All Sky Camera

[Version 1.0]
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[All Sky User Manual]

This document will introduce you to the wonders of the MallinCam All Sky Camera. It will include instructions on how to connect the All Sky to your computer along with explanations of the camera's various settings. Imaging techniques with the various hardware and software options will be covered along with how to broadcast the output of the All Sky camera on the Internet. The standard Composite 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 All Sky Video camera, which will introduce you to the amazing field of Real Time All Sky video imaging and broadcasting.

Revision History

Version	Date	Revision Description
1.0	10/11/2014	Template Creation and All Sky Wired

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1. Introduction

Welcome to the world imaging with the MallinCam All Sky Camera, a new innovative designed camera that provides you a live video view of the entire sky. Made by MALLINCAM, the main dome is multicoated and is UV protected against turning yellow and provides a clear view of the sky rain or shine, **24 hours** per day, **7 days** per week, **365 days** of the year all from the comfort of your living room.

The Mallincam All Sky Camera features a 5 way adjustable waterproof key adapter to navigate through the camera's zero confusing menu system allowing you to make adjustments of the video camera. The All Sky Camera also allows Extended Exposure to be set automatically from Day to Night thus proving live full colour video without you having to adjust any settings on the camera.

Using the latest plastic CCD sensor from Sony, the Super HAD II 1/3" size sensor has zero amp glow, and the camera is fully equipped with a built-in "no hot pixel" removal software, offering unsurpassed image clarity day or night.

Your purchase will provide you with years of discovery and adventure as you view, record, share, and broadcast the wonders of the entire Night or Day Sky. The Mallincam All Sky Camera captures images that range from brighter Deep Sky Objects to local Solar System favorites, from Meteors to Satellites, from Aurora to Lightning this camera does it all and in near Real Time. You will discover that this camera can be used in urban skies where light pollution normally prevents you from viewing images the sky, to rural locations where you can pull out even those faintest celestial wonders; this camera can do it all.

The All Sky Camera requires no software to install, you simply need only to mount the camera, attached the video out to a monitor or your computer and then then power-up the All Sky and enjoy the view the camera provides. If you have video capture software, you can even record your adventure and take snapshots or even broadcast live to the world 24 hours per every day of the year, it's up to you.

This manual is the work of the MallinCam All Sky users before me. I have borrowed their ideas and even some of their documents and have placed them in the manual so that we have everything is in one place. Special thanks to **Jack Huerkamp** for all the preliminary work he has done with this camera.

So thank you for your purchase, and let the adventure begin

The Contents of the All Sky Package

Depending upon the All Sky Model purchased, the contents may vary, but all All Sky Deluxe cameras include the following standard equipment:

MallinCam All Sky Deluxe Package:

  ➢ All Sky camera body fully enclosed in a metal jacket with a Lexan Dome
  ➢ 10 meter (32 feet) video/power cable
  ➢ 120 Volts AC to 12 Volts DC regulated power supply
  ➢ BNC to RCA adapter

These attachments will provide you with the ability to connect the All Sky Video camera to your telescope, power it using to a 120V AC power source, and displaying your image on any device that accepts analog video via a composite connection. The optional cables will allow you to control the All Sky either through your computer. See the **Appendix** for a list of other accessories available for the All Sky Camera.

The Camera (Just the Facts)

The MallinCam All Sky Camera is a video camera that provides near Real Time images of brighter Deep Sky Objects, Planetary, Lunar, and Solar. This instrument contains the following specifications:

| Model	All Sky
Image Sensor	Sony ICX638BKA HAD II plastic
CCD Pixels:	768 (H) × 494 (V) effective pixels 6.35µm (H) × 7.40µm (V) Pixel size
CCD Size:	1/3" , 5.59mm (H) × 4.68mm (V)
Video Output Format:	NTSC or PAL
Composite Video	BNC Female Connector, with RCA adapter
Gain Control:	Auto/Manual
Exposure Control:	Auto/Manual
Auto Iris:	AES (Rolling Shutter), ALC
Fix Shutter (seconds)	1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000
Extended Shutter (seconds)	1/32s, 1/16s, 1/8s, 1/4s, 1/2s, 1s, 2.1s, 4.2s, 8.4s, 17s
Gamma Selection	0.45 / 0.6 / 1.0
User Gamma	0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90. 0.95, 1.00
White Balance	-Automatic White Compensation Control (AWC) -Auto Trace White Balance Control (ATW) -Manual
Communication Protocol	None
Operating Temperature	-30ºC to 60ºC (-22ºF to 140ºF)
Power Supply	12±1V DC at 1A
Dimensions	2.5 Inch tall, 3.68 inch wide (63.5 mm X 93.5 mm)
Weight	10.5 Ounces (300 grams)

The Camera (its Anatomy)

The Mallincam All Sky camera is a circular based camera with a transparent dome on top. It has a radius of 3.68" and is 2.5" tall. The camera weighs in at about 11.5 ounces (300 grams).

2. Making Connections

The All Sky Camera (Connection Diagram)

|	
1	Video Out (BNC)
2	12V Power in (12V)
3	Control Adapter
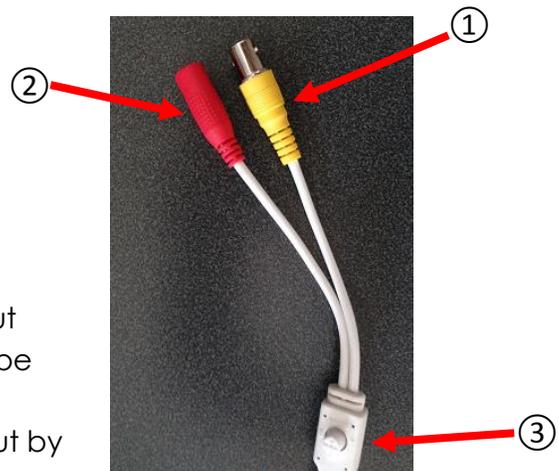
Connecting All Sky to Monitor

The MallinCam All Sky provides a BNC Video-Out Adapter (yellow) that allow the video signal to be distributed to Video monitors. This Video-Out Adapter provides standard Composite video out by the BNC connector on the back of the All Sky (*1 on the above Connection Diagram*).

Composite Video

The Composite Signal is obtained by connecting the included 10m MallinCam Video Cable from the Video-Out adapter of the All Sky to the Composite Video-In Adapter on your monitor (*since in most monitors, the Composite Video-In connector is a RCA style, MallinCam provides a BNC to RCA adapter to facilitated that connection*).

To connect, just align the two little openings on the BNC cable (*male*) with the two notches on the adapter's BNC (*female*) connector, push and twist so the notches slide into place. This locks the connector to the All Sky cable.
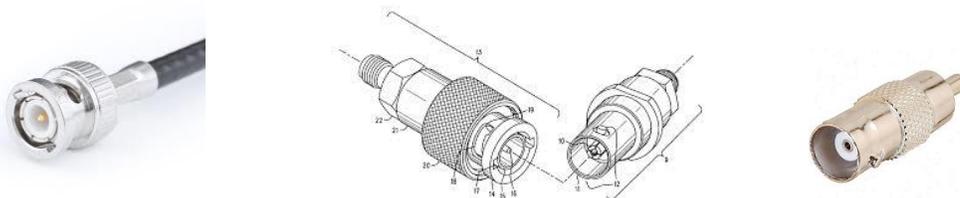
Power

The All Sky or All Sky Wired requires 12V 1amp power either from an AC to DC converter or 12V DC power supply. Just connect power adapter into to Power In port on the back of the All Sky or into the RED Power In connecter on the end of the 10m cable on the All Sky Wired.

Connecting the All Sky to your Computer for Video

Requirements:

> ➢ Computer with video display software such as AMCAP.
> ➢ USB Video capture adapter such as MallinCam MCV.
> ➢ Mallincam dual power/video cable.
> ➢ All Sky AC to DC power adapter.
> ➢ All Sky camera.

Software Requirements:

You will need any software package that can display an image from your video capture device. Some suggestions are:

- AMCAP
- SharpCap
- SplitCam
- ManyCam
- WebCamMax

Each software has its pros and cons, depending upon what you require the software do. Using SplitCam, ManyCam, or WebCamMax will make it easier to broadcast your images on Night Skies Network (see section **Connecting the Night Skies Network (NSN)**) if that will be a direction you are thinking of taking.

Hardware Requirements

> ➢ A **USB Video Capture Device**, such as MallinCam's **MCV.** This device will allow the output from the All Sky (composite) to be captured and displayed by the software (see **Installing the MCV** in Appendix).

Attaching the Video Cable to All Sky Camera

Now you attach the All Sky 10m composite cable (**RCA** adapter attached) to the USB Video Capture Device (**MCV**) that you are using for video input and attach the other end of the 10m cable to the Yellow connecter (**BNC**) on the All Sky Camera to allow for capture of the video signal.

To USB Port on Computer

Now all we need to do is start the video display software of your choice to display the image. Remember what ever software choice you made to display the image from the All Sky Camera, it will have an option that allows you to choose the Video Capture Adapter's driver (**x2828** for **MCV**). Once you chosen the driver, you should now see an image of what the All Sky Camera is capturing in the video window of your software.
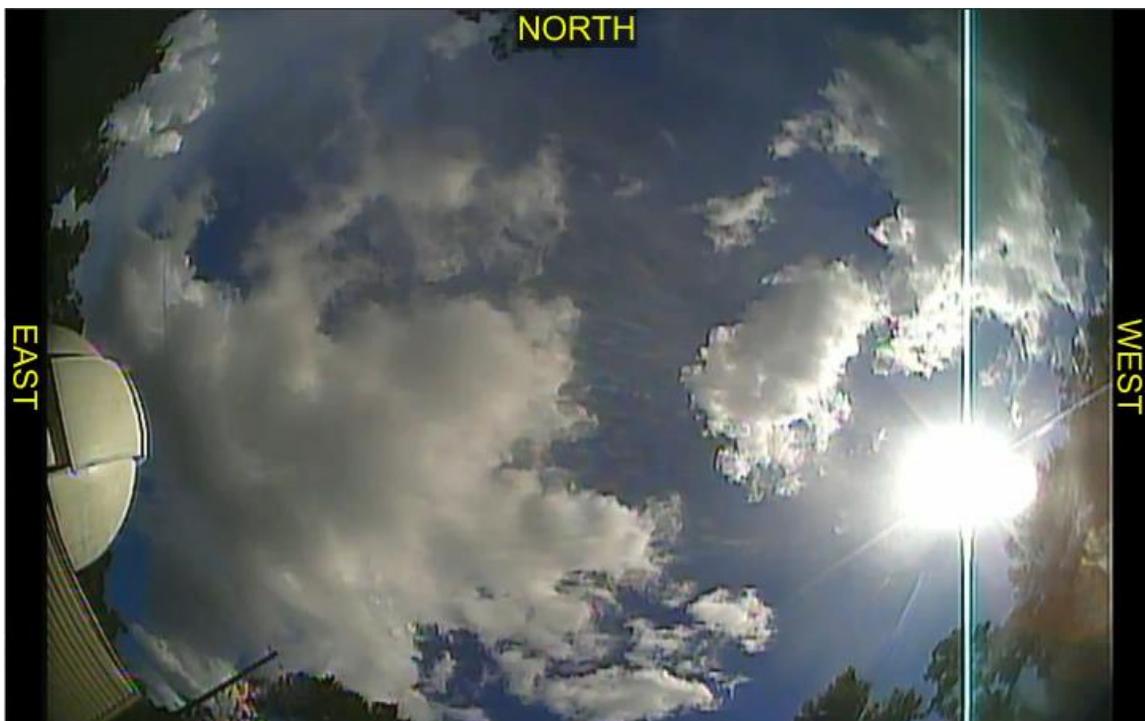
(The NORTH, EAST, WEST notations are part of a video display window)

Checking out the All Sky for the First Time (Day Time)

Now is the time to do a quick check of the All Sky Camera to see if you can obtain a video signal. This walk through assumes you have a monitor with a Composite input capabilities (*or a Laptop with a Video Capture Device attached and configured along with Video Display Software*). Place your All Sky Camera on a flat platform so that the Dome is facing upwards and power up your All Sky Camera and monitor (start your Video Display Software if you are using a Computer). It is best to check out your All Sky Camera in the daytime, so you can more easily check out the connections.

> The **All SKY Camera** Menu changes will revert back to the last time you saved the settings. That is, when the **On Screen Menu** turns off (after 60 seconds), the control settings will revert back. To save the new settings you will have to choose **SAVE&EXIT** from the main **EXIT** icon

You should now be seeing a circular image inside the square window of your display. The panorama may be too bright or too dim, but don't worry as this is normal since we have not yet adjusted the settings for the camera.

Press and release the **Centre Button** (③ *on the* **Connection Diagram**) on the All Sky Camera's white cable. If everything is connected and powered correctly, you should see the camera's **On Screen Menu** pop-up on top of your image with **EXPOSURE** Highlighted.

> Note: There are two ways of fine tuning the brightness of the image. The first is using the All Sky Camera Menu settings, and the second is using the brightness and contrast controls on your monitor (or software controls in your video capture software) the camera. I would start with your monitor and make any adjustments to the brightness of the image if necessary.

With the **EXPOSURE** selection highlighted (icon is blue), press the **Centre button** on the All Sky Camera control adapter and the camera will display the Exposure Settings. We will learn how to move through the menu system to adjust the **Brightness** and **Exposure** settings. The **Button Adapter** has a **Centre Knob** which when pressed **inwards** acts as a center key. You can move this Knob **left**, **right**, **up**, and **down** to move he highlighted regions on the Display to select another option.


The highlighted option will indicate what you can adjust with the **Knob** (**Control Button**). The arrow key choices will appear after the option's current vale. For example: in the last image, the **LENS** setting says **ELC**, and it has a **DOWN LEFT CURVY** arrow after it. This indicates you can change the **EXPOSURE** settings by either pressing the **CENTRE** button (which indicates there is a sub-menu in that setting that you can access by hitting the **CENTRE button**) or the pressing **LEFT** or **RIGHT** on the button to scroll through other options. For our example on **LENS,** if **ELC** was selected then pressing the **RIGHT button** will change its value to **DC**, and pressing it again goes to the next option (which in this control is back to **ELC**). This way you can use the **LEFT button** to go back to the **ELC** setting or press the **RIGHT button** to go to the next value. If you pressed the **CENTRE button** when **ELC** was selected, the second menu will appear that will allow you to adjust the ELC parameters.

Now we want to adjust the **BRIGHTNESS** of the image from the camera's control. This is located inside the **ELC Menu**, so with **ELC** highlighted on the **LENS Menu**, press inward with the **Control Button** to take us into the **LENS-ELC Menu** subsystem. You should be presented with a set of options that look something like the ones on the right. Press **DOWN** on the **Control Button** to select **BRIGHT** (it will now be highlighted in Blue), then press **LEFT** or **RIGHT** on the **Control Button** to adjust the values of the Brightness. Notice how the brightness of the image increases are the number goes up.

Once finished with adjusting the brightness, it is time to return back to the **Exposure Menu**. Using the **DOWN** button, select the **RETURN** option and press the **CENTRE** button to close the **LENS-ELC** settings Menu (the screen will now return back up to the previous **EXPOSURE** Menu system).
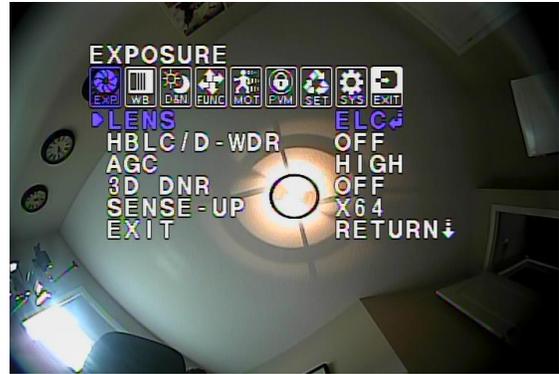
Since the above example just changes the **brightness** value from the camera, there is another way to adjust the brightness, and that is by controlling the actual **exposure setting** on the All Sky Camera. To do this, we will turns off the automatic exposure control of the camera and turn it to manual, and then we can have some fun adjusting the values to see how it affects our image.

From the current **EXPOSURE Menu** with **LENS** highlighted, press **inwards** on the **Control Button** to again go into the **LENS Sub Menu**. With the **E. SHUTTER** control heighted (it should say **AUTO**). Press the **Control Button** to the **RIGHT** and its value should change to **1/60**. The image brightness will also change as we have just told the camera to use 1/60 of a second exposure. Press **LEFT** or **RIGHT** on the **Control Button** to change the exposure (don't forget to watch your screen to see how the brightness is affected). When finished experimenting, return the **E. SHUTTER** value back to **AUTO** and return back to the **Main EXPOSURE Menu** by selecting **RETURN** and activating the control by pressing **INWARD** on the **Control Button**.

When imaging day time objects, sometimes a bright object may over-power the rest of the image. The All Sky Camera has settings that allow you to help correct or enhance the image from the background.

From the **Exposure Menu**, select the **HBLC/D –WRD** control. The setting for this control should say **OFF**. Press **RIGHT** on the **Control Button** and the setting should change to **BLC**. Notice how the image changes on your monitor. Press **RIGHT** on the **Control Button** again and the control setting should say **HLI**. Again notice the change in the image on the screen. Pressing **RIGHT** on the **Control Button** once more will turn the **HBLC/D –WRD** control back to **OFF**. Compare the image on the left with the two images below to see how this control adjusts the background brightness when encountering a bright object.
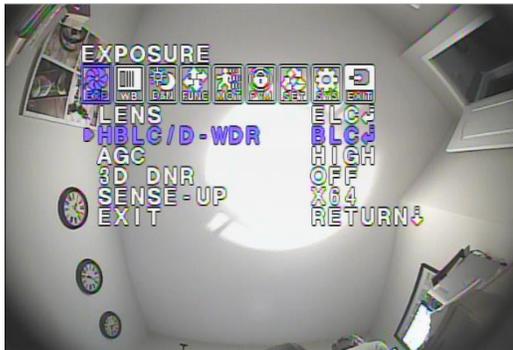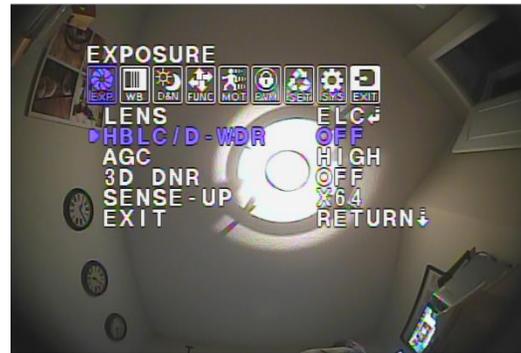
We have experimented with a few different ways to adjust the image on the screen. Now it is time to save the new settings and exit from the On Screen Menu. With the **Main Icons** of the screen push **LEFT** or **RIGHT** on the **Control Button** to select **EXIT** icon. Press **INWARD** on the **Control Button** to display the **EXIT Menu**.

Press **DOWN** on the **Control Button** to select **SAVE&EXIT**. Press **INWARD** on the **Control Button** to activate the control. The Menu will turn off (you may see the word **DONE** flash quickly at the bottom of the screen) and the current settings will be saved on the camera for the next time you use the camera.

If you select the EXIT rather than the SAVE&EXIT, the ICON menu will shut down, but the All Sky Camera will reset itself to the last saved settings.

These settings are just a starting point for your observations and you can adjust the settings to match both your equipment and seeing conditions. The next step in your learning should be to read the OSD MENU Chapter in this manual to get an understanding what the settings do and how they react to each other. This will save you hours of frustration when you are just adjusting the setting to try to improve your image.

> If you do not press any of the buttons on the All Sky for about 3 minutes, the ICON menu will turn off, and the camera will return to the last SAVED settings.

3. Operating the All Sky

The MallinCam All Sky is an imaging camera whose capabilities are in the hands of the user. As you will discover, when you become more confident with the camera, that your images will be the result of the combination both artistic prowess and scientific skill. Both of these attributes will become enhanced as your journey progresses and suggestions and advice from fellow explorers sharpen your skills and enrich your adventure.

One of the first pieces of advice we can offer you is that every environment system is different, the variety of outside obstacles, and sky brightness combined with the ever changing weather and seeing conditions makes it impossible to determine the precise setting for the All Sky Camera. What we can do is provide suggestions that will get you started in the right direction. We recommend that you experiment and tweak the settings that we offer to see what works best for you. Patience will be your best friend as you learn what the All Sky can do, and what you can adjust. Do not be afraid to visit Night Skies Network or the Mallincam Group on Yahoo and ask questions

Imaging Methods:

When you are using the All Sky the evening when the sky is dark, we need to adjust the settings so that we can observe the stars and any object that happen to pass in from of the camera such as meteors.
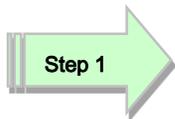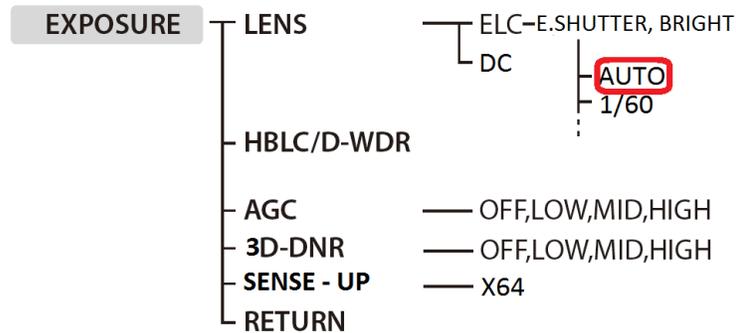
Based on the experience of other users, the following settings are a great place to start.

- ELC: **AUTO**
- AGC: **HIGH**
- 3D-DNR: **HIGH**
- SENSEUP: **X64**
- W/B: **ATW**
- D&N: **AUTO**
- SHARPNESS:**14**
- MONITOR MODE: **2**
- GAMMA: **0.6**
- LSC: **ON**
- MAN DPC: **OFF**
- AUTO DPC: **AUTO**

 So we will walk you through setting up your All Sky Camera to match the above settings. Again keep in mind that this is just a starting point for the settings, you may need to tweak these to match your sky conditions.

Connect your All Sky Camera to your Monitor (or computer) and place the camera is a location (preferably outside), so that you can observe for the image changes as you make the following setting adjustments.

➢ **Set ELC to AUTO**

```
EXPOSURE ─┬─ LENS          ─┬─ ELC─E.SHUTTER, BRIGHT
          │                 └─ DC
          │                      ┌─ AUTO
          │                      ├─ 1/60
          │                      ┊
          ├─ HBLC/D-WDR
          │
          ├─ AGC           ─── OFF,LOW,MID,HIGH
          ├─ 3D-DNR        ─── OFF,LOW,MID,HIGH
          ├─ SENSE - UP    ─── X64
          └─ RETURN
```

Step 1   The **ELC** setting is located in the **EXPOSURE ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
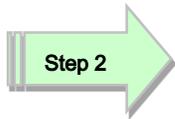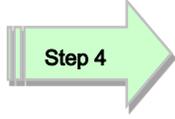
Step 2   Press **INWARD** on the **Command Button** to activate the **EXPOSURE** Menu**.**
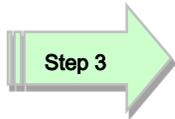
Step 3   With the **LENS** command highlighted in **Blue** press **inward** on the Command Button to display the **LENS-ELC** Menu.
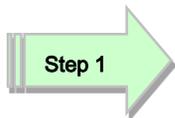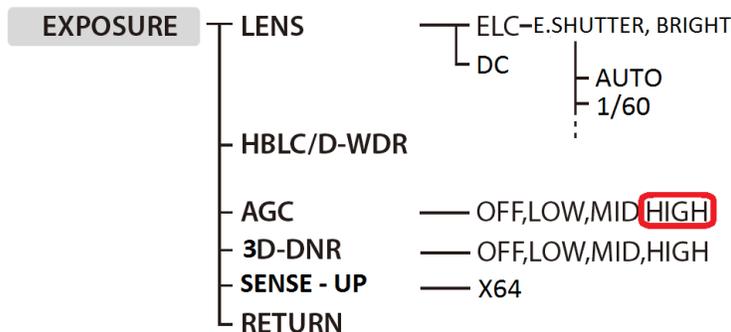
Step 4   With the **E. SHUTTER** control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **AUTO**
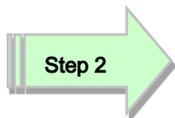
➢ **Set AGC to HIGH**

EXPOSURE ─┬─ **LENS** ──────┬─ ELC ─ E.SHUTTER, BRIGHT
               │   └─ DC ──┬─ AUTO
               │   ├─ 1/60
               │   ⋮
               ├─ **HBLC/D-WDR**
               │
               ├─ **AGC** ───────── OFF,LOW,MID,`HIGH`
               ├─ **3D-DNR** ─────── OFF,LOW,MID,HIGH
               ├─ **SENSE - UP** ─── X64
               └─ **RETURN**

➡ **Step 1**

The **AGC** setting is located in the **EXPOSURE ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
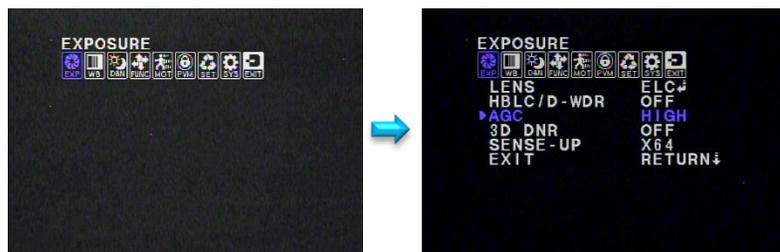
➡ **Step 2**

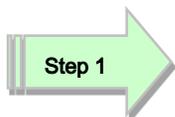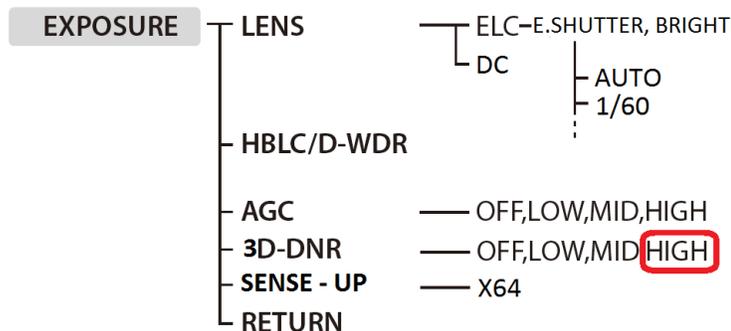Press **INWARD** on the **Command Button** to activate the **EXPOSURE** Menu**.**

➡ **Step 3**

With the **AGC** command highlighted in **Blue**, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **HIGH.**
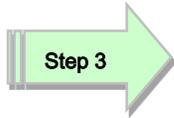

➢ **Set 3D-DNR to HIGH**

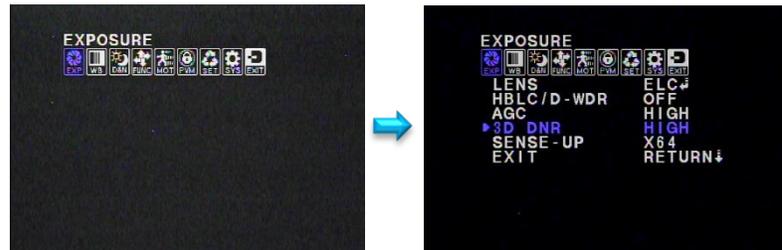**EXPOSURE** ─┬─ **LENS** ──────┬─ ELC ─ E.SHUTTER, BRIGHT
               │   └─ DC ──┬─ AUTO
               │   ├─ 1/60
               │   ⋮
               ├─ **HBLC/D-WDR**
               │
               ├─ **AGC** ───────── OFF,LOW,MID,HIGH
               ├─ **3D-DNR** ─────── OFF,LOW,MID,`HIGH`
               ├─ **SENSE - UP** ─── X64
               └─ **RETURN**

➡ **Step 1**

The **3D-DNR** setting is located in the **EXPOSURE ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.

Step 2   Press **INWARD** on the **Command Button** to activate the **EXPOSURE** Menu**.**

Step 3   With the **3D-DNR** command highlighted in **Blue**, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **HIGH**

➢ **Set SENSE-UP to X64**

Step 1   The **3D-DNR** setting is located in the **EXPOSURE ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
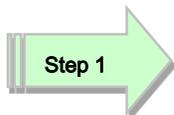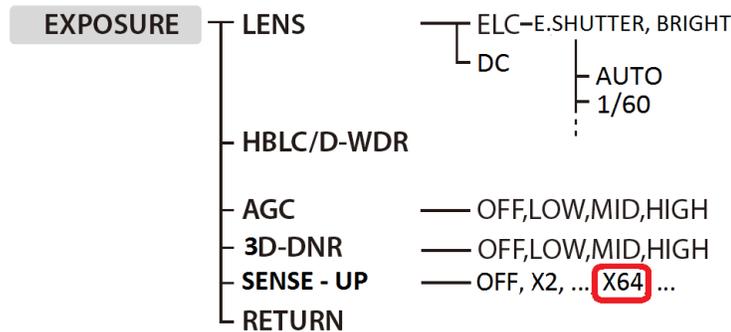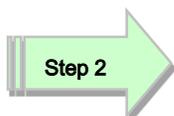
Step 2   Press **INWARD** on the **Command Button** to activate the **EXPOSURE** Menu**.**

Step 3   With the **SENSE-UP** command highlighted in **Blue**, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **X64.**
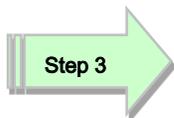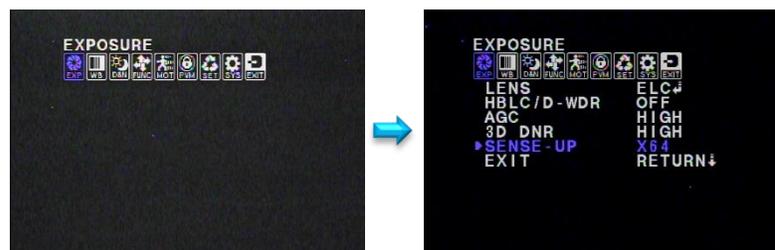
➢ **Set W/B to ATW**

COLOR (W B) ┬ WB MODE ── [ATW] MANUAL, AWC>PUSH, AWC
            ├ R-Y GAIN
            ├ B-Y GAIN
            └ RETURN

Step 1   The **W/B** setting is located in the **COLOR ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
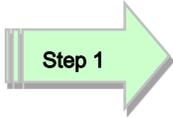
Step 2   With the **Main Menu** Icons on the screen, select the **COLOR** Icon by pressing **LEFT** on the **Control Button**.

Step 3   Once **COLOR** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **COLOR** Menu**.**

Step 4   With the **WB MODE** control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **ATW.**

➢ **Set D&N to AUTO**

DAY&NIGHT ┬ D&N MODE ── [AUTO] COLOR, B&W, EXT
          ├ C_SUP ── <0 ~ 100>
          ├ A_SUP ── <0 ~ 100>
          └ RETURN

Step 1   The **D&N Mode** setting is located in the **D&N ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
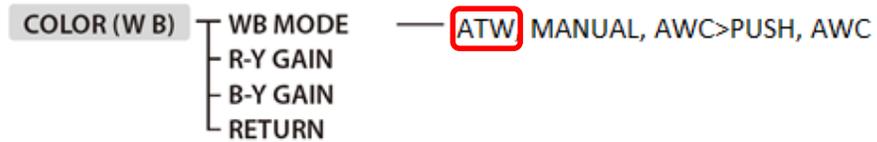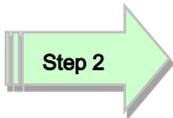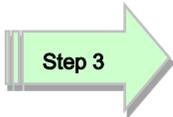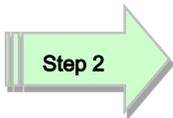
Step 2   With the **Main Menu** Icons on the screen, select the **D&N** Icon by pressing **LEFT** on the **Control Button**.
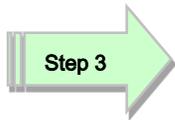
Step 3 Once **D&N** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **DAY&NIGHT** Menu**.**
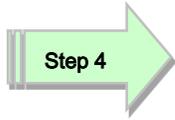
Step 4 With the **D&N MODE** control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the setting value to **AUTO.**

➢ **Set SHARPNESS to 14**

Step 1 The **SHARPNESS** setting is located in the **FUNCTION ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
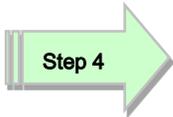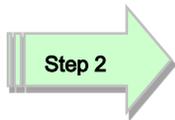
Step 2 With the **Main Menu** Icons on the screen, select the **FUNCTION** Icon by pressing **LEFT** on the **Control Button**.
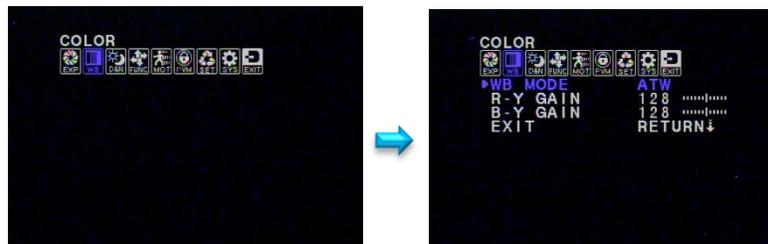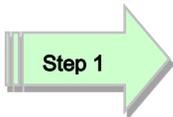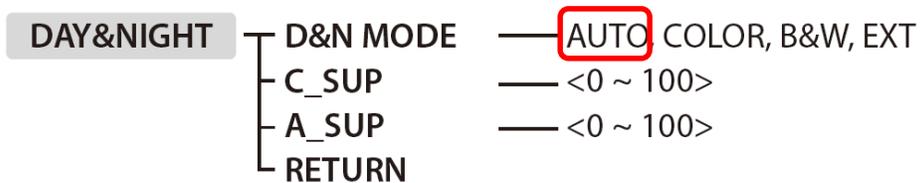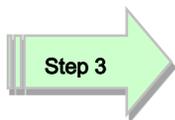
Step 3 Once **FUNCTION** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **FUNCTION** Menu**.**

Step 4 With the **FUNCTION** control selected, press **DOWN** on the **Control Button** to select the **SHARPNESS** Control.

Step 5 With the **SHARPNESS** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **SHARPNESS** value to **14**.

> **Set MONITOR to MODE2**

Step 1 — The **MONITOR** setting is located in the **FUNCTION ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
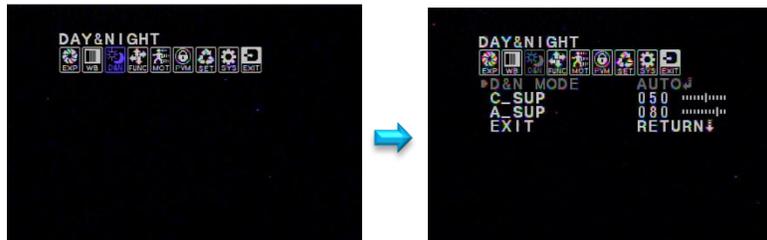
Step 2 — With the **Main Menu** Icons on the screen, select the **FUNCTION** Icon by pressing **LEFT** on the **Control Button**.
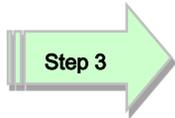
Step 3 — Once **FUNCTION** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **FUNCTION** Menu.
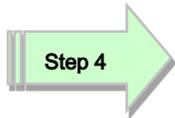
Step 4 — With the **FUNCTION** control selected, press **DOWN** on the **Control Button** to select the **MONITOR** Control.

Step 5 — With the **MONITOR** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **MONITOR** value to **MODE2**.

➢ **Set GAMMA to 0.60**

```
FUNCTION  ─── MIRROR      ──── OFF, MIRROR
          ├─ SHARPNESS    ──── <0~30>
          │  MONITOR      ──── MODE1, MODE2
          │  GAMMA        ────  USER, 0.45, 0.60, 1.00
          ├─ LSC          ──── OFF, ON <0 ~ 30>
          └─ RETURN
```

Step 1 The **GAMMA** setting is located in the **FUNCTION ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.

Step 2 With the **Main Menu** Icons on the screen, select the **FUNCTION** Icon by pressing **LEFT** on the **Control Button**.
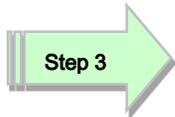
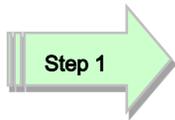**Step 3** Once **FUNCTION** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **FUNCTION** Menu.

Step 4 With the **FUNCTION** control selected, press **DOWN** on the **Control Button** to select the **GAMMA** Control.
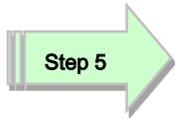
Step 5 With the **GAMMA** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **GAMMA** value to **0.60**.

➢ **Set LSC to ON**

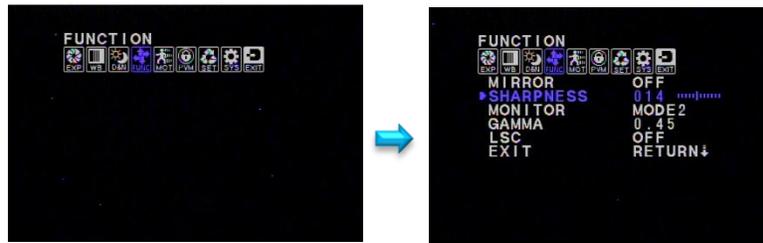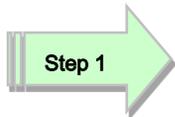| Step 1	The **LSC** setting is located in the **FUNCTION ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.
Step 2	With the **Main Menu** Icons on the screen, select the **FUNCTION** Icon by pressing **LEFT** on the **Control Button**.
Step 3	Once **FUNCTION** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **FUNCTION** Menu.
Step 4	With the **FUNCTION** control selected, press **DOWN** on the **Control Button** to select the **LSC** Control.
Step 5	With the **LSC** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **LSC** value to **ON**. Note: you can enter into the **ON** Menu (press **INWARD** on the **Control Button**), and make adjustments of its value by pressing **LEFT** or **RIGHT** on the **Control Button**.
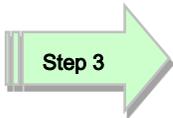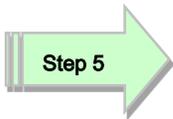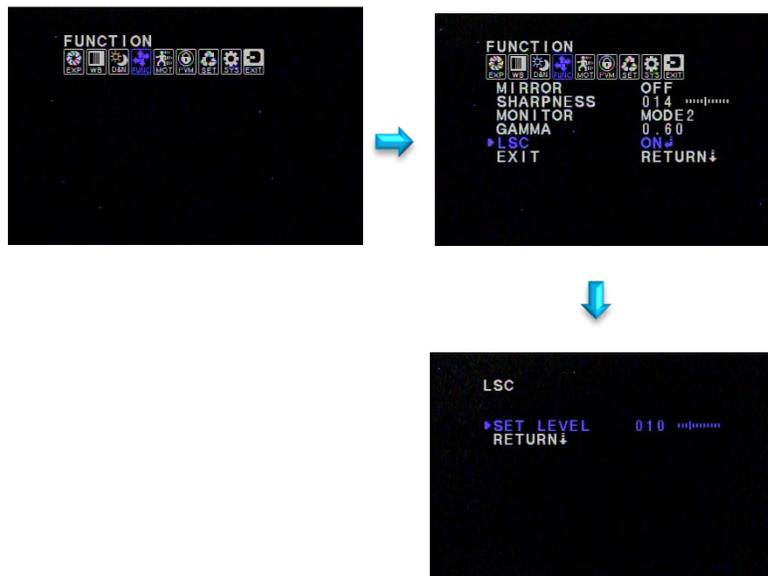
➢ **Set MANUAL DPC to OFF**
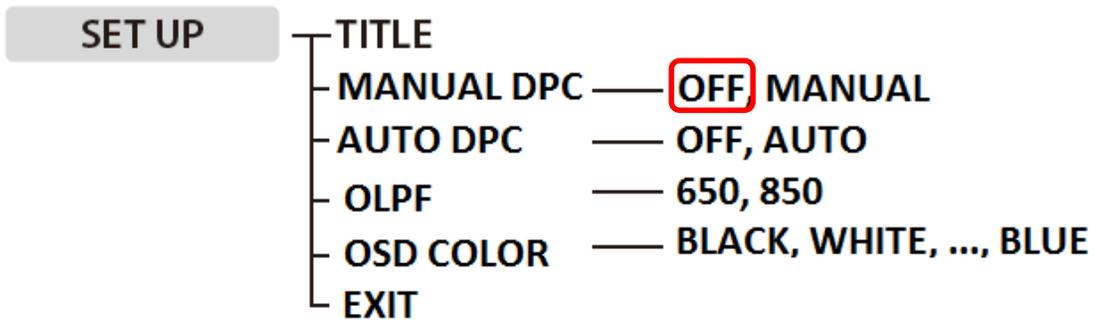
| Step 1 | The **MANUAL DPC** setting is located in the **SETUP ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**. |

| Step 2 | With the **Main Menu** Icons on the screen, select the **SETUP** Icon by pressing **LEFT** on the **Control Button**. |

| Step 3 | Once **SETUP** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **SETUP** Menu**.** |

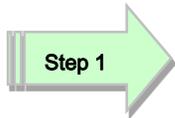| Step 4 | With the **SETUP** control selected, press **DOWN** on the **Control Button** to select the **MANUAL DPC** Control. |

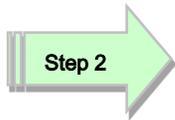| Step 5 | With the **MANUAL DPC** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **MANUAL DPC** value to **OFF**. |

➢ **Set AUTO DPC to AUTO**

```
SET UP ──┬─ TITLE
         ├─ MANUAL DPC ──── OFF, MANUAL
         ├─ AUTO DPC    ──── OFF, AUTO
         ├─ OLPF        ──── 650, 850
         ├─ OSD COLOR   ──── BLACK, WHITE, ..., BLUE
         └─ EXIT
```

Step 1
The **AUTO DPC** setting is located in the **SETUP ICON**, so activate the **O**n **S**creen **M**enu by pressing **INWARD** on the **Control Button**. The **Main Menu Icons** will appear over your image with **EXPOSURE** being highlighted in **Blue**.

Step 2
With the **Main Menu** Icons on the screen, select the **SETUP** Icon by pressing **LEFT** on the **Control Button**.

Step 3
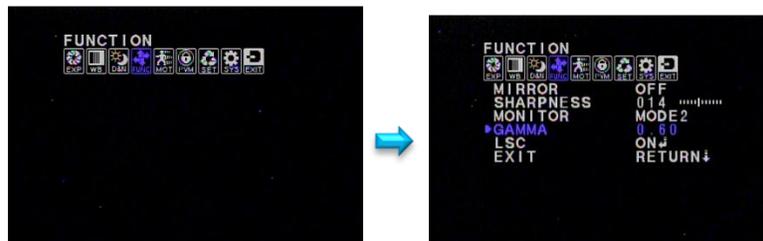Once **SETUP** Icon is highlighted, press **INWARD** on the **Command Button** to activate the **SETUP** Menu**.**

Step 4
With the **SETUP** control selected, press **DOWN** on the **Control Button** to select the **AUTO DPC** Control.
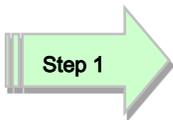
Step 5
With the **AUTO DPC** Control selected, press **LEFT** or **RIGHT** on the **Control Button** to change the **AUTO DPC** value to **AUTO**.
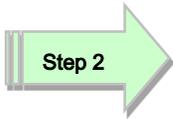
E. SHUTTER vs SENSE UP

One of the decisions you will be making is how much exposure do I need. The answer to this question depends upon your seeing conditions and outside environment lighting.

You want to capture as many star as you ca, so you will need the maximum exposure that the sky conditions can provide. But, you may have other non-sky objects that contain a light source in camera's field of view. So will a long exposure will cause that objects light source to overpower the stars in the image. The technique is to determine which is best you're your outside situation.

Setting **E. SHUTTER** manually to a value say to **x1024** will always give you that exposure (for **x1024** that would be **17s**) The **E.SHUTTER's** exposure rate will always be at that value and a new image will appear when that exposure time is done (ie every **17s**) no matter what the sky conditions are.

Setting **E.SHUTTER** to **AUTO** or **1/60** will allow you access to **SENSE-UP** which will allow you to keep doubling the exposure time, but in this case the camera will determine the amount of doubling it should perform without over exposing the image. It may deem that **4 seconds** is best (even though you might disagree and you had set it to **8 seconds**, that is at **x512**).

Check them both out to see which technique is best you your situation.

Controlling the All Sky by Hand

You can control the All Sky manually by the use of the Command Control.

Using the All Sky Camera Command Control allows you the move Up, Down, Left, and Right by pushing on the **Control Button**. To activate a command just press INWARD on the Control Button.

Up

Left   **Press**   **Right**

Down
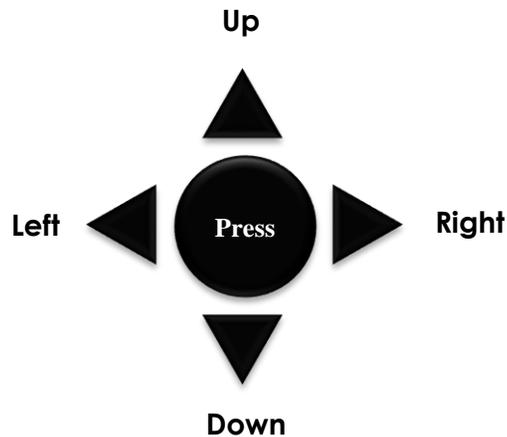
The All Sky Camera OSD Settings

The following table will guide you in locating a specific **OSD** or **O**n **S**creen **D**isplay image control. Once you get the hang of locating the settings, it will be worth your time to peruse the Chapter **Understanding the OSD** to get a deeper comprehension how the adjustments will affect your image.

Always remember the suggested settings are a recommendation, as your viewing condition will affect the image, so don't be afraid to experiment.

All Sky Camera On Screen Display Menu and ICONS

EXP	WB	D&N	FUNC	MOT	PVM	SET	SYS	EXIT
EXPOSURE	COLOR	DAY&NIGHT	FUNCTION	MOTION	PRIVACY	SETUP	SYSTEM	EXIT
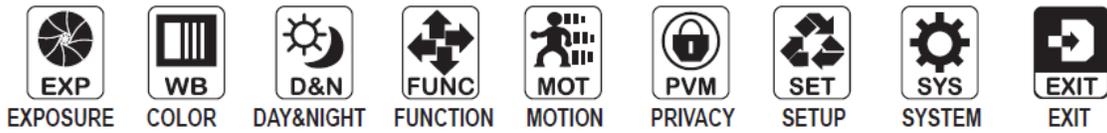
MAIN MENU	SUB MENU	OPTION MENU			
EXPOSURE	LENS	ELC	E. SHUTTER	X1024, X512, X256, X128, X64, X32, X167, X8, X4, X2,AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000	
			BRIGHT	1 to 100	
		DC	E.SHUTTER	X1024, X512, X256, X128, X64, X32, X167, X8, X4, X2,AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, 1/100000	
			BRIGHT	1 to 100	
			DC REF	0 to 20	
	HBLC/D-WDR	OFF			
		BLC	BLC MODE	AUTO	
				MANUAL	TOP	0 to 15
					BOTTOM	0 to 15
					LEFT	0 to 15
					RIGHT	0 to 15
			BLC WEIGHT	OFF/LOW/MID/HIGH	
		HLI	HBLC	HBLC LEVEL	OFF/LOW/MID/HIGH
				TOP	0 to 15
				BOTTOM	0 to 16
				LEFT	0 to 16
				RIGHT	0 to 15

			MODE	ALL DAY, NIGHT		
			SET LEVEL	0 to 100		
			GRAY MODE	GRAY, D. GRAY, BLACK		
			MASK SEL	MASK 1 to 4	MODE	OFF, ON
					TOP	0 to 33
					BOTTOM	0 to 34
					LEFT	0 to 33
					RIGHT	0 to 34
		D-WDR	D-WDR LEVEL	0 to 20		
	AGC	OFF, LOW, MID, HIGH				
	3D DNR	AUTO, OFF, LOW, MID, HIGH				
	SENSE-UP	AUTO, OFF, X2, X4, X8, X16, X32, X64, X128, X256, X512				
COLOR	WB MODE	ATW				
		MANUAL	M. WB R	0 to 128		
			M. WB B	0 to 128		
		AWC>PUSH				
	R-Y GAIN	0 to 255				
	B-Y GAIN	0 to 255				
DAY and NIGHT	D&N MODE	AUTO	BURST	OFF, ON		
			DAY>NIGHT	0 to 30		
			NIGHT>DAY	0 to 29		
			DWELL TIME	0 to 15		
		COLOR				
		B&W				
		EX-CD	BURST	OFF, ON		
			DAY>NIGHT	0 to 255		
			NIGHT>DAY	0 to 255		
			SMART IR	LEVEL	1 to 40	

			DWELL TIME	1 to 15	
			EXIT		
	C_SUP	0 to 100			
	A_SUP	0 to 100			
FUNCTION	MIRROR	OFF, ON			
	SHARPNESS	0 to 30			
	MONITOR	MODE1, MODE2			
	GAMMA	0.45			
		0.60			
		1.00			
		USER	Level	0.20, 0.25, 0.30, 0.35, 0.40, 0.45, 0.50, 0.55, 0.60, 0.65, 0.70, 0.75, 0.80, 0.85, 0.90. 0.95, 1.00	
	LSC	OFF			
		ON	SET LEVEL	0 to 30	
MOTION	MOTION	OFF, ON			
	AREA SEL	AREA 1 to AREA 4	MASK MODE	OFF, ON	
			TOP	0 to 190	
			BOTTOM	0 to 190	
			LEFT	0 to 190	
			RIGHT	0 to 190	
	SENSITI	0 to 30			
	DISPLAY	OFF, ICON, TRACE			
	HOLD TIME	3 to 15			
	ALARM	OFF, ON			
PRIVACY	MASK1 to MASK8	OFF			
		ON	DOT SEL	L_TOP, R_TOP, L_BOT, R_BOT	
			DOT XY		
			MOVE XY		
			COLOR SET	BLACK, WHITE, RED, GREEN, BLUE, MAGENTA, GRAY	

SETUP	TITLE			
	MANUAL DPC	**OFF**		
		MANUAL	**WHITE THR**	0 to 255
			BLACK THR	0 to 255
			DPC LEVEL	0 to 255
	AUTO DPC	**OFF**		
		AUTO	**DPC LEVEL**	1 to 50
			DPC RUN	
	OLPF	650, 850		
	OSD COLOR	BLUE, MAGENTA, CYAN, GRAY, BLACK, WHITE, RED, GREEN		
SYSTEM	**CAMERA ID**	000 TO 255		
	COMMUNI	**OFF**		
		ON	**PROTOCOL**	PELCO-D
			BAUDRATE	2400, 4800, 9600, 19200
	LANGUAGE	ENGLISH, CHINA, …		
EXIT	**FACTORY SET**	NO		
		YES		
	SAVE&EXIT			
	EXIT			

4.   Understanding the OSD

On Screen Display (OSD) Menu

The following are a more detailed explanation on what function each control in the **All Sky Camera** performs. Remember use the suggested values as a guide, as your seeing conditions will dictate how the settings need to be set.

Note: You will have to use the **SAVE&EXIT** command to save the setting adjustments you have made, else they will revert to the previously saved values after about 1 minute.

MENU MAIN This is the main menu for the All Sky. It is from here that you select which setting you would like to adjust. Menu selections include: **EXPOSURE, COLOR, DAY&NIGHT, FUNCTION, MOTION, PRIVACY, SETUP, SYSTEM, and EXIT**.	
EXPOSURE MAIN This setting is used to adjust all aspects of the exposure. Settings include: LENS, HBLC/D –WDR, AGC, 3D DNR, and SENSE UP. It is in this Menu that you will make most of your changes.	

LENS
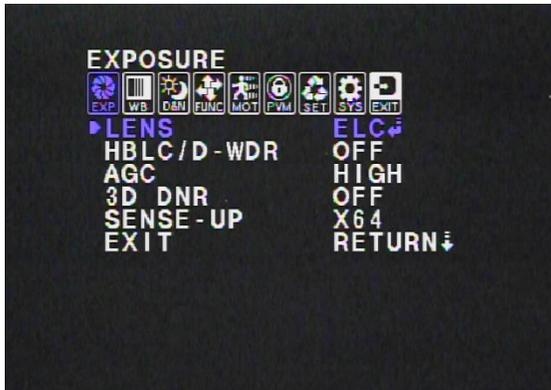
This setting allows to set the LENS to one of two adjustments for controlling the electronic exposure:

ELC (**E**lectronic **L**ight **C**ontrol)
DC (for DC IRIS Lens Control) –We don't use Auto /Iris Lenses for the All Sky Camera, so there is no need set to this setting.

LEN -ELC

You will use this control to adjust the Electronic Shutter settings of the camera. This control allows you to select from: X1024 (16,8s) , X512 (8.4s), X256, X128, X64, X32, X167, X8, X4, X2, AUTO, 1/60, 1/100FLK, 1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000, and1/100000 of a second. For most of your viewing, you will most likely use AUTO Shutter setting will automatically make adjustment from 1/60 to 1/100000 of a second.

E.SHUTTER

This control allows you to adjust the Electronic shutter and the Brightness of the image.

- X2 = 1/32 second exposure
- X4 = 1/16 second exposure
- X8 = 1/8 second exposure
- X16 = 1/4 second exposure
- X32 = 1/2 second exposure
- X64 = 1 second exposure
- X128 = 2.1second exposure
- X256 = 4.2 second exposure
- X512 = 8.4 second exposure
- X1024 =16.8 second exposure

BRIGHT

This adjustment allows you to adjust the brightness of the image. You have the ability to adjust the brightness range from 1 to 100 with the default being 50.
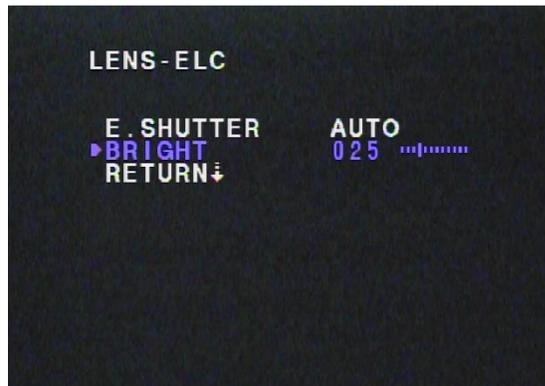
HBLC/D-WDR
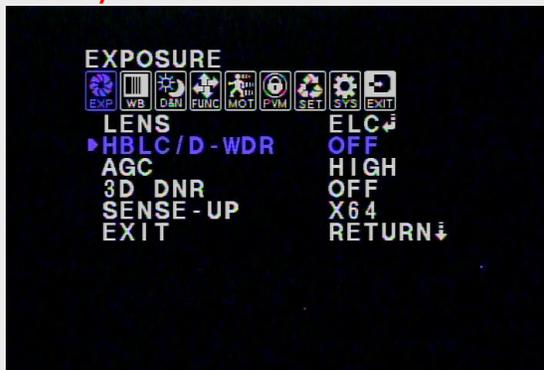
This selections will provide options for enhancing the visibility of objects on the screen specifically when there are different illumination settings in the background.

This Menu will provide you the following controls:

- OFF
- BLC (Back Light Compensation)
- HLI (HighLight Inverse)
- D-WDR

OFF

The object visibility enhancement mode is turn **OFF** and no adjustments are made.
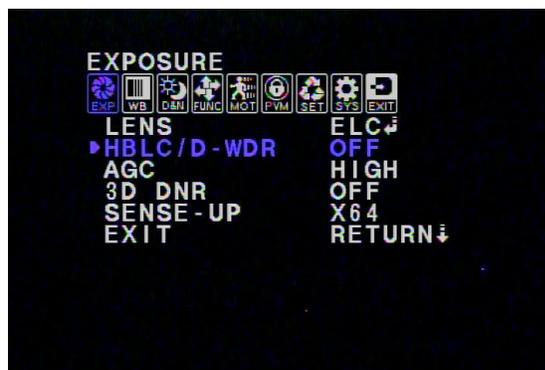
This selection will allow you to enhance the visibility of objects located in the foreground, specifically when they are surrounded by a strongly illuminated background.

You will be provided with a choice of **AUTO** or **MANUAL** Mode along with the ability to select the level of **BCL** enhancement.

BLC

MANUAL	This selections allows you to adjust the size and location of the area where the camera's BLC function is active. By using the button control you are adjust the **TOP**, **BOTTOM**, **LEFT** and **RIGHT** locations of the shaded box (which indicates the enhancement area).
AUTO	This selections allows the Mallincam All Sky camera to make the enhancement adjustment **AUTOMATICALLY** based on the current image.
This selection allows you to adjust the **BLC** Level applied to the enhancements to the visibility of the foreground objects to the background illumination. You are provided with 4 choices. • OFF • LOW • MID • HIGH	**BLC WEIGHT**
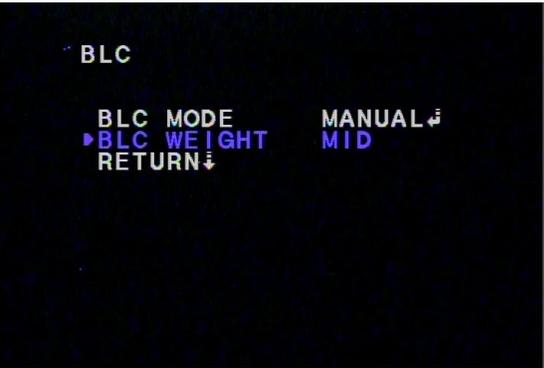
The **HLI** or **H**igh **L**ight **M**ask Function selection in the **HBLC/D- WDR** control allows the All Sky Camera to make enhancements adjustments for objects located near a bright point light source. If a bright point light source appears on the screen, this function will mask it, thus allowing the observation of other objects on the screen.

You will be provided with 5 control options within this menu:

- HBLC
- MODE
- SET LEVEL
- GRAY MODE
- MASK SEL

HLI
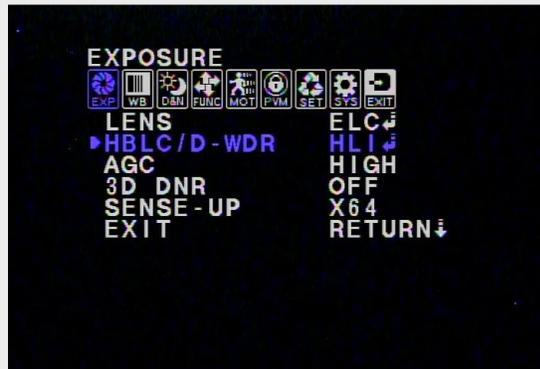
This is an extra feature of **HLI**. It is **H**ighlight **B**ack**l**ight **C**ompensation and what this will do is intensify the area around the bright object to help you see the object better. If you leave this off, regular **HLI** will do its job and will only black out the bright object but will not intensify the areas that are directly around the bright object. You can select

HBLC

the intensity of the **BLC** as well as the area that you would like to apply this setting to.

- **HBLC Level:** (OFF, Low, Mid, High)
- **Top (1-15):** Up adjustment
- **Bottom (1-16):** Down adjustment
- **Left (1-15):** Left adjustment
- **Right (1-16)** Right adjustment

This adjustments allow the effect to be applied to the 4 masks on the screen. The 4 masks can be individually size and moved through the **HLI** Menu

The **D-WDR** (**D**igital **W**ide **D**ynamic **R**ange) control allows you to effectively observe the scene with different illumination levels by correcting the Gamma Curve.

This control effectively improves the dark parts of the image without the saturation from the white parts of the image. You can manually adjust the levels from 0 to 20.

D-WDR

D-WDR at 0

D-WDR at 20

AGC

EXPOSURE

LENS   ELC
HBLC/D-WDR   OFF
▶AGC   HIGH
3D DNR   OFF
SENSE-UP   X64
EXIT   RETURN
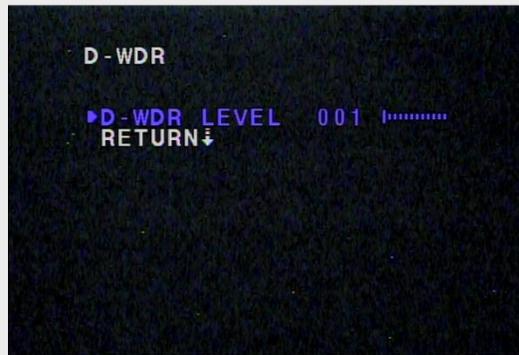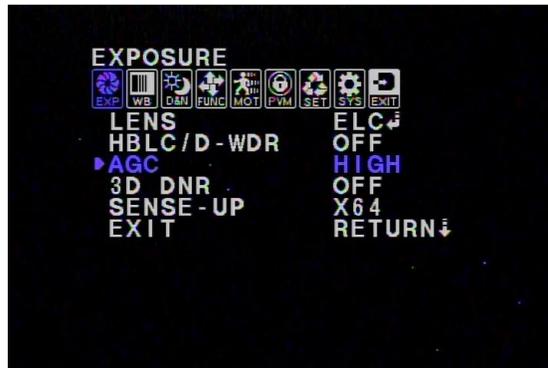
AGC or **A**uto **G**ain **C**ontrol is used to set the **AGC** level. When activated, **AGC** will automatically increase the sensitivity of the All Sky Camera by amplifying the video signal received.

This Menu will provide you with the following settings:

- OFF

- LOW

- MID

- HIGH

3D DNR

EXPOSURE

LENS   ELC↵
HBLC/D-WDR   OFF
AGC   HIGH
▶3D DNR   OFF
SENSE-UP   X64
EXIT   RETURN↓
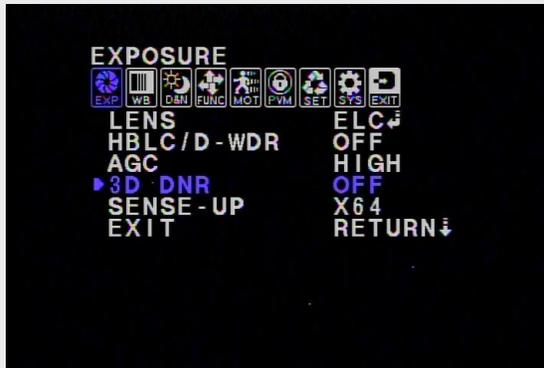
This is a great automatic feature that can help reduce a "noisy" picture at night or during very low light levels. On **HIGH** mode the picture will be very clear but keep in mind this could increase "ghosting" on your screen. Please toggle this setting at night time. If you notice a nice clear picture at night with this setting as being off, then please leave it like that. However, if you notice a great deal of noise you can toggle between the strength settings to see what best suits your seeing conditions.

3D Digital **N**oise **R**eduction allows the Mallincam All Sky Camera to display an improved image in low light conditions by reducing the noise from the screen.

This Menu will provide you with the following settings:

- OFF
- LOW
- MID
- HIGH
- AUTO

SENSE UP

This Setting allows you to adjust the exposure of the All Sky (to a maximum of 8.4 seconds) by utilizing the **HIGH** value of the **AGC** setting and with **E. SHUTTER** set to either **AUTO** or **1/60**. The system will *automatically reduce the shutter speed* whenever light drops below a certain level.

SENSE UP is available only when the (LENS/ELC) **E. SHUTTER** control is set to **AUTO** or **1/60s**. You use this command in conjunction with **E.SHUTTER** and the **AGC** controls. The combination of these controls allows you to push the exposure duration to the maximum and thus see more faint objects such as faint stars.

Note: E-SHUTTER gives you more manual controls (up to **17s**) of exposure.

The available settings for **SENSE UP** are:

- OFF
- AUTO
- X2 = 1/32 second exposure
- X4 = 1/16 second exposure
- X8 = 1/8 second exposure
- X16 = 1/4 second exposure
- X32 = 1/2 second exposure
- X64 = 1 second exposure
- X128 = 2.1second exposure
- X256 = 4.2 second exposure
- X512 = 8.4 second exposure

COLOR MAIN

This Menu contains the commands to adjust the White Balance and the Color Gain of the displayed image to match the current seeing conditions.

WB MODE

The **White Balance Mode** allows to you adjust the color for various light conditions.

This command provides the following adjustments:

- **ATW** (Auto Tracing White Balance)
- **MANUAL** White Balance
- **AWC>PUSH**
- **AWC**

This is a specific form of **AWC**, **ATW** continually tracks and adjusts the White Balance, making it suitable for use in cameras in which the image content and lighting are subject to changes. You will be able to adjust the **R-Y Gain** (Red Tint) or the **B-Y Gain** (Blue Tint).

ATW (Auto Tracing White Balance)

The **WB –MANUAL** Control allows you to manually set the white balance mode by letting you select individual colors to adjust to a fixed setting.
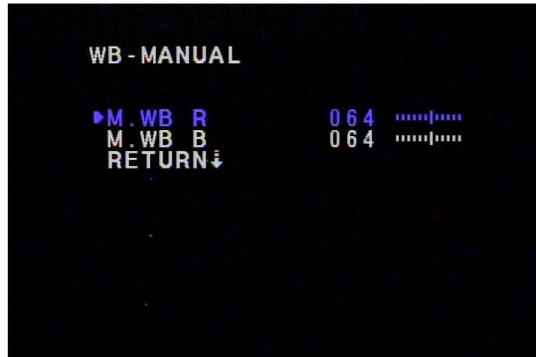
MANUAL

You can set either the **M. WB R** (Manual White Balance Red) or the **M. WB B** (Manual White Balance Blue) settings from a low of **0** to a high of **128**.
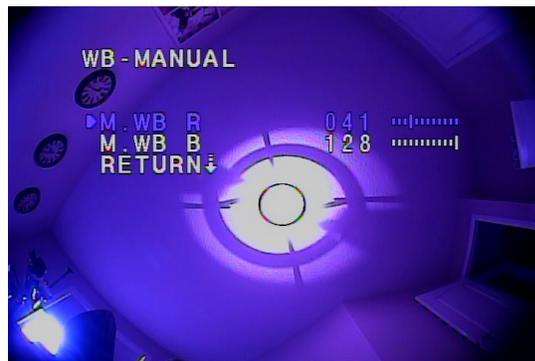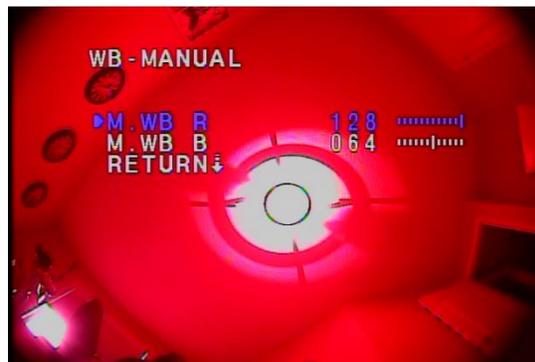
The **AWC>PUSH** control when activated, will adjust the White Balance to the current image and adjust red and blues accordingly. To control this, be sure to push the middle button while this feature is selected. Use this is your colors look way off.

AWC>PUSH

The **AWC** (**A**uto **W**hite **C**ompensation) control is a feature that is very similar to that of **ATW** but it tracks all color temperatures as opposed to just white like **ATW**. We still recommend **ATW** as opposed to **AWC**.

AWC

R-Y GAIN

This control allows you to adjust the **RED** component value. That is, it lets you define the **Red Gain** starting point.

We recommend leaving at default value of 128

It ranges from **0 to 255.**

B-Y GAIN

This control allows you to adjust the **BLUE** component value. That is, it lets you define the **Blue Gain** starting point.

We recommend leaving at default value of 128.

It ranges from **0 to 255**

DAY&NIGHT MAIN

The Day and Night control allows the All Sky Camera to adjust from the colors of the daytime to the Black and White of the night sky. We will want a Black and White image at night because the camera can give a much clearer image when it doesn't have to process colors.

D&N MODE

The D&N Mode provides you with 4 options:

- **COLOR** -The camera processes images in color.
- **B&W** – The Camera processes the images in Black and White.
- **EX-CDS** - This camera is not equipped with the EX-CDS feature; choose **AUTO** instead.
- **AUTO** – the camera make a best guess as to display in **COLOR** or **B&W** based on the parameters set in the **AUTO Control** and the current light levels.

BURST

The Control is set to **ON** if you are using a long video cable and the current image is of poor quality.

AUTO

AUTO Mode in the **D&N Control** provide you with 4 options.

- BURST
- DAY>NIGHT
- NIGHT>DAY
- DWELL TIME

The defaults for these are fine for most uses.

DAY>NIGHT

This setting (1 to 30) will tell the All Sky Camera when to switch over from **DAY Mode** to **NIGHT Mode**. The lower the value the quicker the process will be. This settings runs in conjunction with **NIGHT>DAY**, so don't make both values the same.

NIGHT>DAY

This setting (**1 to 30**) will tell the All Sky Camera when to switch over from **NIGHT Mode** to **DAY Mode**. The lower the value the quicker the process will be. This settings runs in conjunction with **DAY>NIGHT**, so don't make both values the same.

DWELL TIME

This setting (**1 to 15**) tells the ALL Sky Camera how long to switchover when it senses enough light level to make the switch. The lower the setting the less time it takes to make the switch. If the light levels are constantly changing, you enter a larger number so that the switch will be delayed until you have a more constant light condition.

C_SUP

This setting sets the Color Noise Suppression for Night Mode. You have a range from **0 to 100** to choose from. The higher the value the less color you will see Night Mode (more the suppression).

Not available when **3D DNR** is set to **ON**.

A_SUP

This setting sets the Aperture Suppression for Night Mode. You have a range from **0 to 100** to choose from. The more Edge sharpness will be reduced in Night Mode when a higher value is chosen.

Not available when **3D DNR** is set to **ON**.

FUNCTION MAIN

This section contains commands that allow you to control the view of the image. These include:

- MIRROR
- SHARPNESS
- MONITOR
- GAMMA
- LSC

MIRROR

This control allows you to Mirror (reverse left to right) the image.

Control choices are:

- OFF
- ON

SHARPNESS

This control allows you to adjust the sharpness of the image. You can adjust from a sharpness value of **0** all the way thru to **30**. We have found **14** to be a good value for the sky. Just adjust to your requirements.

MONITOR

This control allows you to select from one of two modes:

- MODE1
- MODE2

MODE2 seems to produce a slightly brighter image than **MODE1**. We recommend that you choose **MODE2** when imaging the sky specifically when using a LCD monitor.

GAMMA

This is an electronic correction carried out by the All Sky Camera circuitry to balance the brightness seen by the camera to the image observed on the monitor. GAMMA feature gives you choices to select: 0.45, 0.6, and 1.0 and USER. The smaller the value the brighter the image will appear on your screen. We have found that a GAMMA value of 0.6 is best for the sky.

USER
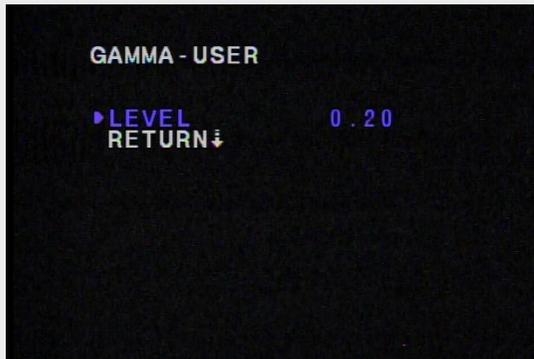
The USER control within GAMMA allows you a more precise setting of the GAMMA value. It ranges from 0.20 to 1.00 in steps of 0.05.

LSC

LSC or Lens Shading Compensation is a form of AGC that is useful if part of the image gets temporarily shaded (by a cloud for example). The control will automatically increase the brightness of the image to compensate. We recommend leaving this ON and at a value of 10.

LSC – ON

Setting the value of **10** is a good start for this control. You experience with your own sky conditions will allow you to adjust this value as necessarily.

MOTION MAIN

This control can inform you that there is motions on the screen. It can monitor up to **4** fixed areas on the image. This menu contains 6 Settings:

- MOTION
- AREA SEL
- SENSITI
- DISPLAY
- HOLD TIME
- ALARM

Since the only application of this menu may be during a meteor shower, we will not discuss the Menu Choices. But you can select one of **4** fixed areas to monitor and instruct the camera how it should inform you when it detects motion (red square or icon). Note: **ALARM** is not active since no speaker in camera.

PRIVACY MAIN

This menu allows you to set up to **8** blacked out areas on the image. This has no application in the astronomy area, so this menu is not discussed

SETUP MAIN

This menu contains settings that control the All Sky Camera's internal operations. You can adjust the 5 following controls:

- TITLE
- MANUAL DPC
- AUTO DPC
- OLPF
- OSD COLOR

TITLE

You options for this control are **ON** or **OFF**. When set to **ON**, you can insert a Title by selecting characters from the screen. Once the **Title** is complete Click on the **RET** command, and when you **SAVE&EXIT** from the **EXIT Menu**, your message will then be displayed on the upper left corner of your screen.

MANUAL DPC

Manual DPC or **D**ead **P**ixel **C**ompensation instructs the camera to compensate for any dead pixels by filling in that dead pixel with the color from nearby pixels. We recommend using the **Automatic DPC** command rather than this control.

If you do set this setting to **ON**, you will be able to adjust the **White Threshold**, the **Black Threshold**, and the **DPC Level** for triggering the process.

AUTO DPC

When **AUTO** is selected, you will be allowed to select the **DPC Level**, then select **DPC RUN**, and the All Sky Camera will do a Dead Pixel Count, and will then count and fill in those dead pixels automatically. We recommend setting this control to **AUTO**.

OLPF

OLPF or **O**ptical **L**ow **P**ass **F**ilter is a feature that is used when you place different filters over the lens. But since the lens on the All Sky Camera is fixed, changing the value to either **850** or **650** will have no effect on your image.

OSD COLOR

The OSD or On Screen Display that is activated when you press **INWARD** on the **Control Button** can be displayed in different colors (Default is Blue).

Your Color Choices are: **BLUE, MAGENTA, CYAN, GRAY, BLACK, WHITE, RED, GREEN**

SYSTEM MAIN

It is here that you can control the camera **ID**, **Communications**, **Language** in which the **O**n **S**creen **D**isplay uses. We recommend that these are not adjusted since the All Sky Camera has no RS485 Communication controls.

EXIT MAIN

It is here that you can reset the All Sky Camera back to the factor defaults, and where you save the changes to the settings that you have made in the camera. Remember, you need to use the **SAVE&EXIT** to make the adjustment permanent for the next camera reboot, else in about 1 minute, the All Sky Camera will revert to the previously saved values.

FACTORY SET

To Reset the All Sky Camera back to the **Factory Settings** (this is useful if the camera is acting strangely or you have made changes and have forgot what you did and you cannot get back a great image). Select **YES** and then press **INWARD** on the **Control Button** to activate the **RESET** process and the settings will revert (The **FACTORY SET** will change back to **NO**), then select **SAVE&EXIT** to save these **FACTORY RESET** settings.

SAVE&EXIT

To keep the changes to the settings you have made on the All Sky Camera press **INWARD** on the **Control Button**. The changes will be saved and the **On Screen Display** will close.

EXIT

Selecting this control just turns **OFF** the **On Screen Display**. It **DOES NOT** save you setting adjustments.

5.   Appendix

Appendix A – Installing the 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.

Note

Do some pre-planning to minimize frustration that may occur when Windows gets a bit temperamental. I use both the MallinCam All Sky 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.

Step 1
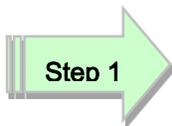
Open the Package

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 MallincamUSA website and download the latest drivers for the MCV device:**

http://www.mallincamusa.com/Files/MVC-1%20Software%20CD.zip

This file is in a zip format, so you will need to unzip the file.
You should see 5 folders and about 4 other files inside the unzipped folder.
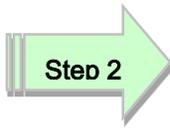
Step 2 ➤ *Insert the MCV-1 or MCV-1e*

*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.
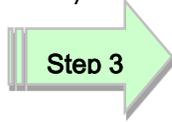
Step 3   *Checking out the MCV-1 or MCV-1e*

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 All Sky 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.

Note   *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 All Sky, 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:

Appendix B Connecting to Night Skies Network

Introduction

I found that when I first started connecting to NSN, things started happening too fast for me to keep track of everything at once. So, pre-planning was the most the most crucial step for me. I found that by doing test runs in the comfort of my house allowed me to develop my techniques that work for the equipment and software that I use. Below are the results and steps that I use to broadcast on NSN, feel free to follow them and/or made modification as you deem as necessary.

Note — Computer real-estate will be your nemesis. So, depending upon the size of the monitor (laptop), then number of screens that you are using, then number of software programs that using are simultaneously are using, will dictate how you will manage your windows. I will describe how I have organized my windows under a variety of situations (1 computer, 1 computer with 2 monitors, which software packages am I using, and what am I trying to do this session). Remember, it's all about having fun, and *time* and *patience* are your best friends (not to mention all the guys and gals, and the Yahoo – MallinCam site :

http://tech.groups.yahoo.com/group/mallincam/messages

One of the most important decisions you will need to make with broadcasting the image of the ALL SKY is what Video capture software are you going to use. Some simple suggestions:

You can have NSN grab the image directly off your Video Capture Device (MCV), but I find it more convenient to either use a Video Capture Software such as AMCAP, or SMARTCAP to display my image and then capture my screen by using Splitcam, Manycam, or WebCamMax. Even better Splitcam, Manycam, or WebCamMax can both display and pass along the image to NSN without the need of a Video Capture Software. All three have about the same features, some of these have versions that will cost you, but all have a version that is free (reduced functions, advertisements, etc…). My current program of choice is Splitcam (I can live with the Advertisements, but it has some amazing extras such as the ability to change Video Input from Svideo to composite, a must if you use MallinCam's MCV device with a variety of cameras.

Step 1 — ***Plug in the ALL SKY camera into a USB Port (MCV) on your computer.***

Note — Always use the same port for your connected devices. I even mark on my laptop which USB port is for which device. I even use a specific **USB** port for my Video input devices (*MCV, ALL SKY, Dazzle*), and a specific port for by *RS232*, *RS485* devices. For example if you only have 2 ports, then 1 port is for video input (*MCV*), and the other port is for *RS485* control.

Step 2

Start Manycam/Splitcam/WebcamMax

Note

Size the Manycam/Splitcam/WebcamMax window so that you will have room for your Browser to open. If you have a dual monitor system you can slide Manycam/Splitcam/WebcamMax window to the second monitor.

Step 3

Have Manycam/ Splitcam/WebcamMax Choose your Video Driver as the Source

Note

Once connected, you should have the image of what the All Sky is looking at inside the Window of the software. If you are using a third party Video Display Software then have Manycam / Splitcam / WebcamMax choose Desktop Capture as the source.
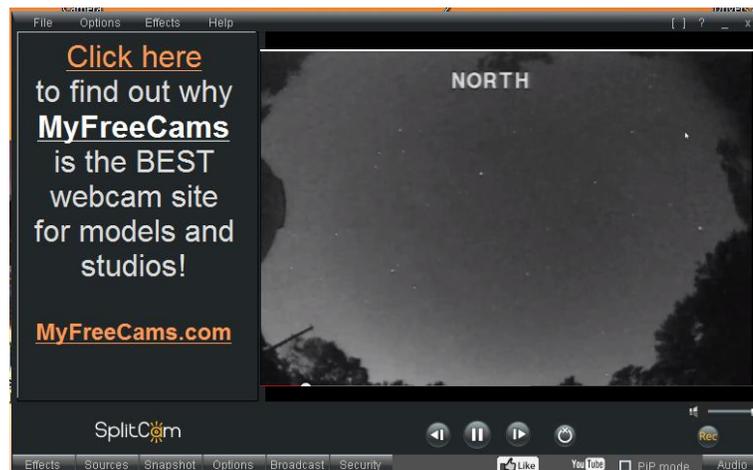
Step 4

Adjust the Resolution and frames/second (fps) value on Manycam/Splitcam/WebcamMax

Note

This will be trial and error; it all depends upon resolution, bandwidth, and what over members on NSN experience from your broadcasted image. You will end up adjusting both on the Manycam / Splitcam /WebcamMax side as well and on the NSN side to get the best image. For me I start at 800x600 and NSN at 800x600.

Step 5

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 favourite browser to use for NSN broadcast is *Chrome*.

Step 6

Log into Night Skies Network (NSN)

Have your Web Brower go to the location: http://www.nightskiesnetwork.com/ . Locate and click on the **BROADCASTERS AND MEMBERS SIGN IN** button. The next **Login** screen will ask you to enter your **username** and **password**.   You will next be presented with the **Channel Line Up** screen for Night Skies network. Click on the **Login** selection on the upper right hand side of the screen.
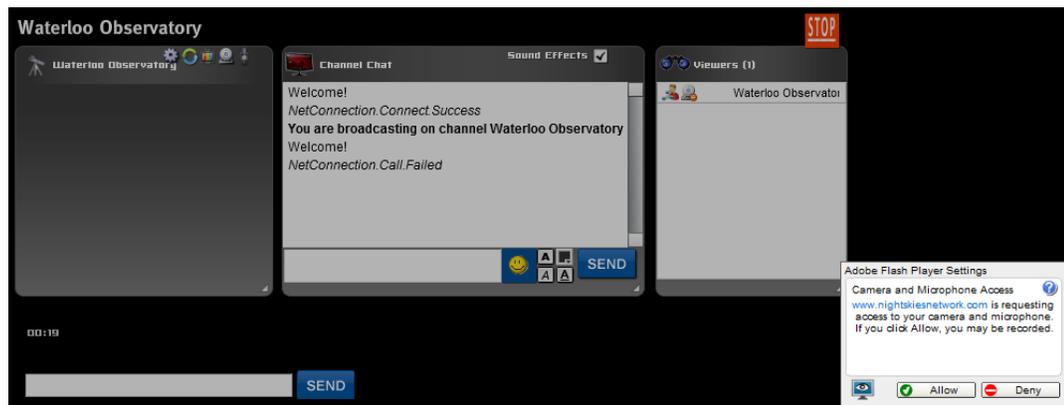

You will be presented with the **Channel Launch Sign In** screen for NSN. Again enter your **Username** and **Password** and click on **Publish Channel** button.

Step 7

Allow Adobe Flash to use your Manycam/Splitcam/WebcamMax

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 8

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 a 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.

Step 9

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.

Note

When you are us 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.

Step 10

Select the Camera

Now is the time to activate the camera, or in our case have NSN driver point to our Manycam/Splitcam/WebcamMax output or the Video Adapter Driver is you are not using Manycam/Splitcam/WebcamMax.

➢ *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 of choice.
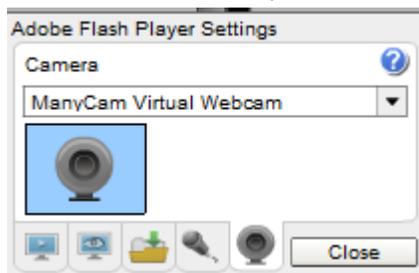
> ➤ **CLICK** on *CLOSE* to Continue.

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 11 | *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.
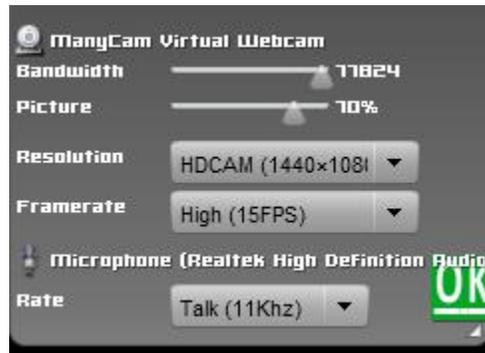
> ➢ Select your *Resolution* from the *Pull Down Menu*. Start at 800x600 and move up from there. Play with these to see what settings the NSN viewers say is the best.

> ➢ 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 ALL SKY 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.

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

| Note | 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). Other 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.

I have become hooked on *Splitcam*. With my dual monitor system I have Splitcam grab my Video device (*USB 2828x Device*) directly. Splitcam can adjust brightness, contrast, etc. I can also call up the *USB 2828x Device* control panel (located in *File/Video settings*) which gives you some more control of the MCV's image output or by using the Options Tab thus allowing you to change the brightness contrast, sharpness over and above what the All Sky camera does. Since I place Splitcam on its own monitor (the second monitor), I can make it full screen to see all the detail, while my fist monitor has the NSN connection screen with its preview and chat window.

Note

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).

Appendix C – First Aid for the All Sky

The Image from the All Sky is jumping all over the place

Diagnosis: The camera is not getting a proper video signal.

Cure: Check to make sure that the video cable is snuggly connected from the All Sky to the Computer.

When I have my Video Software connect to my Mallincam through my MCV-1 adapter I only see a Blue screen.

Diagnosis: The MCV-1 or other adapters can have multiple video input connections. For example the MCV-1 has both composite and S-video. The cause of this symptom is that MallinCam is looking at one of those input ports, while the camera is sending the image through the other. Your Video Display software then just gives a Blue screen to say that I see nothing at the MCV-1 source.

Cure: Set the video to use the Composite port on the x2828 (MCV) video driver. Note: Miloslick/Splitcam/AmCap/Miloslick can change the port choice of the MCV-1. Just go into the **Video Tab** and in the Drop Down list choose **Video Input**. Inside this drop down will be the choice of input ports.

My ALL SKY Camera is frozen, or the commands do not seem to be working correctly, the camera is acting strangely.

Diagnosis: Somehow the MallinCam internals have become corrupted (power surge, static, cosmic ray) and all we need to do is reset everything back to factory settings.

Cure: The first thing you should do is turn off MallinCam for about 30 seconds, then power it up as you normally would (this fixes about 95% of the issues). If this didn't help, you can reset the MallinCam All Sky to its Initial Factor Settings by following this sequence:

- Press the **Center Button** so the ICON Menu appears.
- Select the **EXIT** ICON
- Now Select the **FACTORY SET** option and activate **YES**

Appendix D – Setting Template

Menu Parameter	Setting	Comments
1. Exposure		
ELC		
• E. Shutter		
• Bright		
HVLC/D-WDR		
AGC		
3D-DNR		
Senseup		
2. Color		
WB Mode		
R-Y Gain		
B-Y Gain		
3. Day & Night		
D&N Mode		
4. Function		
Mirror		
Sharpness		
Monitor		
Gamma		
LSC		
5. Setup		
DPC Auto		
DPC Manual		
6. Other		

Jack Huerkamp's recommended Settings

| Menu Parameter	Setting	Comments
1. Exposure		
ELC	AUTO	
• E. Shutter		
• Bright		
HVLC/D-WDR		
AGC	HIGH	
3D-DNR	HIGH	
Senseup	X64	
2. Color		
WB Mode	ATW	
R-Y Gain		
B-Y Gain		
3. Day & Night		
D&N Mode	AUTO	
4. Function		
Mirror		
Sharpness	14	
Monitor	2	
Gamma	0.6	
LSC	ON	
5. Setup		
DPC Auto	AUTO	
DPC Manual	OFF	
6. Other		

Appendix E – Installing All Sky Camera Outside

The base of the Mallincam All Sky Camera is about 3.7" across, so ideally you need a flat surface 4" or great for the camera to rest on. There are numerous options for you to attach the All Sky Camera to a platform, each has its benefits and challenges. Some of the simplest techniques apply the use of Velcro suck to the underneath of the base of the camera and to the platform. This way it is very easy to unstick the camera if you have to remove it from the base.

For those of you who want a more permanent installation, you can unscrew the dome off the base of the Mallincam All Sky Camera, then you have access to three holes (threaded, I believe 10-32). You then can either use the threads attaching the camera to a base, or wood screws for attaching base to a wooded platform.
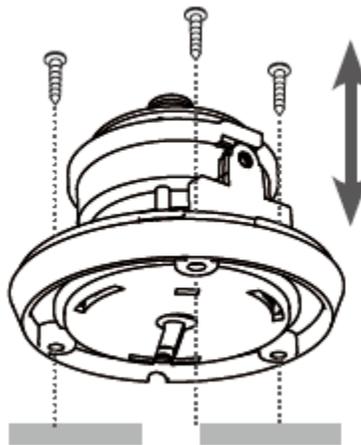
The choices of platform ideas are unlimited, but two that I have seen include a 4x4 fence post with a true 4" diameter wood disk on top. The disk is attached to the post with nails. Then a thin piece of rubber (acts as a water barrier) is place on top of the disc, then the base of the All Sky Camera is screwed thru the rubber thru the disc and into the post. The cable is then run down the side of the post. A plastic cover can be used to protect the Control Button from the elements.
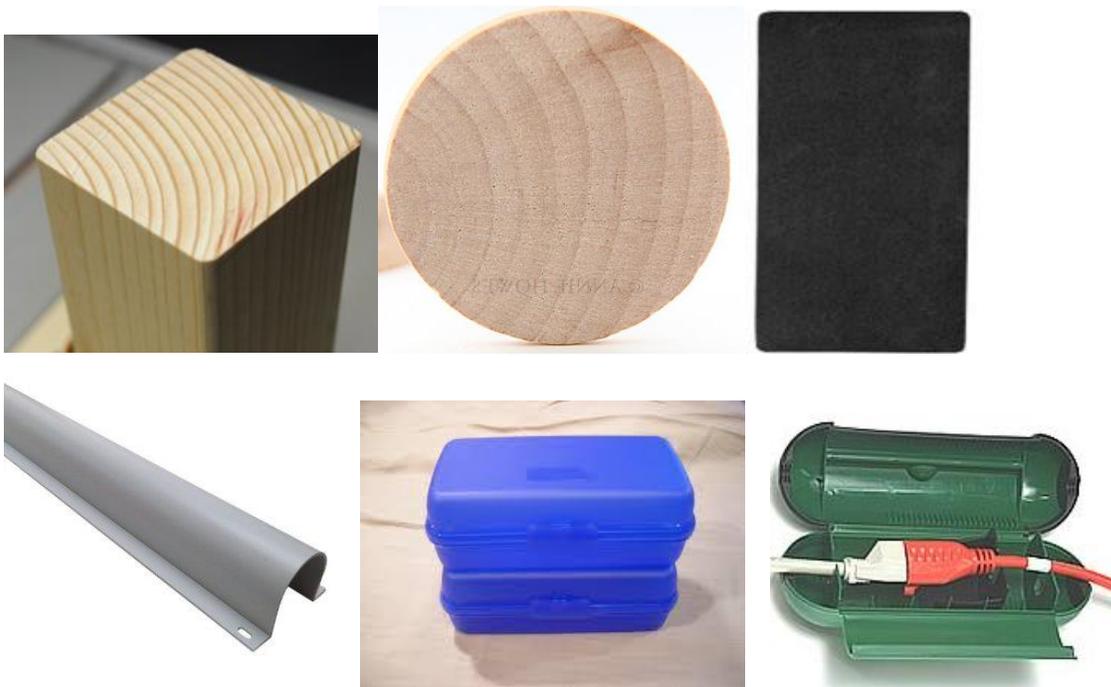
Some have substituted 4" diameter PCV pipe (White) and have placed a white PCV cap on the pipe. The base of the All Sky Camera is then attached to the Cap which in turn is attached to the PCV Pipe. This way the cap (and camera) can be removed from the pipe for easy access. Options include cutting a notch in the pipe to run the cable thru the pipe. (With another notch and an access box with the Control button in that notch).

Appendix F – Applications of All Sky Camera

All image courtesy of Jack Huerkamp

Day Time Rainbow

International Space Station Tracking

Constellations

Iridium Flares

Meteor during Full Moon

Appendix G – Notes