

INSTRUCTION MANUAL

Orion® SynScan™ GPS #7960



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Congratulations on your purchase of the Orion GPS (OGPS).

The OGPS is a compact all-in-one GPS module solution to connect to a SynScan computer telescope GoTo system mounts such as Orion Atlas, Sirius and SkyView Pro mounts.

The OGPS provides accurate geometrical coordinates and serves as a precise real-time clock for the GoTo system.

The receiver continuously tracks all satellites in view and provides accurate satellite positioning data. The OGPS is optimized for good performance, low cost, and maximum flexibility.



Figure 1. Connecting the GPS to the adapter cable.

Parts List

- Orion SynScan GPS mouse (OGPS) with 1.5m cable with MINIDIN (F) connector
- 50cm adapter cable with MINIDIN (F) connector and RJ-12, 6 pin connector
- Manual

System Requirements

SynScan Hand Controller firmware Version 3.32 or later is required in order to connect to the OGPS.

Please see the SynScan Hand Controller manual for firmware update procedure.

Alternatively the link below will take you to the product support page for the SynScan Hand Controller where the manual, firmware and firmware loader software can be downloaded.

<http://www.telescope.com/catalog/product.jsp?productId=99365>

Setup

1. If the firmware version of your SynScan hand controller is earlier than version 3.32, you should update the firmware to version 3.32 or later.
2. Please see the SynScan Hand Controller manual for firmware update procedure.
3. If the firmware version of the SynScan hand controller is version 3.32 or later, your hand controller is ready to be connected to OGPS.
4. First connect the adapter cable to OGPS (**Figure 1**).
5. Plug the RJ-12 connector on the end of the adapter cable into the RJ-12 socket of the SynScan hand controller as shown in **Figure 2**.

6. Connect DC power (12V):

- a. If the hand controller is connected to the mount, plug the 12V DC power source into the mount and press the mount's power switch on.
- b. If the hand controller is not connected to the mount, plug the 12V DC power source directly into the hand controller. For instance when in stand-alone mode, updating hand controller firmware without having to attach hand controller to mount.



Figure 2. Connecting the GPS to hand controller.

7. After you power on the hand controller, you will see "Initializing..." displayed on the LCD for 2 seconds, then the hand control will find the GPS receiver module is connected and after press ENTER, the hand control will prompt to enter the time zone and daylight saving.
8. After setting time zone and daylight saving, the LCD of the hand control will display blinking text "GPS Fixing..." The first time you connect the GPS to the hand controller; it will take at least 50 seconds to fix on the GPS signal. It may take longer, depending on the weather and environment. If it is the first time to use the OGPS or it has been more than a week since last time connecting the OGPS, the time to fix current coordinates will take more than 3 minutes.
9. After the OGPS has fixed on the GPS signal, the hand controller will display the version number if the hand controller is connected to the mount, or the LCD will display "No link to M.C." and "Stand-alone mode", if the hand controller is not connected to the mount.
10. Press ESC, and the hand controller will function as normal. If the GPS signal is fixed successfully, the hand controller will skip the location, date, and time entry. The date, time, and location will be automatically updated from the OGPS.
11. In the SynScan hand controller menu, there is a submenu "GPS" under Utility menu. In this GPS menu, you can read the GPS information. To reach this menu, press the UTILITY key, then press the scroll keys until "GPS" appears on the LCD screen. Press ENTER and the hand control will acquire GPS information within 2 seconds, assuming the OGPS successfully fixes on the GPS signal.
12. When the OGPS fixes, "GPS information:" will display on the first line of the LCD. You can press the scroll keys to check the GPS information.

The letters (a) to (l) show the display sequence of the GPS Information when you press the scroll keys.

- a. Shows the latitude of the current site.
- b. Shows the longitude of the current site.
- c. Shows the current date.
- d. Shows the current universal time (UT)
- e. Shows the current local time (LT)
- f. Shows the time zone, which is retrieved from the user-entered data.
- g. Shows the current local sidereal time (LST).
- h. Shows the altitude of the current site in meters.
- i. Shows the received GPS signal quality.

There are 4 levels of GPS signal quality, which are “No fix”, “2D”, “3D” and “3D+DGPS”. The most accurate signal quality is “3D+DGPS”, “3D” is the second best signal quality, and “2D” is the lowest useable signal quality. “No fix” means that the GPS is currently attempting to fix on a signal, or cannot acquire the signal.

- j. Shows the number of GPS satellites which are in the visible sight of the OGPS.
- k. Shows the number of GPS satellites which are currently fixed upon by the OGPS.
- l. Shows the magnetic variation (in degrees) of the current observing site.

To leave the “GPS Information” submenu press ESC. The other functions and operations of the hand controller are unchanged, and are the same as described in the SynScan Instruction Manual.

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.

Specifications

Receiver Type:	48-Channel, L1 C/A Code
Accuracy:	Position 5m CEP Velocity 0.1m/s
Startup Time:	<5 seconds hot start <35 seconds warm start <40 seconds cold start
Reacquisition:	1 second
Sensitivity:	-146dBm acquisition -160dBm tracking
Update Rate:	1 Hz
Dynamics:	4G (39.2 m/s ²)
Operational Limits:	Altitude <18,000m or Velocity <515m/s
Serial Interface:	RS-232
Protocol:	SynScan Position, Velocity & Time II Binary Message
Input Voltage:	2.7V ~ 6.0V
Current Consumption:	<100mW (3.3V)
Operating Temperature:	-40°C ~ +60°C
Humidity:	5% ~ 95%



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