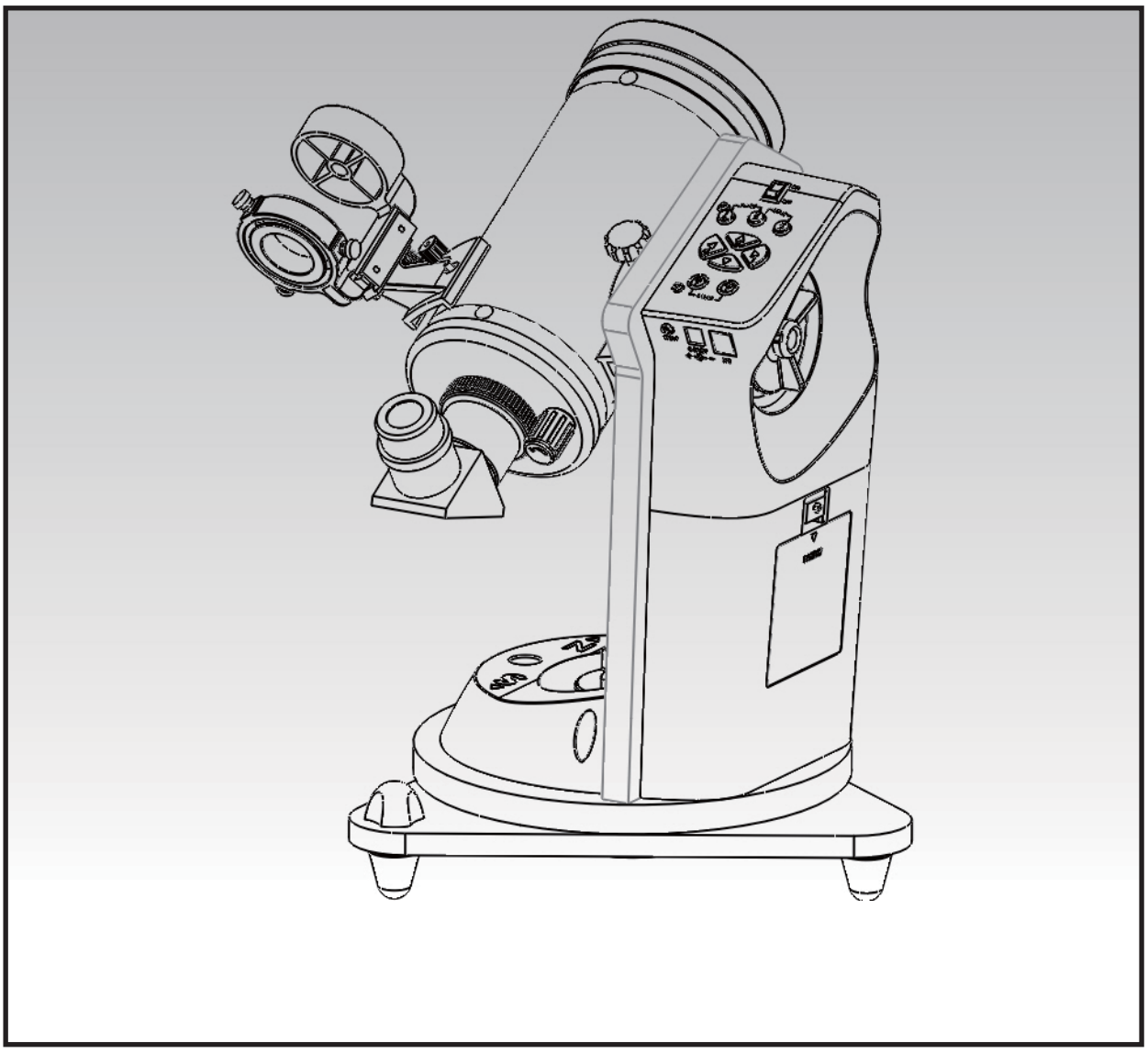
INSTRUCTION MANUAL

MiniDob Mount



Congratulations on your purchase of the MiniDob Mount. This is a unique and versatile mount! Nothing like this mount has ever been offered in the marketplace before!

- Instant Astronomical Tracking
- Single Arm Alt-Azimuth Mount
- DC Servo Motor Assembly
- Dual Encoder Design for Manual Operation
- Terrestrial Stored Positions to GOTO
- Cruise and Image for Terrestrial Positions
- Lightweight and Portable
- Simple and Easy to Use

This mount is truly fun to use with its multi-function operation.

WARNING

- Never look at the sun with the naked eye or with a telescope (unless you have the proper solar filter). Permanent and irreversible eye damage may result.
- When observing the sun (while using a proper solar filter) with your telescope, make sure that the finderscope has a dust cap over the objective end or remove the finderscope.
- Never use your telescope to project an image of the sun onto any surface. Internal heat build-up can damage the telescope and any accessories attached.
- Never use an eyepiece solar filter or a Herschel wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through the telescope to the eye.
- Never leave the telescope unsupervised, either when children are present or adults who may not be familiar with the correct operating procedures of your telescope.

MOUNT AND TELESCOPE ASSEMBLY

Mount Setup

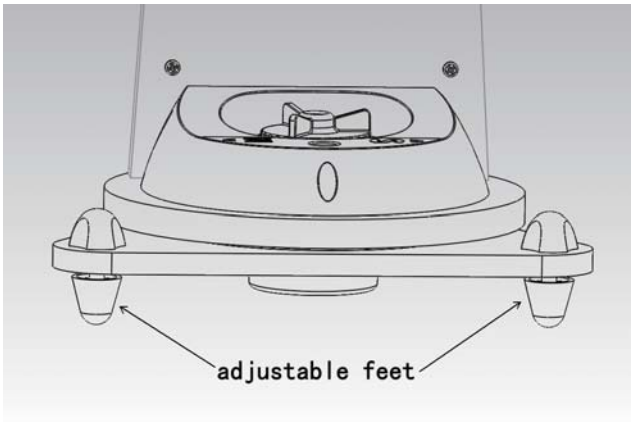


Figure 1

1.Place the mount on a flat surface. For astronomical usage, place a bubble leveler on the base and adjust the 2 adjustable feet to level the base (Figure 1).

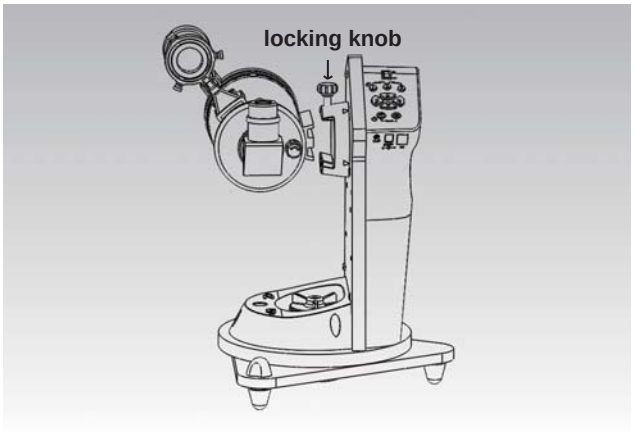


Figure 2

2.Loosen the locking knob on the mounting platform. Slide the dove tail bar on the telescope tube into the slot of the mounting platform and tighten the locking knob. The fork arm should be at the right side of the telescope tube when the telescope tube points forward (Figure 2).

Optical Tube Notes

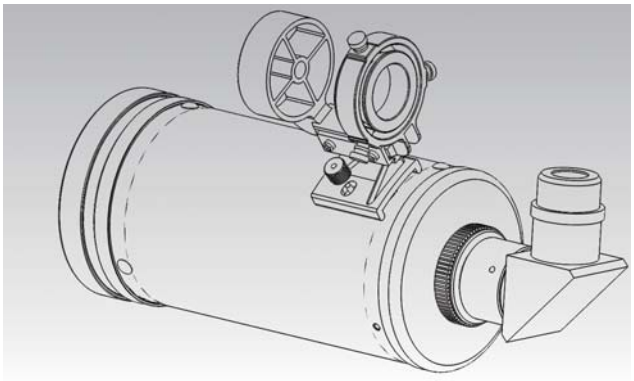


Figure 3

You must be careful not to use an optical tube that is too heavy or too big as the motor assembly will not be able to operate properly and the mount may get damaged. As a guideline, do not use tubes that exceed 2 kgs or 4.4 lb (Figure 3).

Powering The Mount

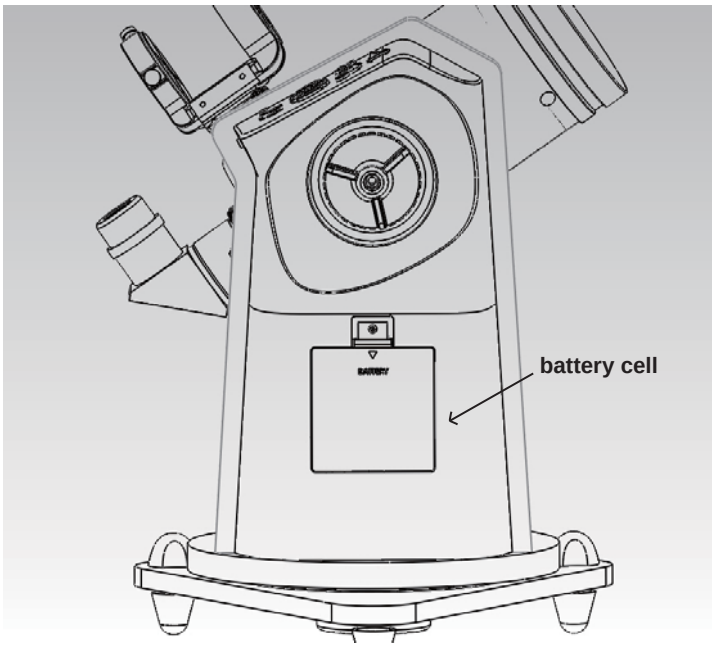


Figure 4

HC jack is used to connect to SynScan AZ GOTO hand control .
SNAP jack is used for auto imaging.

The MiniDob mount can be powered from the internal batteries or an external DC power supply (Figure 4).

The battery compartment is located on the fork arm and holds eight (8) AA alkaline batteries (to be supplied by user).

The external DC power requirement is 12-Volts DC Nominal and it should be able to supply at least 500mA of DC current. The cord plug should be 2.1mm I.D. x 5.5mm O.D. x 12mm, female and positive center. The maximum voltage should not exceed 14-Volts and the minimum is 7.5-Volts.

WARNING: SOME SIMPLE TRANSFORMER STYLE AD-DC POWER CAN OUTPUT DC VOLTAGE THAT IS MUCH HIGHER THAN THE VOLTAGE AS SHOWN ON ITS LABEL. AVOID USING SUCH ADAPTER, OTHERWISE THE MOUNT MIGHT NOT WORK AND MAY BECOME DAMAGED.

FOR ASTRONOMICAL USE

Normal Operation

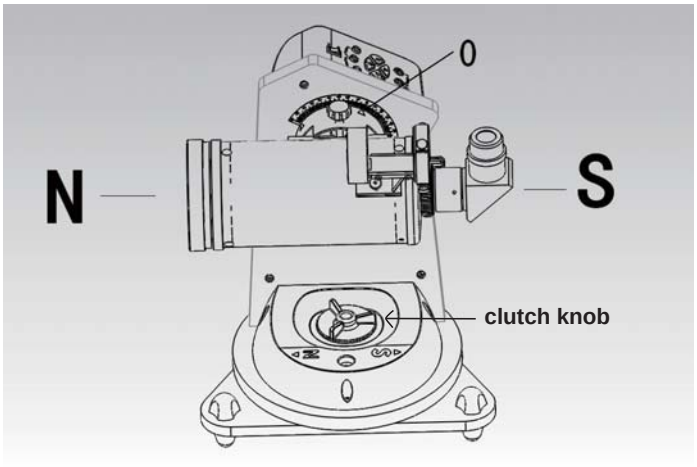


Figure 5

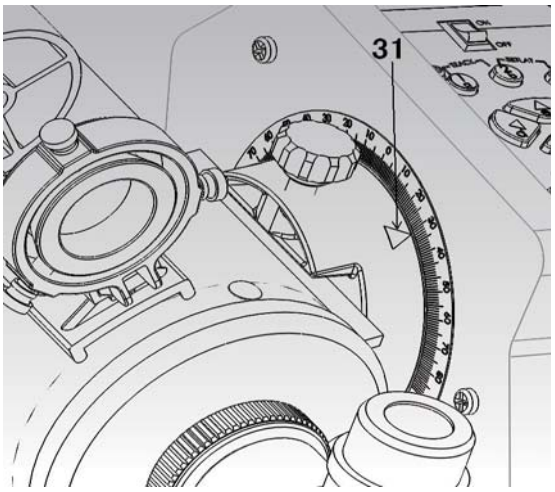
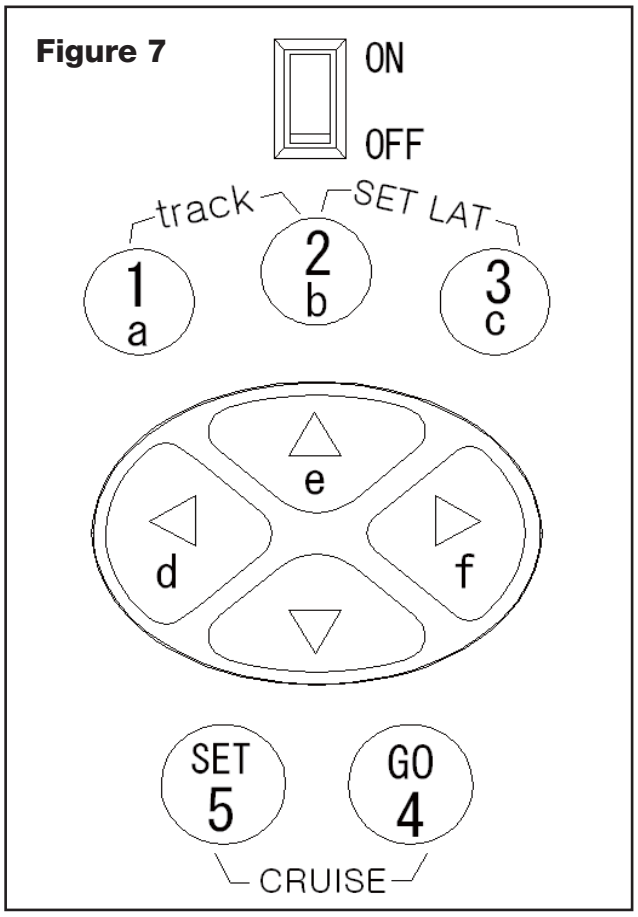


Figure 6



1.The base of the mount should be leveled properly.

2.Loosen the azimuth clutch knob and point the telescope tube to true North.

3.Loosen the altitude clutch knob and level the telescope tube.

4.After completing the step above, the telescope is now in its proper “Power-On” position. Always place the telescope in this position prior to turning the power on.

5.Turn on the power. The MiniDob mount is now ready for astronomical observing.

6.At any time, user can loosen the azimuth clutch and altitude clutch knobs to manually rotate the telescope horizontally and vertically and point the telescope to the celestial object of interest. After re-locking the clutches, the MiniDob mount will start

tracking that object automatically.

7.User can also use the buttons on control panel to move the mount. Following these guides to use the buttons to slew the mount:

- The four direction buttons are used to slew the mount horizontally and vertically.
- User can use the other 5 buttons to choose from 5 slewing speeds. Speed 1 is the slowest and Speed 5 is the fastest.
- Speed 1 and Speed 2 are for centering an object in the eyepiece of the telescope.
- Speed 3 and 4 are for centering an object in the red dot finder of the telescope.
- Speed 5 is for slewing the mount at its fastest speed. (To save the battery, we recommend rotating the mount manually instead.)

8.The celestial object function can be switched on/off by simultaneously pressing the buttons “1/a” and “2/b”. While the tracking is on, the backlight of the buttons will flash twice and the internal buzzer will give two short beeps. If the tracking is off, the button’s backlight will flash once and the buzzer will give only one short beep.

9.Press and hold “1/a” button for more than 5 seconds can switch the internal buzzer on/off. Press and hold “2/b” button for more than 5 seconds can switch the button backlight on/off.

Setting Latitude – An One-Time Setting Operation

The MiniDob mount needs the input of local latitude to allow its celestial object tracking function to work properly. The latitude setting operation is an operation if the observing site does not change much in latitude. Here are the steps for setting the latitude.

- Find local latitude with a GPS, a map or other similar devices.
- For Northern Hemisphere users, rotate the altitude axis until the altitude scale reads 0 degree. For Southern Hemisphere users, let the dial read the local latitude. User can rotate the altitude axis with motor or manually (figure 5).
- Turn off power, and then turn it on again.
- For Northern Hemisphere users, rotate the altitude axis to let the altitude scale read local latitude. For Southern Hemisphere users, let the dial read 0 degree (Figure 6).

• Press both buttons “2/b” and “3/c” simultaneously, and the MiniDob will know the local latitude.

Tips: *When rotating the altitude axis with motor, use the same UP/DOWN key to end adjusting scale reading to 0 degree or your local latitude, this will help eliminate the influence of mechanical backlash. For example, if UP key is the last button that you used to set the scale to 0 degree, you should also use UP key as the last button for setting the scale reading to your local latitude.*

Limitation and Options

• Celestial object tracking accuracy depends on multiple factors, such as
Leveling of the base;
Accuracy of pointing to true North before turning power on.
Accuracy of setting local latitude.
Celestial object types: Sun, Moon, planet or stars.
The position of the celestial objects in the sky.

It is normal to find that the celestial object still drifts slowly in the eyepiece of the telescope while the MiniDob is tracking the object, but the drift will be much slower compared to a telescope without tracking function.

• Users have to find a celestial object and point the telescope to it manually. To locate a celestial object automatically, user can consider purchasing a SynScan GOTO hand control.

FOR TERRESTRIAL (LAND) USE

General Opertion

1.The MiniDob mount always activates the celestial object tracking function after power is turned on. For terrestrial application, user should press buttons “1/a” and “2/b” simultaneously to turn off the tracking function.

2.User can loosen the clutches to rotate the mount manually, or use the buttons on the control panel to slew the mount.

3.The MiniDob mount can store 6 preset positions and retrieve these positions when required.

- Point the mount (with telescope, camera etc.) to a spot of interest, and then press button “SET” plus one of the buttons “a” to “f”. The current position of the mount will be stored and represented with that button (“a” to “f”).

- Press button “GO” plus one of the buttons “a” to “f”, the mount will slew to the preset position represented by the button (“a” to “f”).

***Tip** – to ensure the best accuracy for your position choices, it is important that you use the "up" and "right" direction buttons as the final keys before you actually set your position choice.*

4.The MiniDob remembers the stored positions even after the power is turn off. Thus if the base of the mount is not moved and the power is turned on with the mount pointing at the same reference spot, user can always retrieve the pre-stored position.

5.Press and hold “1/a” button for more than 5 seconds can switch the internal buzzer on/off. Press and hold “2/b” button for more than 5 seconds can switch the button backlight on/off.

Camera Cruising Function

1.The MiniDob mount can control a camera and take pictures at up to 6 preset positions (“a” to “f”).

2.The camera used for this application should have an external shutter control port which can connect to the SNAP port on the MiniDob with a proper cable. The SNAP port is a 2.5mm 3-segment stereo jack and the trigger signal connects to the tip and base segments.

3.Point the camera to the spots where user wants to take pictures and store the positions to buttons “a” to “f”.

4.Press buttons “GO/4 and “SET/5” simultaneously to start the camera cruising. The mount

will slew to and stop at the pre-stored position one by one from “a” to “f”. When the mount stops, it will send a signal to trigger the attached camera to take a picture. The MiniDob will stop at the last position for about 3 minutes before it re-starts the cruising again.

5.By default, when the MiniDob stops at a pre-stored position, the active time of the shutter triggering signal is 3 seconds. User can press button a~f and button DOWN to change the time to 1~6 and 7 seconds during the cruising. The proper time depends on how long the camera takes to finish the exposure measurement and auto-focus functions.

6.During the cruising, user can press the SET button to pause. Release the SET button will resume the cruising.

7.Press buttons “DOWN” and “RIGHT” simultaneously to stop the cruising.

8.User might want to clear and skip one or more of the preset positions (“a” to “f”). To do this, user must store the power-on position to the specific buttons immediately after turning on the power.

Video Cruising Function

1.The MiniDob mount can also cruise through up to 6 pre-stored positions without full stop at the spots. This is for using a camcorder to record a continuous video.

2.Press buttons “GO/4” and “Down” to activate the “Video Cruising” function.

3.During the cruising, user can press the SET button to pause. Release the SET button will resume the cruising.

4.The mount does not stop between cruising cycles.

5.Press buttons “DOWN” and “RIGHT/f” to stop the cruising.

Panoramic Photography

1.The MiniDob mount can control a camera to take panoramic photos.

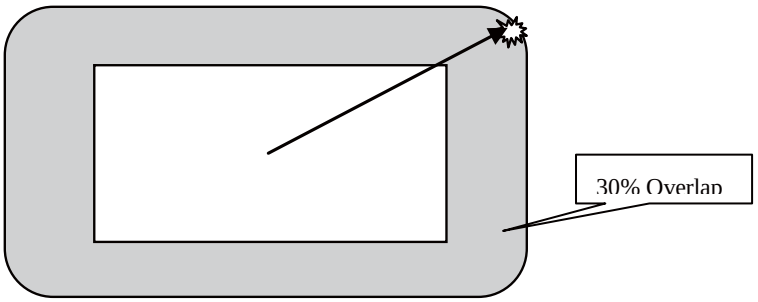
2.The camera must have an external shutter control port, and a proper bracket should be used to attach the camera on the MiniDob mount.

3.Set the FOV of the camera

- Level the camera with the mount. Turn off the power of the mount and then turn it on again.

• Look through the viewfinder window of the camera or look at the life view LCD display of the camera. As shown in the following figure, remember the object at the corner of the view finder, then rotate (Manually or automatically with motor drive) the azimuth and altitude axes of the MiniDob mount to move the center of the view finder onto that object. Press buttons “SET/5” and “1/a” to save the position. The MiniDob will double the movement to get the full field of view.

• When taking panoramic pictures, the mount will apply 30% overlap between the pictures.



4.Set the lowest altitude angle of photography.

Look through the view finder of the camera and use the DOWN/UP buttons to slew the altitude axis

to the desired lowest point of photography, and then press buttons “SET/5” and “2/b” to save the position.

5.Set the highest altitude angle of photography.

Look through the view finder of the camera and use the DOWN/UP buttons to slew the altitude axis to the desired highest point of photography, and then press buttons “SET/5” and “3/c” to save the position.

6.Start panoramic photography.

Press buttons “1/a” and “3/c” simultaneously to start taking panoramic pictures.

The mount will start taking pictures from the preset lowest altitude angle, first move in azimuth direction, then increase altitude angle gradually.

After all pictures are taken, the mount will return to the original position (Power-on Position).

7.During picturing taking, user can press the SET button to pause. Release the SET button will resume the operation.

8.By default, when the MiniDob stops at a pre-stored position, the active time of the shutter

triggering signal is 3 seconds. User can press button a~f and button DOWN to change the time to 1~6 and 7 seconds during the cruising. The proper time depends on how long the camera takes to finish the exposure measurement and auto-focus functions.

9.Press buttons “DOWN” and “RIGHT” to suspend the operation.

10.The FOV setting, lowest altitude and highest altitude setting are saved in the MiniDob mount even after the power is turned off. During the next panoramic photography session, the user does not need to repeat the setting if these parameters do not change. User can simply level the tripod and camera, turn on power and press button “1/a” and “3/c” to start taking panoramic pictures.