Orion® StarSeek™ Wireless Telescope Controller

#6001

ORION
TELESCOPES & BINOCULARS
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This next-generation version of the Orion StarSeek Wireless Telescope Controller "module" enables control of an Orion GoTo or computerized "push-to" mount from an iOS or Android phone or tablet running Orion's StarSeek astronomy app. You simply connect the StarSeek module to your mount's serial or USB port using the serial or USB cable that came with your telescope or mount. The StarSeek module works by creating its own local wireless network, leveraging the Wi-Fi capability built into iPhones, iPads, and phones and tablets running the Android operating system. When coupled to the serial or USB port on your telescope's GoTo mount, the module converts the Wi-Fi signal from the mobile device into serial commands used by the mount to drive the telescope automatically to any of more than 31,000 celestial objects in the StarSeek app's database.

The StarSeek Wireless Telescope Controller module works with all Orion motor-driven GoTo telescopes, including the Atlas and Atlas Pro, Sirius and Sirius Pro, StarSeeker GoTo and both SkyQuest XTg and XXg GoTo Dobsonian lines, as well as with many other GoTo telescope brands having RS-232 or USB ports. It also works with Orion IntelliScope "push to" scopes (requires #5222 IntelliScope to PC serial cable, sold separately).
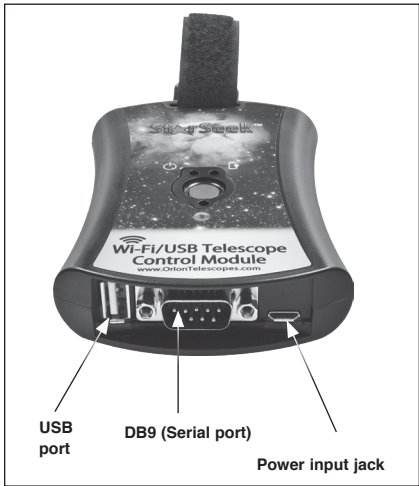

Figure 1. The USB and DB9 serial ports, and the power input jack (micro-USB) are on the bottom of the StarSeek module.
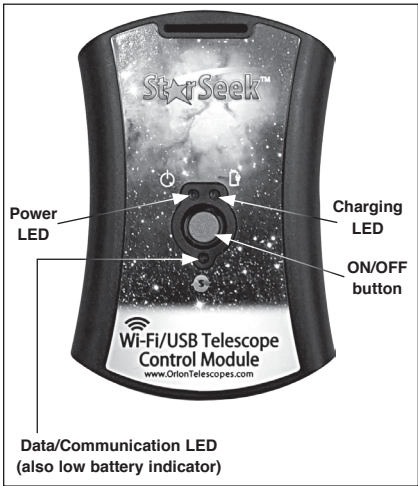

Figure 2. The center ON/OFF button is flanked by three LED indicator lights. The Data LED blinks when the mount is under active control by the app, and when telescope control is disconnected it will blink if there is less than 25% charge on the internal battery.

I. Included Parts

• StarSeek Wireless Telescope Controller module

• AC charging adapter

• Hook-and-loop hang strap

II. Charging the StarSeek Module

The Wireless Telescope Controller module has an internal, rechargeable lithium ion battery to supply power for operation. You should make sure the battery is fully charged before each use. Battery life is about 10 hours depending on usage. You can also run the StarSeek module continuously from AC power by plugging the charging adapter into a household 110V AC outlet.

To charge the StarSeek module:

1. First make sure there are no RS232 or USB cables connected to the StarSeek module.

2. Plug the charging adapter into a power outlet and the small end into the micro-USB "Power" port located on the bottom of the module **(Figure 1)**. The charging LED (upper right of red center button) should turn ON, indicating the module is charging. If the LED is OFF, it means the device is already charged.

3. Charge the module until the charging LED turns off, at which time the module is fully charged.

When the internal battery is under 25% of full power, the data LED (below the center button) will blink. Plug in the charger to recharge the battery to avoid losing power. *NOTE: To check battery power, communication with the telescope must be disconnected in the StarSeek app, because in the connected state the data LED blinks by default.*

Refer to **Figure 2** for the positions of the three LED indicator lights and center Power button.

III. Configuring the StarSeek Module

1. Power ON the module by pressing red center button for at least 1 second, then release it. The power LED (upper left of center button) should turn on.

2. Use your tablet or phone to check for available Wi-Fi networks (make sure Wi-Fi is turned on).

3. Connect to the "StarSeek" network. This network requires no password.

To enable password protection or security features:

1. Power the StarSeek module on

2. Connect to the "StarSeek" Wi-Fi network

3. Open your web browser on the tablet or phone and enter http://10.0.0.1. The StarSeek module's status page will load and various security and firmware settings can be configured. You can configure StarSeek directly from the StarSeek app by going to Settings > Setup > StarSeek Settings Web Page.

4. Use the navigation menu at upper right and tap on Wireless (You'll also see links to Serial and Firmware settings.). On the Wireless screen, change the Device Name (SSID) and set a Password of at least eight characters. Doing so adds a layer of security. If another person in close proximity were to use the same network name, it may conflict with yours, and they may be able to connect with (and control!) your hardware.

IV. Connect to Your Telescope

All Orion GoTo and computerized push-to telescopes and mounts are equipped with a serial port, which is located on the hand controller next to the port for the coil cable that connects the hand controller to the mount. (On other brands of telescope or mount, the serial port may be on the hand controller or the mount itself.) You will connect the StarSeek module to the hand controller's serial port with an RS-232 serial cable -- DB9 female to RJ11 male; most Orion GoTo telescopes and mounts come with this serial cable included **(Figure 3)**. Call Orion if you need to purchase a replacement cable.
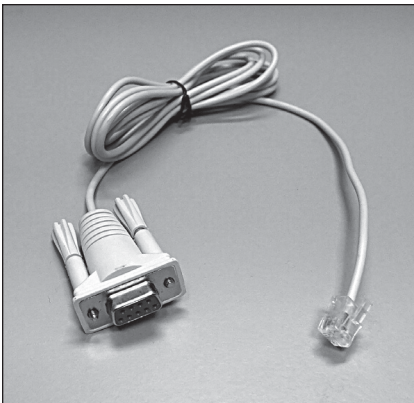

Figure 3. Orion GoTo telescopes and mounts come with a serial cable like this one that is needed to couple the StarSeek module to the mount for wireless telescope control from a mobile device.
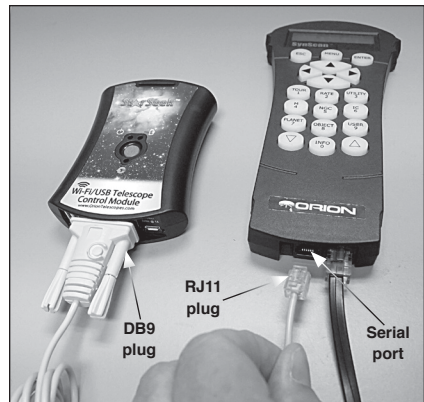

Figure 4. Connecting the StarSeek module to the SynScan hand controller. The RJ11 plug on the serial cable connects to the serial port on the SynScan, which is right next to the larger RJ45 port for the coil cable.

For the Orion IntelliScope, you will need a #5224 IntelliScope to PC RS-232 cable, which is sold separately.

For non-Orion telescopes, you will need to use the serial or USB cable recommended by the manufacturer for a particular telescope. Make sure you know the exact cable that's required. Just because a serial cable fits physically into a telescope's serial port, that doesn't necessarily mean it is the right cable.

1. Make sure the StarSeek module's serial settings match those required for your telescope/mount. If you're not sure, just proceed using the default settings in the StarSeek module's "Serial" screen.

2. Power up your telescope or mount and perform any alignment routine that you would normally perform, as outlined in the telescope/mount's user manual.

3. Connect the large DB9 end of the serial cable to the DB9 port on the StarSeek module, and connect the RJ11 plug to the mating receptacle on the hand controller, as shown in **Figure 4**. For USB-interface telescopes, use a standard USB cable to connect the StarSeek module's USB **(Figure 1)** port to the telescope's USB port.

4. Now turn on your tablet or phone that has the Orion StarSeek app installed, and join the StarSeek module's Wi-Fi network.

IMPORTANT: Do not connect the StarSeek module to the AUX port, hand controller port, autoguider port, or any port on your telescope (or its hand controller) other than its RS-232 serial port! Doing so may the damage StarSeek module and/or your telescope hardware. Make sure you know where the RS-232 serial port on your telescope is located, and only connect the StarSeek module to that port.

V.   Control Your Telescope

To activate telescope control:

1. In the StarSeek app, Go to Settings > Telescope Setup, then select the correct telescope type and mount type.

2. Enter the StarSeek module's IP address and port number, if they are not already entered. By default, these are 10.0.0.1 and 4030. Tap the Done button to accept changes and return to the main sky chart view.

3. Tap the Scope icon on the tool bar below the sky chart view to show the Scope Control Panel.

4. Tap Connect to establish communication with your telescope. If successful, you'll hear a "ping" and the telescope's position should appear as a bulls-eye on the star chart. Once communication is established, the data LED will flash continuously.

5. You can now use the StarSeek app to point your telescope to any object shown above the horizon. Select any object in the chart that is above the horizon and tap GoTo to move the telescope to that object in the sky.

6. When you're finished, tap Disconnect on the scope control screen of the StarSeek app to terminate communication with your telescope.

7. To power off the StarSeek module, press the center button for at least 1 second, then release it. The power LED should now be off.

VI. Resetting the StarSeek Module

Should you ever need to reset the StarSeek module to default settings, follow this procedure:

1. Check to see that the power LED is ON.

2. Press and HOLD the center button for 5 seconds, then release. The data communication LED (see **Figure 2**) will begin to flash slowly. When StarSeek has completed thr rest it will flash rapidly indicating that the module is preparing to reset its internal settings.

3. Release the center button and the StarSeek module will power down.

4. The next time the module is powered ON it will start with its default settings.

VII. Troubleshooting the StarSeek Module

Can't connect to the StarSeek module:

• Verify that the StarSeek module is charged, powered on, and within range of the connecting device.

• Make sure you star aligned the telescope before trying to connect.

• Verify that your serial cable is the correct one for your scope type.

• Verify that your StarSeek app settings for telescope type and mount type are correct.

• Verify the StarSeek module name, IP Address, and port number are correct in the StarSeek app Settings page.

• Change the SSID and/or transmitting channel to one with less traffic to prevent interference issues. See the StarSeek module's settings webpage at http://10.0.0.1 for more information.

• If your telescope has GPS, try turning off "Set Time & Location" in the StarSeek app. Go to Settings ->Setup and turn off Set Time & Location.

The telescope behaves erratically or has motor run-away:

- Verify that the StarSeek module and the telescope do not have low battery. Low battery often causes erratic behavior to occur. Plug in or charge the module, the telescope, and phone or tablet as needed.

- Move to a location with less Wi-Fi interference.

- Change the StarSeek module's SSID, Channel, or other settings to prevent unwanted individuals from connecting to your telescope.

- In the StarSeek app's Settings->Setup, change the Readout Rate setting to a lower value.

VIII. Updating the StarSeek module's firmware

1. Connect to the StarSeek Wi-Fi module from your computer at the default IP Address of http://10.0.0.1 and navigate to the "Firmware" tab.

2. Browse and select firmware file.

3. Click the "Update Firmware" button ONCE.

4. Wait for a notification of firmware application.

5. If no notification is seen within 10 seconds, refresh the page and try again.

6. You may need to rejoin the StarSeek network after a firmware update.

Specifications

Operating system compatibility	iOS, Android
Mount/telescope compatibility	Most GoTo models and brands that have RS-232 or USB communication ports; see OrionTelescopes.com for list
Housing material	ABS plastic
Battery type	Lithium ion
Battery capacity	2200mAh
Power input	5V DC, 1 Amp
Wi-Fi range	100 ft.
Communication ports	DB-9M (serial), USB
Dimensions	4.5"x3"x7/8"
Weight	4.1 oz.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation.

One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.

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