

INSTRUCTION MANUAL

SynTrek™

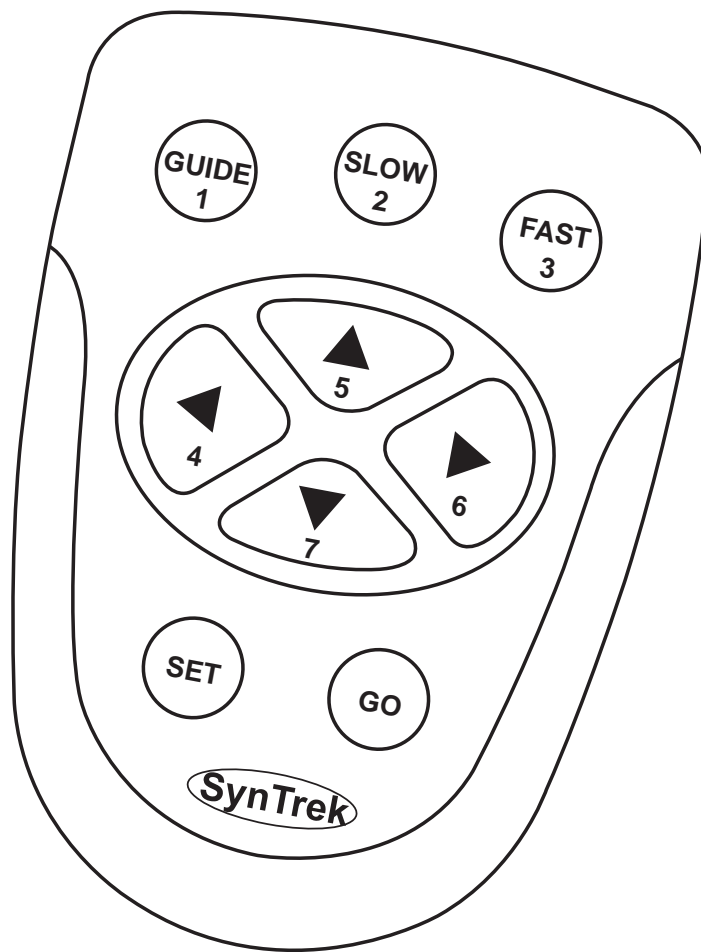


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NEVER USE YOUR TELESCOPE TO LOOK DIRECTLY AT THE SUN. PERMANENT EYE DAMAGE WILL RESULT. USE A PROPER SOLAR FILTER FIRMLY MOUNTED ON THE FRONT OF THE TELESCOPE FOR VIEWING THE SUN. WHEN OBSERVING THE SUN, PLACE A DUST CAP OVER YOUR FINDERSCOPE OR REMOVE IT TO PROTECT YOU FROM ACCIDENTAL EXPOSURE. NEVER USE AN EYEPiece-TYPE SOLAR FILTER AND NEVER USE YOUR TELESCOPE TO PROJECT SUNLIGHT ONTO ANOTHER SURFACE, THE INTERNAL HEAT BUILD-UP WILL DAMAGE THE TELESCOPE OPTICAL ELEMENTS.

Introduction to the SynTrek™

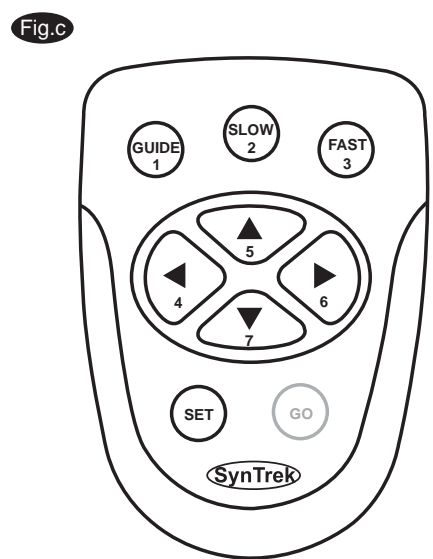
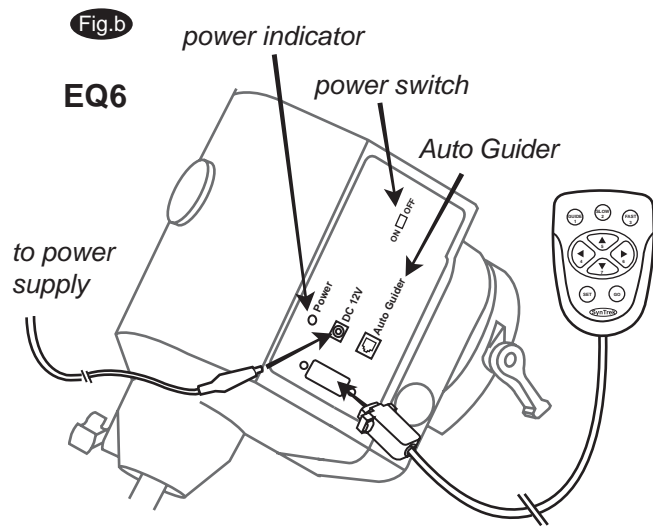
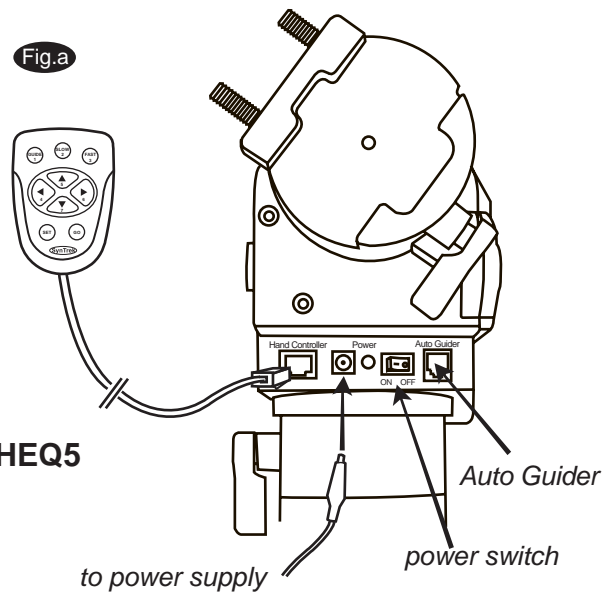
The SynTrek™ is designed for the purpose of providing a simple slewing and tracking control for the HEQ5 or EQ6 mount. The small and versatile SynTrek™ hand control provides automatic tracking of celestial objects as soon as the power is turned on. The user-friendly interface provides quick access to many other functions the SynTrek™ has to offer.

Powering the SynTrek™

The SynTrek™ can be turned on using the power switch on the HEQ5 or EQ6 mount. The HEQ5 SynTrek™ hand control cable has a RJ-45 connector on the ends. Correctly plug it into the hand control outlet on the mount. Push the connector into the outlet until it clicks into place (Fig.a). The EQ6 SynTrek™ cable has a DB9 connector on the end. Plug the DB9 connector into the hand control outlet on the mount. Tighten the screws to secure the connector in place (Fig.b). Flip the Power Switch on the mount to the "on" position to turn on the power.

SynTrek™ hand control

The SynTrek™ hand control (Fig.c) has a simple interface of 9 push buttons. The Guide, Slow, and Fast keys located near the top are used for setting the slewing and guiding speed. The arrow keys allow complete directional control of the telescope during slewing or tracking. The LEFT and RIGHT arrow keys are used to control movements in RA axis; the UP and DOWN arrow keys are used to control the movements in Dec axis. The Set key near the bottom of the hand control is used to set the SynTrek™ hand control to Northern or Southern Hemisphere operation. The GO key is reserved for the use of future Sky-Watcher products. It does not apply to the HEQ5/EQ6 SynTrek™.



A LED light is installed in each key to indicate the status of the operation. The LED will lit when a key is successfully pressed. Once a key combination is entered, all LEDs will lit to indicate successful operation.

T Tracking an object

In order for the SynTrek™ to properly track celestial objects, the mount must be polar-aligned first. See the HEQ5/EQ6 mount instruction manual for procedures on how to polar align the HEQ5/EQ6 mount. Once the power is turned on, the SynTrek™ automatically starts tracking by rotating the RA motor at the proper speed (sidereal rate) to compensate for the Earth's rotation. The Dec motor does not automatically rotate. If the mount is properly polar-aligned, little or no adjustment of the declination axis is necessary to track celestial objects. Pressing the GUIDE key then SLOW key will stop tracking and allow the stars to drift by at their normal rotation rate. Pressing the same key combination again will reactivate tracking.

The SynTrek™ provides the following three tracking options:

Sidereal rate tracking is the default tracking rate for the SynTrek™. It allows tracking of most celestial objects at the speed of the Earth's rotation rate.

Solar rate tracking allows SynTrek™ to properly track the Sun over a long period of time. Solar rate tracking can be activated by pressing and holding the SLOW key, then press the RIGHT arrow key.

Lunar rate tracking allows SynTrek™ to track the Moon at the same rate the Moon moves across the sky. Lunar rate tracking can be activated by pressing and holding the SLOW key, then press the DOWN arrow key.



Solar rate tracking and Lunar rate tracking can only be activated while the telescope is already in the tracking mode. To initiate Solar and Lunar rate tracking from non-tracking mode, first activate tracking then press the appropriate key combination for Solar or Lunar rate tracking.

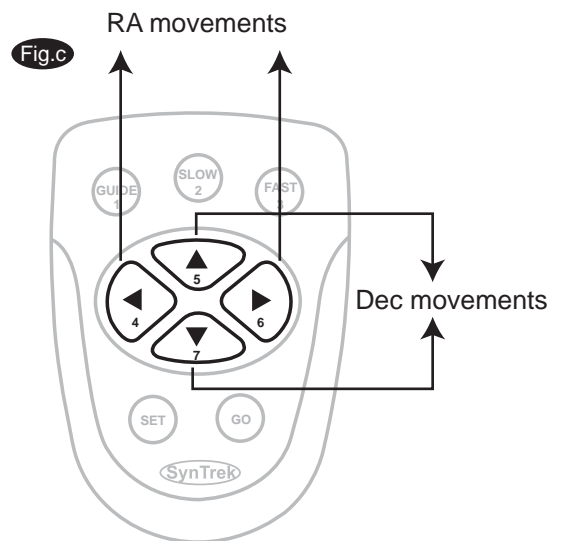
S Slewing to an object

Selecting the slewing speed

The GUIDE, SLOW, and FAST keys are used to select the speed at which the telescope moves when the arrow keys are pressed. Once the speed is selected the LED of the corresponding key will lit. Flashing GUIDE, SLOW, or FAST indicates that the SynTrek™ is currently under the tracking mode. Pressing the arrow keys will cause the SynTrek™ to move the telescope at the speed of the flashing key.

See the table below for details (the speeds listed here are based on the Sidereal rate, which is approximately 0.15 arc-min/sec):

	GUIDE	SLOW	FAST
When tracking mode is ON	Guiding Speed	4X	8X
When tracking mode is OFF	32X	64X	800X



Slewing speed recommendations:

For manual guiding — Guiding Speed (see *Selecting the guiding speed* on the next page).

Centering objects in the eyepiece — 4X or 8X

Centering objects in the finderscope — 32X or 64X

General fast slewing of the telescope — 800X

Selecting the guiding speed

The SynTrek™ provides 4 speed settings equal to or slower than sidereal rate for guiding purpose (1X, 0.75X, 0.5X, and 0.25X). These settings apply to both autoguiding via the autoguider interface and manual guiding. The default guiding speed is 0.5X. Once a new guiding speed has been selected, the SynTrek™ will store the new setting until another speed has been chosen. The following key combinations will set the guiding speed to the corresponding rate:

- 1X— Hold the FAST key, then press the UP key.
- 0.75X— Hold the FAST key, then press the LEFT key.
- 0.5X— Hold the FAST key, then press the RIGHT key.
- 0.25X— Hold the FAST key, then press the DOWN key.

Reversing the direction keys

The direction a celestial object appears to move in the eyepiece changes depending on the type of telescope you are using, and the accessories used in combination with the eyepiece. This can be confusing when doing manual guiding. To compensate for this, the SynTrek™ offers a "Reverse" function to reverse the button logic of the hand control. To switch between the LEFT and RIGHT key, press and hold the SLOW key then press the LEFT key. To switch between the UP and DOWN key, press and hold the SLOW key then press the UP key. Once the direction keys have been reversed, the setting will be stored even when the power is turned off.

Setting for Northern/Southern Hemisphere operation

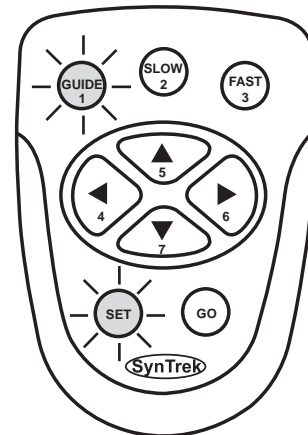
The SynTrek™ comes set up for Northern Hemisphere operation. In order for it to track correctly in the Southern Hemisphere, you need to switch from the Northern to Southern Hemisphere operation mode by press down and holding the SET key while turning the unit on. Release the SET key when the unit has successfully turned on and the GUIDE key starts flashing. This needs to be done only once. The SynTrek™ will operate in the Southern Hemisphere mode until it is switched back to Northern Hemisphere mode using the same method.

When the SynTrek™ is tracking under the Southern Hemisphere mode, the SET key will flash, as well as the GUIDE, SLOW, or FAST key (see Fig.e).

Power saving

To conserve power assumption, Dec motor enters sleep mode if idle for 15 seconds. In this mode, the Dec motor stops and the power supply current drops about 40%. Pressing the UP or DOWN arrow key (adjustment in Dec) will reactivate the Dec motor. If an autoguider is attached, the signal it sends in Dec direction will also reactivate the Dec motor. In this case, to accomodate autoguiding operation, the Dec motor will not enter the sleep mode again. If you wish to initiate the power saving feature when the autoguiding operation is done, press UP or DOWN arrow key to switch back to manual guiding. The Dec motor will enter the sleep mode after 15 seconds.

Fig.e



Objects in the eyepiece view may appear to drift slightly in Dec direction the moment the Dec motor enters sleep mode. When doing astro-photography, wait until the mount completely enters the sleep mode before beginning the shot to ensure picture quality. If an autoguider is used, wait until the autoguider sends the first Dec signal to the SynTrek™ before taking pictures.

TECHNICAL SPECIFICATIONS

SynTrek™ SPECIFICATIONS

Power Supply:	11 to 15 V DC 2Amp (Tip positive)
Motor type and resolution:	Microstep driven 1.8° stepper motors. Resolution: 0.144 arc sec (or 9,024,000 steps/rev.)
Slewing speeds:	Guiding speed 4X 8X 32X 64X 800X
Guiding speeds:	1X 0.75X 0.5X 0.25X
Gear Ratio:	705
Tracking Rates:	Sidereal, Lunar, Solar
Tracking Modes:	RA tracking

APPENDIX A - KEY COMBINATION QUICK REFERENCE GUIDE

FUNCTION	KEY / KEY COMBINATION	NOTE
Activate / deactivate tracking	GUIDE, then SLOW	Sidereal tracking rate
Solar rate tracking	SLOW, then RIGHT	Must be under any tracking mode
Lunar rate tracking	SLOW, then DOWN	Must be under any tracking mode
1X Guiding speed	FAST, then UP arrow	
0.75X Guiding speed	FAST, then LEFT arrow	
0.5X Guiding speed	FAST, then RIGHT	
0.25X Guiding speed	FAST, then DOWN	
Reverse RA direction keys	SLOW, then LEFT	
Reverse Dec direction keys	SLOW, then UP	
Northern / Southern Hemisphere switch	SET	

SynTrek™



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