

# DobsonDream

Push-TO DSC controller

User guide



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## 1. APPOINTMENT AND OPPORTUNITIES

DobsonDream is a DSC controller (digital telescope guidance circles). It helps observers to accurately and quickly find objects in the night sky. In this case, the telescope tube is pointed to the object manually, until the crosshair in the planetarium program coincides with the desired object. The controller receives data about the position of the telescope tube from sensors (encoders) located on the telescope mount axes. As encoders, any quadrature encoders with two TTL outputs and a power supply of 6 - 12V can be used. When inexpensive low-resolution encoders are used, 200 to 2000 steps / pulses per revolution of the encoder shaft, an additional gearbox is needed to increase the number of steps / pulses per rotation of the telescope axis. In this case, the encoder will be installed radially to the telescope mount axis, as in photo 1.



Photo 1

When using encoders with high resolution, 2000 - or more steps / pulses per one revolution of the shaft, the encoder is mounted directly on the telescope mount axis, as in photo 2.

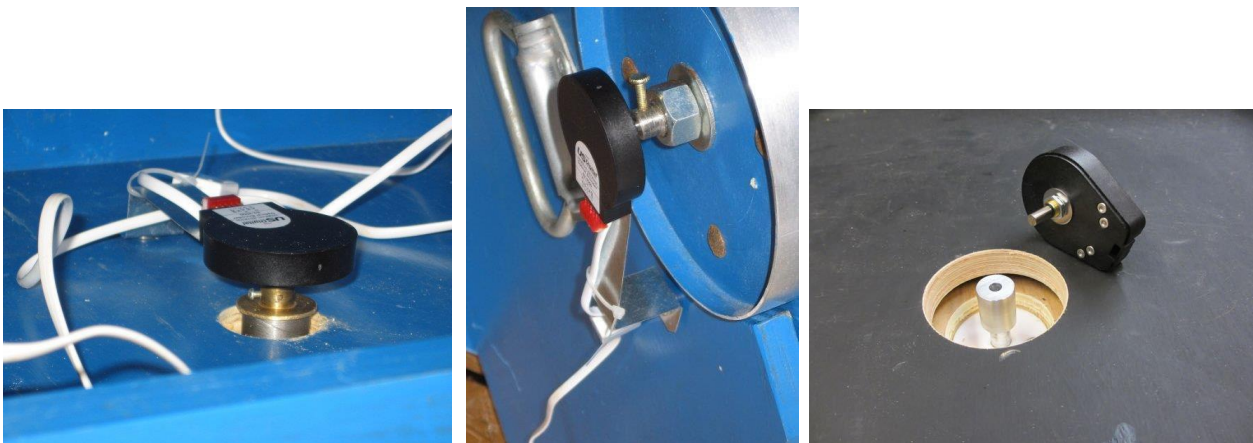
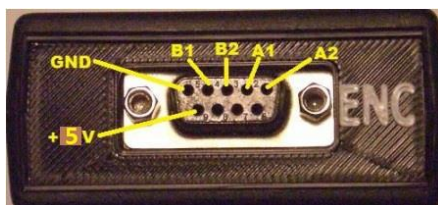


Photo 2

Photo 3 shows the pinout of the DB9 connector for encoders.



A1, B1 - signals of the first encoder

A2, B2 - signals of the second encoder

Photo 3

DobsonDream can work with any planetarium program supporting work with basic encoders and DSC. For example, for a PC with Windows, you can use the Cartes De Ciel planetarium, and for mobile devices with the Android or iOS SkySafari planetarium. DobsonDream is made in two versions. Their difference in different communication interfaces, WiFi or Bluetooth.

Next, all examples will be shown for mounting Dobson, although this system can be installed for any azimuthal or equatorial mount

## 2. Preparation for work

Before starting work, the appropriate encoders must be installed on the telescope mount. The type of connector and pinout of the encoder wiring must match Photo 3.

1. Connect the encoders to the ENC connector of the DobsonDream controller.
2. Connect the 12V power supply to the 12V connector of the DobsonDream controller. The center pin of the connector is positive.
3. Using the **DobsonDream setting panel** (version for Android only), specify in the controller the number of encoder steps / pulses for which each axis completes a full revolution. DobsonDream will remember this data. And if the number of steps / pulses of the encoder does not change, then on subsequent inclusions this item can be skipped. Photo 4 shows the sequence of steps for setting the number of encoder steps / pulses.



Photo 4

Also, using the DobsonDream setting panel utility, you can check and compare the estimated number of steps / pulses per rotation of the telescope axis with the actual number for encoders installed radially. To do this, go to continuous reading of the encoders by clicking the Continuous reading button, and clicking Reset by resetting the reading to zero, as in photo 5.

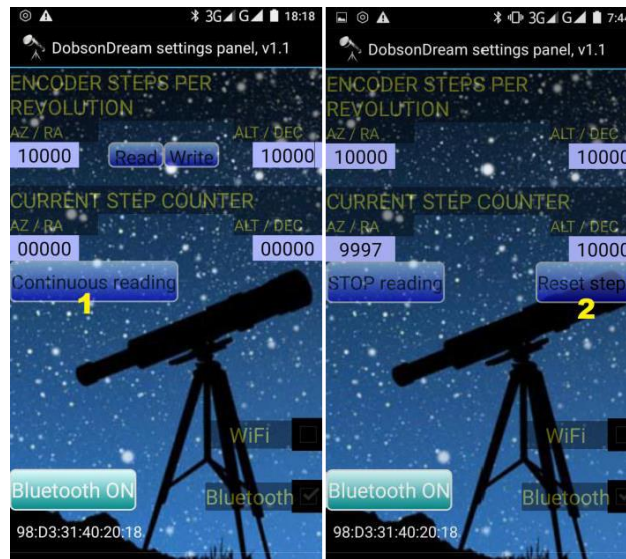


Photo 5

Make marks with a thin marker on the disks of the mount axes to count the full revolution, as in photo 6.



Photo 6

If there is no possibility to rotate the axis for a complete revolution, make marks for 1/2 or 1/4 turn. Rotate the telescope axis from the zero mark to the mark, for example, 1/2 turn. In this case, if the estimated number of steps / pulses per revolution is 10,000, the DobsonDream setting panel should show 5000 steps / pulses.

DobsonDream is ready for use.

## 2. Work with mobile devices.

To connect to mobile devices, select the interface that corresponds to your DobsonDream. For Bluetooth, the password for connecting to the system is 1234. For the WiFi connection between the mobile device and DobsonDream, use the following parameters: SSID - DobsonDream, password - 12345678. Connection parameters for SkySafari: ip address - 192.168.0.1, port - 1234.

Next on photo 7, the SkySafari planetarium example shows the sequence of connection to DobsonDream via WiFi. In the planetarium program on your mobile device, select the connection method by WiFi or Bluetooth. For WiFi, simply connect to the default DobsonDream network and in the SkySafari settings, enter the ip address and port in the required fields.

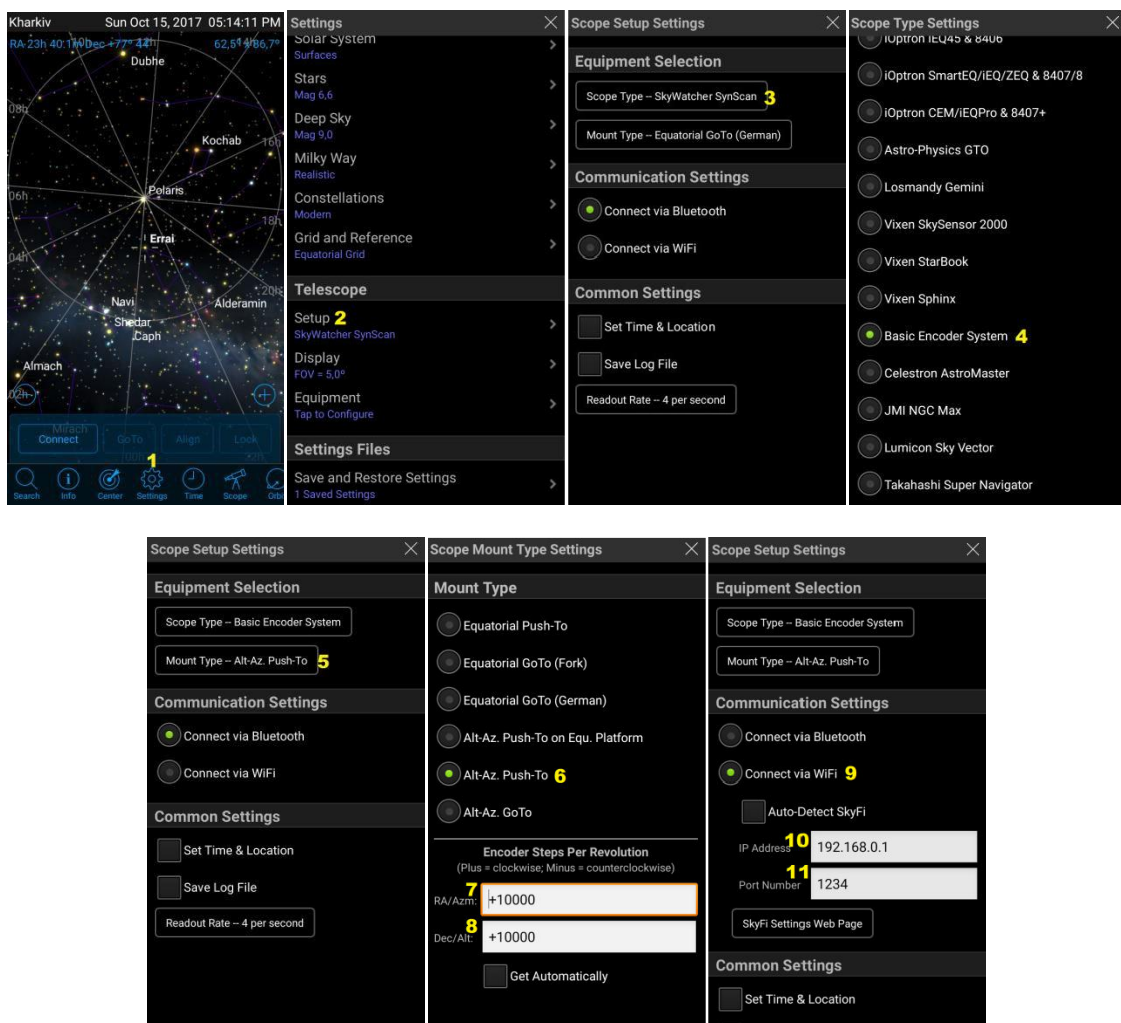


Photo 7

Connect SkySafari Planetarium to DobsonDream. If the connection is successful, a pleasant signal will be heard, and by smoothly moving the telescope you will see the corresponding crosshairs in the star field of the planetarium program. Further, to make the planetarium "understand" where the telescope is directed, it is necessary to make a telescope alignment

(alignment) on two stars. To do this, aim the telescope at a previously known, bright star. Select the same star by clicking on the planetarium screen, and click the Align button. Do the same with another star in advance. If, during the transfer of the telescope to another star, it is detected that the crosshairs on one or both axes are moving in the opposite direction, change the sign in the corresponding field of the number of steps / impulses of the encoders in position 7, 8 in photo 7 and perform the procedure of binding the telescope to two stars again. If everything went well, then smoothly moving the telescope tube you can start to make a fascinating tour through the infinite expanses of the universe.

Changing the settings of the WiFi network DobsonDream can be done via the WEB interface at the initial IP address 192.168.0.1.

### 3. Work with PC

If DobsonDream has a Bluetooth interface, then first you need to establish a connection between the PC and DobsonDream via Bluetooth. To do this, on the Windows Control Panel, click Devices and Printers \ Add a Device. The PC must detect Bluetooth. Then select the access by password and enter "1234". The PC must create a Bluetooth connection and the "Device COM port COMxx" should appear in the device manager. If DobsonDream has a WiFi interface, then you need to connect to the WiFi access point "DobsonDream". By default, a network with open access. Next, you need to create a TCP-COM bridge. To do this, use the free utility USR-VCOM (<http://www.usriot.com/usr-vcom-virtual-serial-software/>), registering the parameters as on photo 8.

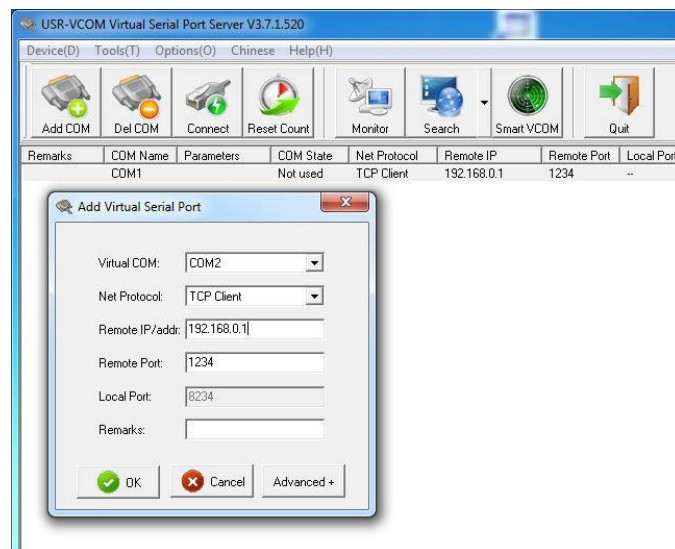
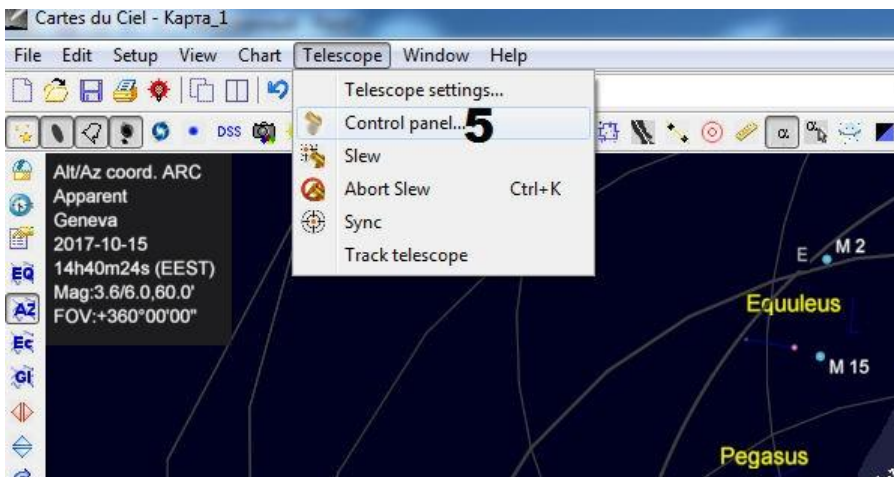
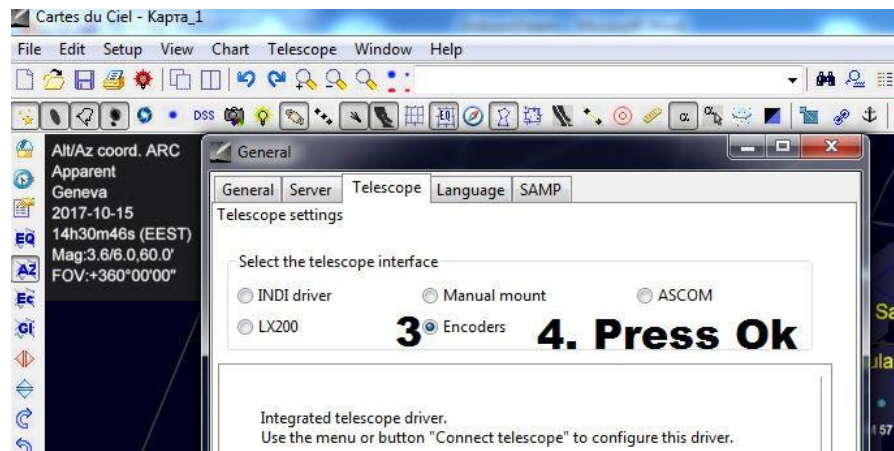
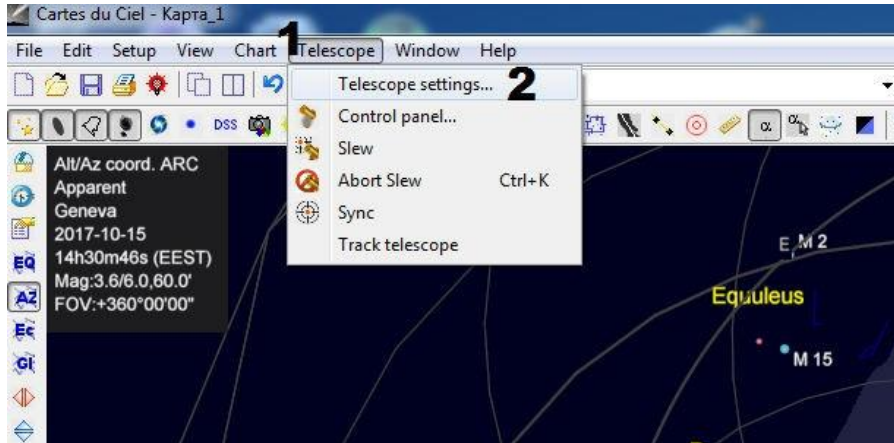


Photo 8

A new COM port will appear in the device manager, which you will have to select in the planetarium program when you connect to DobsonDream.

Next on photo 9, the example of the planetarium Cartes De Ciel shows the sequence of connections to DobsonDream..



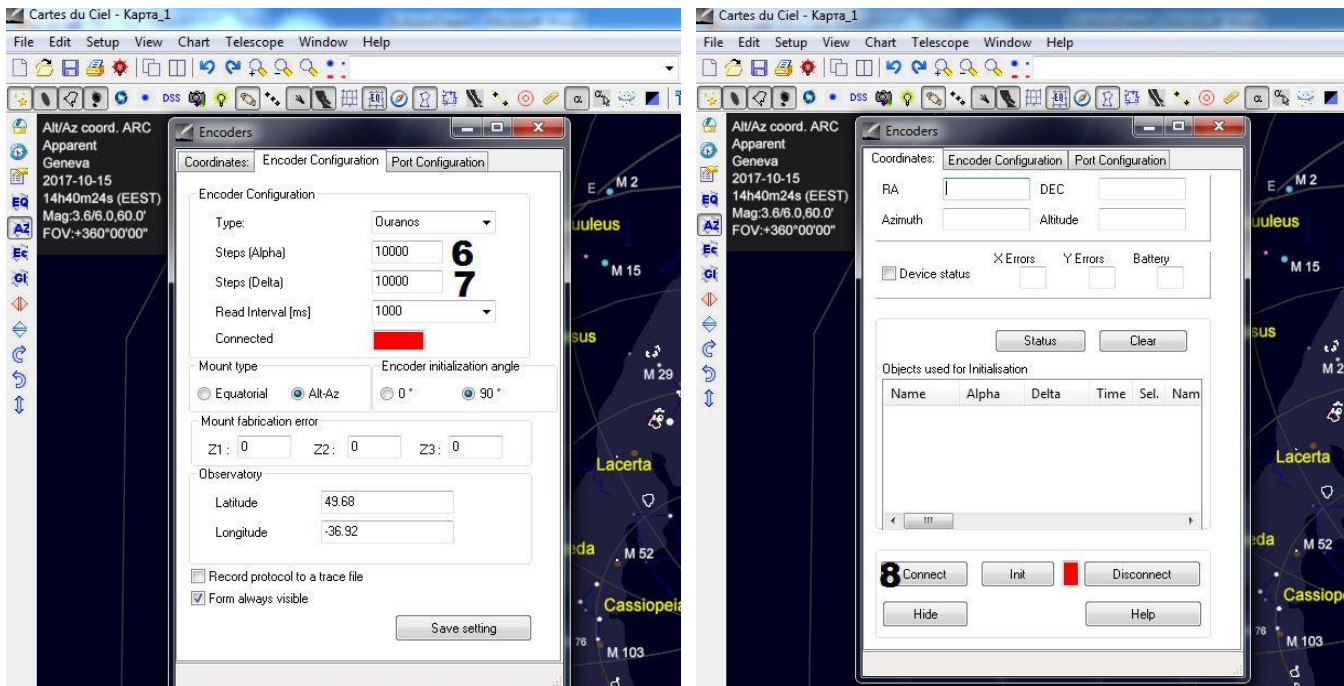


Photo 9

If the connection was successful then the red rectangle will turn green, and by smoothly moving the telescope you will see the corresponding crosshairs in the star field of the planetarium program. Further, to make the planetarium "understand" where the telescope is directed, it is necessary to make a telescope alignment on two stars. To do this, aim the telescope at a previously known, bright star.

Right-click the same star on the planetarium screen, and click in the Telescope / Synchronize menu that appears. Do the same with another star in advance. If during the transfer of the telescope to another star it is found that the crosshairs on one or both axes are moving in the opposite direction, change the sign in the corresponding field of the number of steps / impulses of the encoders in position 6, 7 in photo 9 and perform the procedure of binding the telescope to two stars again. If everything went well, then smoothly moving the telescope tube you can start to make a fascinating tour through the infinite expanses of the universe.

**Thank you for purchasing DobsonDream controller**

**Pleasant observations to you ....**