS Level. When set to OFF you get Black and White image but with subcarrier ON, also when you select MONO you will also obtain a Black and White image with subcarrier OFF.

A subcarrier carries more information.

For Astronomy use: Experiment

WHITE BALANCE



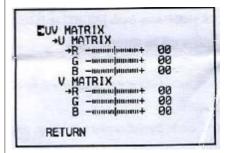
The Signature camera provides two type of White Balance control (adjusts colours depending upon seeing and brightness). Auto Trace White functions by detecting white color in the scene at a color temperature from 2500 to 8000 Kelvin.

The color temperature is being monitored continuously and the white balance is set automatically by internal controller.

Auto White Balance is a preset type function whereby white color in the scene is detected and white balance is automatically adjusted to image on screen, then the setting status is stored. It automatically memorizes the adjusted white balance value every time the AWB button is turned on

For Astronomy use: **Experiment**

UV MATRIX



The YUV model comprises *luminance* (Y) and two colour difference (U, V) components. The luminance can be computed as a weighted sum of red, green and blue components; the color difference, or *chrominance*, components are formed by subtracting luminance from blue and from red

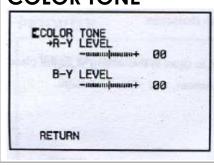
The UV representation of chrominance was chosen over straight Red and Blue signals because U and V are color difference signal. These settings allow you to adjust the colours difference values to help match the colours on the image to what they should be in the real world. For Astronomy use: **Experiment**

COLOR GAIN



This setting allows you to increase the colour saturation of the image on the screen.

COLOR TONE



Allows you to adjust the colour tone of the displayed images.

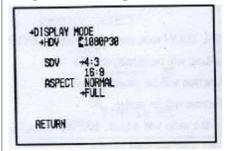
For Astronomy use: Experiment

The Red color difference signal is processed through R-Y and the Blue color difference signal is processed through B-Y Y holds the luminance value For Astronomy use: **Experiment**

SETUP MENU (4/4) (4/4) ECIAL PLACTION TIKE **LANGUAGE** Just in case English isn't your thing, your can choose Japanese, Traditional Chinese, or Simplified Chinese. RETURN For Astronomy use: Optional **TITLE** This setting allows you to create a small message that can appear either at the Top or Bottom of the screen. The message length is restricted to 24 characters. RETURN For Astronomy use: Optional **DEFAULT** Use this setting specifically to reset the Signature to its Factory settings. Comes in handy if you have messed up settings and have lost communications. Note: Camera ID is set to 000, which turns off RS485 communications. RETURN You can save a current set of settings in the camera and reload those settings when required. For Astronomy use: Optional

SPECIAL FUNCTIONS (1/2) SPECIAL PUNCTION (1/2) RETURN **PRIORITY** This allows you to prioritize the Signature's Sense UP capabilities. SLOW ESENS UP PRIORITY SHUTTER slows down all operations of SLOW SHUTTER the camera even the menu display and button response. Be patient when using this setting. RETURN For Astronomy use: Experiment **MOTION DETECT** This setting doesn't have a use (that I can think of in Astronomy. Not even included EMOTION DETECT in my software. TIME 10 SEC For Astronomy use: OFF **DIGITAL ZOOM** This setting allows you to zoom into a specific area of your screen. About a 4 DIGITAL ZOOM times zoom is available For Astronomy use: Experiment H/V REVERSE This setting allows you reverse either the Horizontal or the Vertical or even both Horizontal and Vertical image on the V-REYENE camera. RETURN For Astronomy use: Optional

DISPLAY MODE



These settings allow you to match the video output resolution to your capture device's (or monitor) input resolution:

720p60 @ 74.25MHz/16bit,

1080p30 @ 74.25MHz/16bit,

720p30 (A) @74.25MHz/16bit,

720p30 (B) @37.125MHz/16bit,

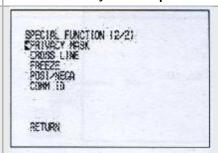
720p30 (C) @74.25MHz/8bit,

1080i60@74.25MHz/16bit

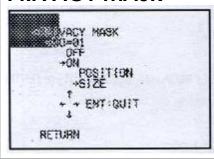
You can even adjust the aspect ratio on your image to better match your equipment.

For Astronomy use: Experiment

SPECIAL FUNCTIONS (1/2)

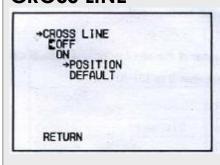


PRIVACY MASK



This setting allows you to black out certain areas of the screen.

CROSS LINE

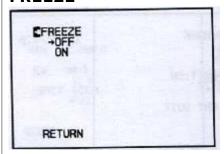


With this setting the Signature will draw a set of thin lines that cross. You can use this CROSS LINE to centre on a planet. You can adjust the cross lines up down left and right to match your requirements. Default puts them back to the centre after you have moved them.

For Astronomy use: **OPTIONAL**

For Astronomy use: **OFF**

FREEZE

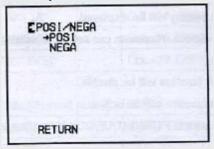


This setting when set to ON will freeze the image.

When set to OFF, real time image continues of the screen.

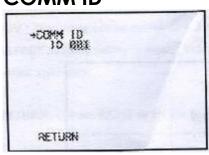
For Astronomy use: OPTIONAL

POSI/NEGA



This setting is used to invert the image colour-wise (black becomes white and white becomes black, and each colour switches to its complementary colour).

COMM ID



For Astronomy use: **OPTIONAL**This setting is used to set the communication ID for the Signature

camera. The Default is 000 which has no communications abilities. When set to any other ID (001 to 127) then it can communicate thru the RS485 port.

My software expects ID number 001. So if you are using the software "Buttons Control" then set the COMM ID to 001 For Astronomy use: **OPTIONAL**

Appendix B – Special Button Power Sequences

The Signature Camera has some Power Up sequences that will turn ON or OFF specific hardware features of the Camera. To activate the appropriate hardware features, just **HOLD DOWN** the appropriate button(s) on the back of the Signature when you **POWER UP** it up (Plug in the Power).



| Button | Function |
|--------|------------------------------|
| | Turns on NTSC Mode |
| UP | |
| | Turns on PAL Mode |
| RIGHT | |
| | Toggles CVBS activation |
| DOWN | Note: May require active SDI |
| | Toggles SDI activation |
| LEFT | |

| LEFT and DOWN | Cycles thru the activations of Video Ports: • All OFF • CVBS ON, SDI OFF • CVBS ON, SDI ON • CVBS OFF, SDI ON |
|---------------|--|
| CENTRE | Determines current Video settings on the Signature If both SDV and HDV are active then the camera will display something like this: > HDV DISPLAY 720p60 > SDV DISPLAY NTSC (16:9) > ASPECT NORMAL Note: When you release the Centre Button, Message will disappear. |

Appendix C – Trouble Shooting Procedures

| Problem | Solution |
|--|--|
| The Back LED doesn't light up | This is a power problem. Check that the power plug is completely inserted into the back of the Signature. That you have 12V and 1A of current from a correctly polarized AC to DC adapter. Ensure your 12V DC battery is charged. |
| No Video Image from any output port | Port(s) may be deactivated. • Hold both the LEFT and DOWN buttons on the back of the Signature and Power Up. This process cycles thru the activation of the ports. • See Appendix B |
| The OSD screen is frozen | Signature is lost trying to complete a task. • Have you activated SLOW SHUTTER, as this slows down the internal operations of the camera when looking at a dim object? If so, try looking at a brighter object |

| to get back response from the |
|--------------------------------|
| camera and deactivate SLOW |
| SHUTTER. |
| Power Down and then Power |
| Back UP |
| See Chapter 4 in SETUP MENU |
| about how to do a Factor Reset |
| |

Appendix D – Installing MCV

The MCV-1 and the MCV-1e both come nicely packed in its own see-through packaging. The installation procedures will be the same for either package. The following are the techniques I have used on 4 different computers (3 laptops and 1 desktop). Some are 32 bit and others are 64 bit, all run windows 7. I have not encountered any problems installing this way.



Do some pre-planning to minimize frustration that may occur when Windows gets a bit temperamental. I use both the Mallincam Xtreme and the Mallincam Signature exclusively with computer control, so I needed to assign one USB port for my video input (MCV) and another USB port for my serial cable (Belkin USB Serial cable). I even label which port is which on my lap-top (just in case I forget). I will always use the same port for each device, so that I will not have multiple versions of the drivers for multiple USB ports (you are just teasing the windows gods if you mix and match, and they will get even).

The MCV-1 and MCV-1e are heavy and depending upon your computer's manufacturer, the MCV may put some strain on the USB port. Therefore, I use a small 6" USB cable extender, and plug the extender into the USB port for and plug the MCV into the other end of the extender.



Open the Package

When you open the package you will find:

- > 1 mini CD
- 1 User's Manual
- MCV-1 (1e) Do not inset this into **USB port** until instructed
- Take the instruction booklet and the mini CD and place them on the table. If your computer cannot handle a mini CD (you cannot physically lock the CD into the centre hole of the CD drive), then you can down load the software by following the next step
- Go to the Mallincam website and download the latest drivers for the MCV device (see bottom of Web page):

http://www.mallincam.net/software-downloads.html

Step 2

Insert the MCV-1 or MCV-1e

Remember the USB port you choose for the MCV; you will always use this USB **port** for the **MCV**.

- The Windows will find new hardware and will attempt to load drivers. It will most likely fail on one driver. Don't worry that is why you have the driver installation software.
- Either insert the CD or run the program autorun.exe in the folder of the file you downloaded.
- When you see the green **USB 2.0 HD HV Grabber** screen, CLICK on the option: Install Drivers.



- You may receive a Windows warning asking you if you want to allow the installation to run, Click Yes.
- Follow the instructions on the Installation of USB Video/Audio Device **Driver** Wizard that is displayed on the desktop.
- The installation takes under a minute. Once complete, you will be presented with a notification windows, click Finish with the "Yes, I want to restart my computer now" option selected.
- The computer will restart. Login in as you normally would.
- You don't need to install any of the other files from the HD AV Grabber installer.

Step 3

Checking out the MCV-1 or MCV-1e

It is always a good idea to check out the **MCV-1e** to see if it is running correctly after you have done a first time installation.

- Start the **Image** software that you will using to display your Signature Video image such as: AmpCap, SharpCap, VirtualDub,..)
- In the Video Device menu, you should see a Video Source called "USB 2828x Device". This is the driver for either the MCV-1 or MCV-1e device.
 This is the one we want. Select it
- Power up your Signature, and you should be able to see the camera's images on the video window of your software.



Oh No, the video is not working correctly, strange stuff is happening and it is not my camera

After you have checked all of the obvious: Power to the Signature, Software (AMCAP) is pointing to the correct input device on the MCV (remember it has 2 connection types: RCA and SVIDEO).

 Down load the updated MCV-1 or MCV-1e driver from the Mallincam Software Links Site:

http://www.mallincam.net/software-downloads.html

Appendix E – Installing SDI Capture Devices

Blackmagic UltraStudio

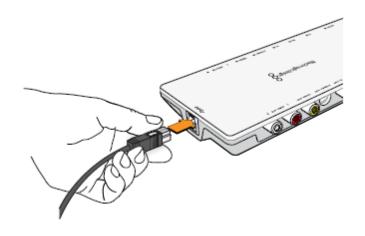
The first step in installing the Blackmagic UltraStudio to your computer is to attach the hardware to your computer.

Requirements:

- Compatible Computer with USB 3.0 Port
- Signature Camera
- Power Supply for signature Camera
- > Blackmagic UltraStudio SDI
- ➤ HD-SDI Video Cable (SD59-BB50 dual BNC connectors)
- ➤ USB 3.0 Cable

Procedure:

- Connect the SDI Video cable from the HD-SDI BNC connector on the back of the Signature Camera to the BNC input connect on the Blackmagic UltraStudio.
- Connect the USB 3.0 cable from the BlackMagic UltraStudio to a USB 3.0 Port on your computer.
- Power Up your Computer
- Power Up the Signature



After the UltraStudio has been connected to your computer it is now time to install the Blackmagic Drivers onto your computer.





Follow install prompts.



- Ensure you have the very latest driver. Visit www.blackmagicdesign.com/support
- Open the "Desktop Video" folder and launch the "Desktop Video" installer.
- 3. The drivers will now be installed on your system. An alert will appear: "Do you want to allow the following program to install software on this computer?" Click **Yes** to continue.
- 4. You will see a dialog bubble saying "found new hardware" and the hardware wizard will appear.

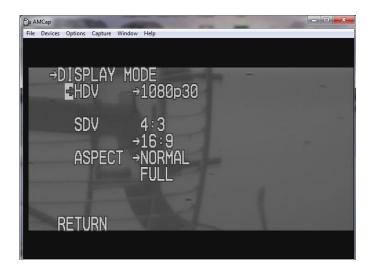
 Select "install automatically" and the system will find the required Desktop Video drivers. You will then receive another dialog bubble saying "your new hardware is ready for use."
- Now restart your computer to enable the new software drivers.

The Desktop Video software installer installs the following components:

- Blackmagic Desktop Video drivers
- •Blackmagic Design Control Panel
- Blackmagic Design LiveKey
- Blackmagic Media Express
- Blackmagic Multibridge Utility
- Blackmagic AVI and QuickTime™ codecs
- Blackmagic Disk Speed Test
- Adobe® Premiere Pro, After Effects, Photoshop presets and plug-ins
- Avid Media Composer 6.x plug-ins
- eyeon Fusion plug-ins



If this is the first time you are trying to connect the Signature to the UltraStudio, you will need to check and if necessary change the HD output to 1080p30. Connect your Signature using the Composite video port (Not the SDI HD) to your computer then using any video display capture software (AMCAP), hold the middle key on the Signature to obtain the menu, using the "Right Arrow" get to "Special Function (1/2)" Menu, Select it using "Middle Button". Using the down arrow, choose "Display Mode". Within "Display Mode", ensure that the "HDV" is set to "1080p30"

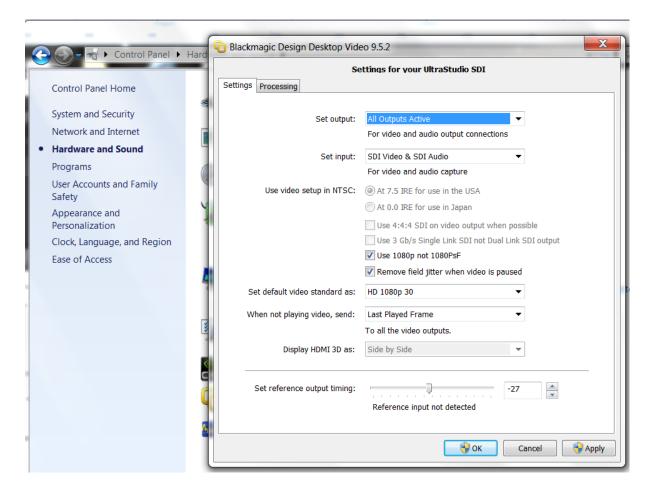


It is also worth your while to get the Signature working using the Standard composite BNC connection, It has "less" requirement in synching with other software. You can output both SDI and Composite at the same time. I use composite if I broadcast on NSN, and SDI if I save my images or just want to look at a higher resolution video for outreach purposes.

Note: I have found that Versions later than 9.5.2 of Blackmagic Design Desktop Video, use too much cpu cycle time for the Blackmagic Media Express to lock on, and you cannot obtain a video image with the Dell XPS Laptop. But, you can use the Blackmagic WDM to obtain an image with SharpCap or Virtual Dub (both have the capability to grab 1080p data. These two software packages are how I normally capture images from the UltraStudio.

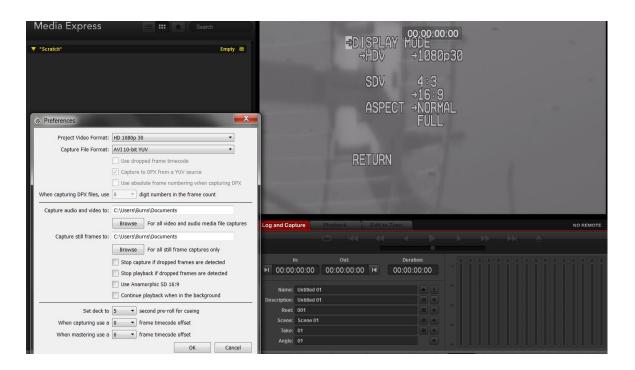
Getting SDI Video Images

- Step 1: Power up the Signature (LED light should shine, Mine is the RED LED version)
- Step 2: Power up the Computer
- Step 3: Activate the Windows "Control Panel"
- Step 4: Select "Hardware and Sound"
- **Step 5:** You should have a selection "Blackmagic Design Control Panel" near the bottom, select it
- **Step 6:** Match my settings as seen in picture below (Check "Use 1080p not 1080psf")



- Step 7: Select OK to accept these settings and close the "Control Panel"
- **Step 8:** Start the "Blackmagic Media Express" software
- Step 9: Under the "EDIT" tab, choose "Preferences"
- Step 10: In the "Project Video Format" Drop-Down, choose "HD1080p 30"

- Step 11: If you are going to save video you can change the "Capture File format" to "AVI 10 bit"
- **Step 12:** Match the settings I have below (you can always adjust them later, but ensure at 1080p 30)



You should be up and running.

Note have the "Blackmagic Media Express" selected to the "Log and Capture" Tab, this is the Video Display Window, the other tabs allow you to play videos that you have captured.

Using other Software

You can view the video with other software rather than the "Blackmagic Media Express". For example, using the SharpCap, select the camera to "Blackmagic WDM Capture". In the "Video Control Panel" of Sharpcap, ensure you have 25fps at 1920 x 1080. Remember it takes about 5 seconds or so before the image makes it to the screen (at lot of syncing going on here)

Note: sometime syncing is a problem, so with Sharpcap, if you do not see an image after a few seconds, change the frame rate, it may take a few selections until you obtain an image.

If you are using other software besides "Blackmagic Media Express" that software has to capture 1920 x 1080 otherwise, you will see only a zoomed portion of the actual screen. (I use the SharpCap software).





The crucial thing to remember when using SDI output, is that you need to match the output mode (say 1080p30) to the input mode of any hardware or software that is capturing the image.

Magewell SDI Dongle (XI100DUSB-SDI)

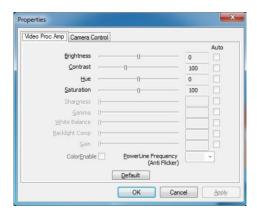


This product is plug-and-play, so all you need to do is plug in the dongle, it will install what it need automatically (like every USB device). Then you can use the product.

- Simply connect a SDI cable from the SDI port on the Mallincam to the SDI input on the Magewell.
- > Start your favourite piece of Video display software, like AMCAP
- ➤ Have AMCAP point to XI100DUSB-SDI Video

That's it.

If your Video Display software has a **Filter Output** or **Filter PIN**, then you can adjust the Brightness, Contrast, Hue, and Saturation.



Appendix F – RS485 Connection Options

This appendix includes the current list of compatible RS485 adapters that users have successfully connected to the Signature Camera.

US Converters RS485/422 cable converter Model Number XS890

This RS485/422 adapter can be purchased at the US Converters online website (http://www.usconverters.com/) for about \$40 US







USB to RS485/422 Cable

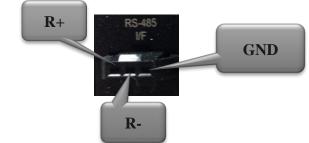
Screw Terminal Board

Rock's Signature Connector

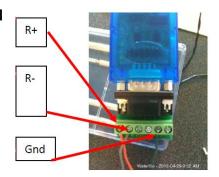
This is a high quality Plug-and-Play *USB to RS485 / RS422 converter* optimized for Windows 7 and Windows 8 but will also work perfectly fine with Windows 98, 2000, XP and Vista. The RS485 / RS422 end is a standard 9-pin D-sub connector with a **Screw Terminal Board** included for easy connection of cables from **Rock's RS485 Signature Connector**. The cable length is about 56" and can be extended via a USB extender cable at the USB end, or a set of longer wires between the **Screw Terminal Board** and **Rock's Signature Connector**.

Connecting Hardware

Attach Rock's Signature Connector to the Screw Terminal Board by matching R+, R- and GND.



Attach: Red (R+) wires to left (first) pin on **Screw Terminal Board**, Black (R-) wire to second pin on the **Screw Terminal Board**, and Yellow (GND) wire to 5th pin on the **Screw Terminal Board**.



Once attached, connect this combination to the **USB to RS485/422 Cable**. You should now have connection path

that allows you to attach one end to a USB Port on your computer and the other end to the RS-485 Port on the back of the Signature camera.

Installing Driver Software

Plug in the completed cable into a free USB Port on your computer. Windows should automatically download and install the correct drivers from internet that are needed to run this converter.



Once completed a message similar to the one below should appear.



Make note of the COM Port number that Windows assigns to your **USB to RS485/422 cable Adapter**, for this will be required by the software that controls the Signature.



Windows Operating system knows nothing about RS485, all it knows is that you have a USB device attached, and that this device is acting like a Serial Cable.

If Windows cannot load the drivers from the internet, then just follow the instructions that came with your RS485 adapter. There should be a CD that came with your **USB to RS485/422 Cable Adapter** that contains all of the necessary drivers. Better still, visit the website of the US Converters and download and install the latest drivers for your specific operating system.

US Converters RS232 -RS485 Converter Model Number XS201A

This RS232 adapter can be purchased at the US Converters online website (http://www.usconverters.com/) for about \$20 US, but you will need a USB to RS232 Adapter and RS232 Cable extender (Male-to-Female) of a length that meets your distance requirements. With this system, it is assumed that you already have a USB to RS232 Adapter installed, so no software installation is required.



USB to RS232 Adapter



RS232 Cable



US Converters
RS232 to RS485
Adapter



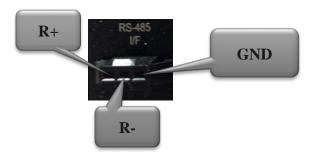
Rock's Signature
Connector

Connecting Hardware

This setup assumes that you already have an installed **USB to RS232 Adapter**. Then you only need to attach your Male-to-Female **RS232 Cable** (Serial cable) to your **USB to RS232 Adapter**. Now attach the **US Converters RS232 to RS485 converter** to the **RS232 Cable**.

Finally attach Rock's Signature Connector to the green Screw Terminal Board of the US Converters RS232 to RS485 Adapter.

When attaching Rock's Signature Connector to the Screw Terminal Board by matching R+, R- and GND.



Attach: Red (R+) wires to left (first) pin on **Screw Terminal Board**, Black (R-) wire to second pin on the **Screw Terminal Board**, and Yellow (GND) wire to 3rd pin on the **Screw Terminal Board**.

Once attached, you should now have connection path that allows you to attach one end to a USB Port on your computer and the other end to the RS-485 Port on the back of the Signature camera.



Windows Operating system knows nothing about RS485, all it knows is that you have a USB device attached and this device is acting like a Serial Cable.

Appendix G – Signature Setting Example Sheets

The following pages are due to the hard work of both **Steve Hempell** and **Jack Huerkamp**. I have included their worksheets and setting here:

| | | | Mallincam S | Signature Settings | | | |
|----------|--|-------------------|-------------|--|---------------|---------------------------|-------------|
| Object (| Observed: | | | Aperture, F ratio): | Monitor Type: | | |
| | | | | | Compute | r Config: | |
| MENU | | | Setting | Settings | | | |
| 1 OF 4 | LUMINANCE MEN | U 1 | On/Off/Auto | | Value | Telescope Acces | sories Etc. |
| | ALC | | | Luminance Level | | Filter(s) | |
| | | FLC | | | | | |
| | AES | | | Luminance Level | | Barlow | |
| | FIX SHUTTER | | | Shutter Speed | | | |
| | PEAK AVERAGE | | | Peak Mix Level | | Focal Reducer | |
| | BACK LIGHT | | | Area | | | |
| | XDR | | | Low/Med/ High | | Spacers | |
| | GAMMA | | | 1.0, 0.45, CRT, LCD | | · | |
| 2 OF 4 | LUMINANCE MEN | U 2 | | | _ | Other | |
| | AGC | AUTO | | Max Gain Level dB | | _ | |
| | | FIX | | Fix Gain Level dB | | | |
| | SLOW SHUTTER | | | Limit Time Sec | | | |
| | DNR | | | Low, Med, High | | Site type | |
| | DAY/NIGHT | | | Day, Night, Compl | | Site type | |
| | 3/11/11/0111 | AUTO | | Hold Time Sec | | Seeing | |
| | FOG REDUCTION | 1,1010 | | Low, Med, High | | Jeenig | |
| | ECLIPSE | | | Low, Med, High | | Transparency | |
| | SHARPNESS | | | Low, Wica, Filgi | | Transparency | |
| | ENHANCE | HDV | | Н | | See: http://www | V. |
| | 2111111102 | 1157 | | V | | Skyandtelescope.com// | |
| | SDV | | Н | | | Resources/darksky/3304013 | |
| | | | | V | | html for site type or | |
| 3 OF 4 | COLOR MENU | | | | <u>L</u> | See: http://www | v.astromax. |
| | COLOR MODE | | | Gain Control | | Org/faq/aa01fac | |
| | | AUTO | | AGC Suppress Level | | For seeing and | |
| | WHITE BALANCE | ATW | | Color Offset | | transparency | |
| | WITH BALFAIVEE | AWB | | Color Offset | | Notes: | |
| | UV MATRIX | V | | R | | 110103. | |
| | 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | • | | | |
| | | | | G | | | |
| | | | | G B | | + | |
| | | Н | | В | | | |
| | | Н | | B R | | | |
| | | Н | | В | | | |
| | COLOR GAIN | Н | | B R G | | | |
| | COLOR GAIN COLOR TONE | Н | | B R G B | | | |
| | | Н | | B R G G B Gain Control | | | |
| 4 OF 4 | COLOR TONE | H | | B R G G B Gain Control R-Y Level | | | |
| 4 OF 4 | COLOR TONE | Н | | B R G G B Gain Control R-Y Level | | | |
| 4 OF 4 | COLOR TONE SETUP MENU | Н | | B R G G B B Gain Control R-Y Level B-Y Level | | | |
| 4 OF 4 | COLOR TONE SETUP MENU SPECIAL FUNC 1 | H | | B R G G B Gain Control R-Y Level | | | |
| 4 OF 4 | SETUP MENU SPECIAL FUNC 1 PRIORITY | H | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER | | | |
| 4 OF 4 | SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | H | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL | | | |
| 4 OF 4 | SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT | H | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME | | | |
| 4 OF 4 | SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | HDV/SDV | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG | | | |
| 4 OF 4 | COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM | | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION | | | |
| 4 OF 4 | COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM | HDV/SDV | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | | | |
| 4 OF 4 | COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM DISPLAY MODE | HDV/SDV ASPECT | | B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | | | |

| | | | Mallincam S | Signature Settings | | | |
|----------|--|---|-------------|--|---|--|--------------|
| Mars | | | Orion XT-12 | | Speco | | |
| | | | | | Computer | · Config: | |
| MENU | | | Setting | Settings | | | |
| 1 OF 4 | LUMINANCE MENU 1 | | On/Off/Auto | | Value | Telescope Acce | ssories Etc. |
| | ALC | | Off | Luminance Level | | Filter(s) | IR |
| | | FLC | Off | | | | |
| | AES | | Off | Luminance Level | | Barlow | |
| | FIX SHUTTER | | 1/30 | Shutter Speed | | | |
| | PEAK AVERAGE | | Off | Peak Mix Level | | Focal Reducer | |
| | BACK LIGHT | | Off | Area | | | |
| | XDR | | Off | Low/Med/ High | | Spacers | |
| | GAMMA | | 1 | 1.0, 0.45, CRT, LCD | | | |
| 2 OF 4 | LUMINANCE MEN | U 2 | | | | Other | |
| | AGC | AUTO | | Max Gain Level dB | | 7 | |
| | | FIX | On | Fix Gain Level dB | 6 db | | |
| | SLOW SHUTTER | | Off | Limit Time Sec | | 1 | |
| | DNR | | Off | Low, Med, High | | Site type | home |
| | DAY/NIGHT | | Night | Day, Night, Compl | night | | |
| | , | AUTO | | Hold Time Sec | | Seeing | |
| | FOG REDUCTION | | Off | Low, Med, High | | | |
| | ECLIPSE | | Off | Low, Med, High | | Transparency | |
| | SHARPNESS | | | ,, 6 | | | |
| | ENHANCE | HDV | | Н | | See: http://ww | w. |
| | | | | V | | Skyandtelescope.com// Resources/darksky/330401 html for site type or | |
| | SDV | | | Н | | | |
| | | | | V | | | |
| 3 OF 4 | COLOR MENUL | | _ | - | _ | Care latter //www | |
| . | COLOR MENU | | | | | See: http://ww | w.astromax. |
| 3 3.1 4 | COLOR MODE | | On | Gain Control | | Org/faq/aa01fa | |
| 3 31 7 | | AUTO | On | Gain Control AGC Suppress Level | | Org/faq/aa01fa For seeing and | |
| 3 31 4 | COLOR MODE | | | AGC Suppress Level | | Org/faq/aa01fa | |
| 3 01 7 | | AUTO ATW AWB | On On | | | Org/faq/aa01fa For seeing and | |
| 3 01 7 | COLOR MODE | ATW | | AGC Suppress Level Color Offset | +104 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset | +104 | Org/faq/aa01fa For seeing and transparency | |
| 3 31 7 | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset R | | Org/faq/aa01fa For seeing and transparency | |
| 3 31 7 | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset R G | -105 | Org/faq/aa01fa For seeing and transparency | |
| 3 31 7 | COLOR MODE WHITE BALANCE | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B | -105 +34 | Org/faq/aa01fa For seeing and transparency | |
| 3 31 7 | COLOR MODE WHITE BALANCE | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B R | -105 +34 +127 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE | ATW AWB V | | AGC Suppress Level Color Offset R G B R G G | -105 +34 +127 +81 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC Suppress Level R Color Offset R G AGC Suppress Level | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN | ATW AWB V | | AGC Suppress Level Color Offset R G B R G G B R G G G B G G B G G B | -105 +34 +127 +81 -128 4 | Org/faq/aa01fa For seeing and transparency | |
| 4 OF 4 | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC Suppress Level R Color Offset R G AGC Suppress Level | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC Suppress Level R Color Offset R G AGC Suppress Level | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC Suppress Level R Color Offset R G AGC Suppress Level | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B R G B AGIN Control R-Y Level B-Y Level | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B R G B AGC, SLOW SHUTTER | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G G B AGC, SLOW SHUTTER AREA SENSE LEVEL | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | ATW AWB V | | AGC Suppress Level Color Offset R G B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM | ATW AWB V | | AGC Suppress Level Color Offset R G B R G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION | -105 +34 +127 +81 -128 4 15 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM | ATW AWB V H H H H H H H H H H H H H H H H H H | | AGC Suppress Level Color Offset R G B R G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | -105 +34 +127 +81 -128 4 15 10 | Org/faq/aa01fa For seeing and transparency | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM DISPLAY MODE | ATW AWB V H H H H H H H H H H H H H H H H H H | | AGC Suppress Level Color Offset R G B R G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | -105 +34 +127 +81 -128 4 15 10 | Org/faq/aa01fa For seeing and transparency | |

| | | | Mallincam S | Signature Settings | | | | |
|---------|--|---|-----------------------------|--|--|--|--|--|
| JUPITER | ₹ | | | escope (Aperture, F ratio): LX 200 | | Monitor Type: COMPUTER LCD & CRT | | |
| | | | 14" F10 Camera@ Prime Focus | | Computer Config: ROXIO EASY VHS TO | | | |
| MENU | | | Setting | Settings | DVD | | | |
| 1 OF 4 | LUMINANCE MENU 1 | | On/Off/Auto | | Value | Telescope Acce | ssories Etc. | |
| | ALC | | Off | Luminance Level | | Filter(s) | IR | |
| | | FLC | Off | | | · · · | | |
| | AES | | Off | Luminance Level | | Barlow | | |
| | FIX SHUTTER | | On | Shutter Speed | 1/30 | | | |
| | PEAK AVERAGE | | Off | Peak Mix Level | , | Focal Reducer | | |
| | BACK LIGHT | | Off | Area | | | | |
| | XDR | | Off | Low/Med/ High | | Spacers | | |
| | GAMMA | | 1 | 1.0, 0.45, CRT, LCD | CRT | · | | |
| 2 OF 4 | LUMINANCE MEI | NU 2 | | | | Other | • | |
| | AGC | AUTO | | Max Gain Level dB | | 7 | | |
| | | FIX | On | Fix Gain Level dB | 8 db | | | |
| | SLOW SHUTTER | | Off | Limit Time Sec | | | | |
| | DNR | | Off | Low, Med, High | | Site type | home | |
| | DAY/NIGHT | | Night | Day, Night, Compl | Day | / | | |
| | | AUTO | | Hold Time Sec | , | Seeing | 4 | |
| | FOG REDUCTION | | Off | Low, Med, High | | | | |
| | ECLIPSE | | Off | Low, Med, High | | Transparency | 4 | |
| | SHARPNESS | | On | , , , | | , , | | |
| | ENHANCE | HDV | | Н | -35 | See: http://ww | w. | |
| | | | - | V | | Skyandtelescope.com// Resources/darksky/3304011 | | |
| | | SDV | Н | | +50 | | | |
| | | | | V | +50 | html for site ty | pe or | |
| 3 OF 4 | COLOR MENU | | _ | | _ | | | |
| 3 UF 4 | COLOR MENU | | | | | See: http://ww | w.astromax. | |
| 5 UF 4 | COLOR MENU COLOR MODE | | On | Gain Control | | Org/faq/aa01fa | | |
| 3 UF 4 | | AUTO | On | Gain Control AGC Suppress Level | | Org/faq/aa01fa For seeing and | | |
| 3 UF 4 | | AUTO | On On | | 00 | Org/faq/aa01fa | | |
| 3 UF 4 | COLOR MODE | | | AGC Suppress Level | 00 | Org/faq/aa01fa For seeing and | | |
| 3 UF 4 | COLOR MODE | ATW | | AGC Suppress Level Color Offset | 00 | Org/faq/aa01fa For seeing and transparency | | |
| S UF 4 | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset | | Org/faq/aa01fa For seeing and transparency | q14.htm | |
| 3 UF 4 | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset R | 0 | Org/faq/aa01fa For seeing and transparency Notes: | q14.htm | |
| S UF 4 | COLOR MODE WHITE BALANCE | ATW AWB | | AGC Suppress Level Color Offset Color Offset R G | 0 | Org/faq/aa01fa For seeing and transparency Notes: Using same set | q14.htm tings Speco | |
| 3 UF 4 | COLOR MODE WHITE BALANCE | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B | 0 0 0 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray | q14.htm tings Speco | |
| S UF 4 | COLOR MODE WHITE BALANCE | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B R | 0 0 0 0 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with two bands Same settings of | tings Speco ish o dark gray | |
| S UF 4 | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B R G B R G G G B G G B G G B | 0 0 0 0 0 0 0 0 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car bac | tings Speco ish o dark gray | |
| S UF 4 | COLOR MODE WHITE BALANCE UV MATRIX | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC B | 0 0 0 0 0 0 0 -13 -35 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car back Monitor showe | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp | |
| S UF 4 | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN | ATW AWB V | | AGC Suppress Level Color Offset Color Offset R G B R G B R G G G B G G B G G B | 0 0 0 0 0 0 0 0 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car bac | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp | |
| 4 OF 4 | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC B | 0 0 0 0 0 0 0 -13 -35 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car back Monitor showe | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC B | 0 0 0 0 0 0 0 -13 -35 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car bac Monitor showe Jupiter with dar | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU | ATW AWB V | | AGC Suppress Level Color Offset R G B R G B G AGC B | 0 0 0 0 0 0 0 -13 -35 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings con 2.5" car back Monitor showed Jupiter with daid (better viewing) | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 | ATW AWB V H | | AGC Suppress Level Color Offset R G B R G B R G B AGC Suppress Level R Color Offset R B B Color Offset R R Color Offset R Color Offset R R C | 0 0 0 0 0 0 -13 -35 -25 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car bac Monitor showe Jupiter with dar (better viewing Above) | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY | ATW AWB V H | On | AGC Suppress Level Color Offset R G B R G B G B G AGC, SLOW SHUTTER | 0 0 0 0 0 0 -13 -35 -25 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car bac Monitor showe Jupiter with dar (better viewing Above) On night with b | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT | ATW AWB V H | On | AGC Suppress Level Color Offset R R G B R G B G AGC B G AGC, SLOW SHUTTER AREA SENSE LEVEL | 0 0 0 0 0 0 -13 -35 -25 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car back Monitor showed Jupiter with dare (better viewing Above) On night with be On ETX 125 showed processing the settings of the second processing the secon | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | ATW AWB V H | On | AGC Suppress Level Color Offset R G B R G B G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME | 0 0 0 0 0 0 -13 -35 -25 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with two bands Same settings of On 2.5" car bace Monitor showe Jupiter with dark (better viewing Above) On night with book On ETX 125 shows Fuzzy Jupiter, non computer sees Syntek DC-112. | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY | ATW AWB V H H H H H H H H H H H H H H H H H H | On | AGC Suppress Level Color Offset R G B R G B G B Gain Control R-Y Level B-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | 0 0 0 0 0 0 -13 -35 -25 AGC | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with tw bands Same settings of On 2.5" car back Monitor showed Jupiter with dare (better viewing Above) On night with be On ETX 125 showed processing the settings of the second processing the secon | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM DISPLAY MODE | ATW AWB V H H H H H H H H H H H H H H H H H H | On | AGC Suppress Level Color Offset R G B R G B G G B G G B G AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION | 0 0 0 0 0 0 -13 -35 -25 | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with two bands Same settings of On 2.5" car bace Monitor showe Jupiter with dark (better viewing Above) On night with book On ETX 125 shows Fuzzy Jupiter, non computer sees Syntek DC-112. | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM | ATW AWB V H H H H H H C H H C C C C C C C C C C | On | AGC Suppress Level Color Offset R G B R G B G G B Gain Control R-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 NORMAL/FULL | 0 0 0 0 0 0 -13 -35 -25 AGC | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with two bands Same settings of On 2.5" car bace Monitor showe Jupiter with dark (better viewing Above) On night with book On ETX 125 shows Fuzzy Jupiter, non computer sees Syntek DC-112. | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using | |
| | COLOR MODE WHITE BALANCE UV MATRIX COLOR GAIN COLOR TONE SETUP MENU SPECIAL FUNC 1 PRIORITY MOTION DETECT DISPLAY DIGITAL ZOOM DISPLAY MODE | ATW AWB V H H H H H H H H H H H H H H H H H H | On | AGC Suppress Level Color Offset R G B R G B G B Gain Control R-Y Level B-Y Level B-Y Level AGC, SLOW SHUTTER AREA SENSE LEVEL TIME MAG POSITION 720P60 ETC/ 4:3, 16:9 | 0 0 0 0 0 0 -13 -35 -25 AGC | Org/faq/aa01fa For seeing and transparency Notes: Using same set 9" showed gray Jupiter with two bands Same settings of On 2.5" car bace Monitor showe Jupiter with dark (better viewing Above) On night with book On ETX 125 shows Fuzzy Jupiter, non computer sees Syntek DC-112. | tings Speco ish o dark gray on ETX 125 kup LCD HR d gray sharp k gray bands. night than ad viewing owed blueish o bands creen using X and | |

| Object Observed Monitor Telescope/Aperture Computer MENU PLANETARY LUNAR SOLAR DSO 1 OF 4 LUMINANCE MENU 1 ALC AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 ACC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MODE WHITE BALANCE UV MATRIX - H COLOR GAIN COLOR TONE B-Y UV MATRIX - H COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK TELESCOPE ACCESSORIES ELC. | | MA | LLINCAM SIG | NATURE SETT | INGS | |
|--|-----------|--------------------|-------------|-------------|-------|-----|
| MENU PLANETARY LUNAR SOLAR DSO 1 OF 4 LUMINANCE MENU 1 ALC AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 ASC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE SHARPNESS ENHANCE UV MATRIX - V UV MATRIX - H COLOR MODE WHITE BALANCE UV MATRIX - H COLOR TONE R-Y COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | Object Observed | | Monitor | | |
| 1 OF 4 LUMINANCE MENU 1 ALC AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE R-Y COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | Telescope/Aperture | | Computer | | |
| 1 OF 4 LUMINANCE MENU 1 ALC AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE R-Y COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | | | | | |
| ALC AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE B-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 FRIGRITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | MENU | | PLANETARY | LUNAR | SOLAR | DSO |
| AES FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE B-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | 1 OF 4 | LUMINANCE MENU 1 | | | | |
| FIX SHUTTER PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE B-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | ALC | | | | |
| PEAK AVERAGE BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE SHARPNESS ENHANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE B-Y COLOR TONE B-Y TOLOR TONE B-Y A OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | AES | | | | |
| BACK LIGHT XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | FIX SHUTTER | | | | |
| XDR GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | PEAK AVERAGE | | | | |
| GAMMA 2 OF 4 LUMINANCE MENU 2 AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE B-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | BACK LIGHT | | | | |
| AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | XDR | | | | |
| AGC SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | GAMMA | | | | |
| SLOW SHUTTER DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | 2 OF 4 | LUMINANCE MENU 2 | | | | |
| DNR DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | AGC | | | | |
| DAY/NIGHT FOR REDUCTION ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | SLOW SHUTTER | | | | |
| FOR REDUCTION ECLIPSE SHARPNESS ENHANCE OLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | DNR | | | | |
| ECLIPSE SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | DAY/NIGHT | | | | |
| SHARPNESS ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | FOR REDUCTION | | | | |
| ENHANCE 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | ECLIPSE | | | | |
| 3 OF 4 COLOR MENU COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | SHARPNESS | | | | |
| COLOR MODE WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | ENHANCE | | | | |
| WHITE BALANCE UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | 3 OF 4 | COLOR MENU | | | | |
| UV MATRIX - V UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | COLOR MODE | | | | |
| UV MATRIX - H COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | WHITE BALANCE | | | | |
| COLOR GAIN COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | UV MATRIX - V | | | | |
| COLOR TONE R-Y COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | UV MATRIX - H | | | | |
| COLOR TONE B-Y 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | COLOR GAIN | | | | |
| 4 OF 4 SETUP MENU SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | COLOR TONE R-Y | | | | |
| SPECIAL FUNCTION 1 PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | COLOR TONE B-Y | | | | |
| PRIORITY MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | 4 OF 4 | SETUP MENU | | | | |
| MOTION DETECT DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | SPECIAL FUNCTION 1 | | | | |
| DIGITAL ZOOM H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | PRIORITY | | | | |
| H/V REVERSE DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | MOTION DETECT | | | | |
| DISPLAY MODE SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | DIGITAL ZOOM | | | | |
| SPECIAL FUNCTION 2 PRIVACY MASK Telescope Accessories Etc. | | H/V REVERSE | | | | |
| PRIVACY MASK Telescope Accessories Etc. | | DISPLAY MODE | | | | |
| Telescope Accessories Etc. | | SPECIAL FUNCTION 2 | | | | |
| | | PRIVACY MASK | | | | |
| | Telescope | Accessories Etc. | | | | |
| Filter(s) Notes: | Filter(s) | | Notes: | | | |

| | MA | LLINCAM SIGN | NATURE SET | TINGS | |
|-----------|--------------------|-----------------------|------------|-----------------------|-----|
| | Object Observed | Jupiter | Monitor | | |
| | Telescope/Aperture | | Computer | | |
| | | | | | |
| MENU | | PLANETARY | LUNAR | SOLAR | DSO |
| 1 OF 4 | LUMINANCE MENU 1 | | | | |
| | ALC | OFF | | OFF | |
| | AES | ON | | OFF | |
| | FIX SHUTTER | OFF | | 1/180 | |
| | PEAK AVERAGE | OFF | | OFF | |
| | BACK LIGHT | OFF | | OFF | |
| | XDR | OFF | | OFF | |
| | GAMMA | 0.45 | | 1 | |
| 2 OF 4 | LUMINANCE MENU 2 | | | | |
| | AGC | AUTO | | FIX 8dB | |
| | SLOW SHUTTER | OFF | | OFF | |
| | DNR | HIGH | | OFF | |
| | DAY/NIGHT | DAY | | DAY | |
| | FOR REDUCTION | OFF | | OFF | |
| | ECLIPSE | OFF | | OFF | |
| | SHARPNESS | ON | | ON | |
| | ENHANCE | H+30 V+30 | | | |
| 3 OF 4 | COLOR MENU | | | | |
| | COLOR MODE | AUTO | | ON | |
| | WHITE BALANCE | ATW | | ATW | |
| | UV MATRIX - V | 0-0-0 | | R-128,G- 128,B+128 | |
| | UV MATRIX - H | 0-0-0 | | R-128,G- 128,B+128 | |
| | COLOR GAIN | 0 | | | |
| | COLOR TONE R-Y | 0 | | | |
| | COLOR TONE B-Y | 0 | | | |
| 4 OF 4 | SETUP MENU | | | | |
| | SPECIAL FUNCTION 1 | | | | |
| | PRIORITY | AGC | | AGC | |
| | MOTION DETECT | OFF | | OFF | |
| | DIGITAL ZOOM | OFF | | OFF | |
| | H/V REVERSE | OFF | | OFF | |
| | DISPLAY MODE | 720p50,4:3 ,NORMAL | | 720P50,4:3, NORMAL | |
| | SPECIAL FUNCTION 2 | | | | |
| | PRIVACY MASK | OFF | | | |
| Telescope | Accessories Etc. | | | | |
| Filter(s) | | Notes: | | | |

| Appendix H – Notes | | |
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