SIDEREAL TECHNOLOGY

Telescope Servo Drive Systems

You have choices when SERVO-izing your telescope with Sidereal Technology Products.

Control your telescope with: -Stand alone (tracking only)
-Free ASCOM driver
-Scope II or III from BB Astro Designs
-Argo Navis™
-PDA (Coming Soon!)
-Sky Commander (Coming Soon!)

The complete Sidereal Technology system was engineered and tested by amateur astronomers, for amateur astronomers. The full system includes a Dual Servo Telescope Controller, two servo motors, an FCC approved wireless handpad transmitter, with receiver which has a built in auto-guider port. This system allows you to navigate the skies with amazing precision and ease.

"I got a good polar alignment and tracked objects in all parts of the sky with great accuracy. After getting such a great result with DragNTrack, [I] got the Argo Navis™ out and lined it up, and slewed all over the sky with accuracy I have never experienced with my scope before. [I] think that the accuracy of the scope will only improve when I get around to using the Argo Navis's™ Telescope Pointing Analysis System™...I now have a scope that I was only able to dream of a little while ago."

-David Hatfield, from Australia, about the Sidereal Technology system.

The Sidereal Technology Dual Servo Controller is economical, very small, and packed with many features. It connects to two servo motors with integral encoders, and to two telescope encoders. It will track and/or guide your telescope without any computer connected, or provide tracking, guiding, GoTo, etc. when connected to either a computer, an Argo Navis™, or a PDA (coming soon). The system is compatible with equatorial or alt/az mounts. It is versatile and easy to install on scopes of all sizes.

The optional wireless handpad and receiver connects to the Sidereal Technology Dual Servo Controller for wireless remote control of your telescope. The handpad transmitter has an astronomer's LED flashlight, and a specially designed glow in the dark keypad. You won't find such a variety of features with any other servo drive system.

www.siderealtechnology.com
grayarea@siderealtechnology.com

Frequently Asked Questions:

Q: With the Sidereal Technology system, will I need telescope encoders on my telescope?
A: Only if you have a clutched system, or a system where the driver rollers may slip. If you have a geared or belt drive system without drive rollers, or if your drive rollers don't slip much, then you don't need telescope encoders.

Q: If I want to use the *Argo Navis*™ to control the telescope, then do I need telescope encoders?
A: No. The SiTech Servo Controller sends the telescope's position to the *Argo Navis*™ on the serial port. You really don't need telescope encoders if your drive system doesn't slip.

Q: I have a roller drive system, and it slips enough that I need external encoders. Do I need a "box" such as the MG-III to connect to these encoders?
A: No, the external telescope encoders connect directly to the SiTech Dual Servo Controller.

Q: I've seen encoder systems where you couldn't move the telescope too fast, or the system would "miss" encoder ticks. Is this true with this system?
A: No, these are extremely high speed telescope encoder inputs. You can even gear the encoders up, for more resolution.

Q: I only want to track, I don't need a GOTO system. Do I need a computer or an *Argo Navis*™?
A: No. The Sidereal Technology Servo Controller will track your equatorial or Alt/Az telescope, all by itself, using the *DragNTrack*™, *SlewNTrack*™, or Equatorial modes.

Q: What are the *DragNTrack*™ and *SlewNTrack*™ modes?
A: These two modes, along with the Equatorial mode, can be configured using ServoConfig, the supplied SiTech configuration software. Once configured, the SiTech controller will track your telescope without having a computer or other controlling device connected.

- If you have an Alt/Az telescope, **with** external telescope encoders, you should use the *DragNTrack*™ mode, whether you have clutches or not. If you have a clutches you can "drag" your telescope around the sky as if it were a normal DOB, and it will track at the proper altitude and azimuth rates, for extremely accurate tracking.
- If you have an Alt/Az telescope **without** external telescope encoders, then you should use the *SlewNTrack*™ mode.
- If you have an equatorial system, you should use the Equatorial mode.

Q: What is *ServoConfig*™?
A: ServoConfig™ is a Windows based configuration program that allows you to configure the Dual Servo Controller. It is very easy to use, offers many features, online help, and has great documentation. There are many features such as finding how many encoder ticks for one revolution of the scope, or to calculate the mechanical backlash of your system.

Q. How many speeds can I select with the handpad?
A. If using the wireless handpad, there are 3 selectable speeds. If using a wired handpad, there are two selectable speeds. These are configured with *ServoConfig* to be any speed you like.

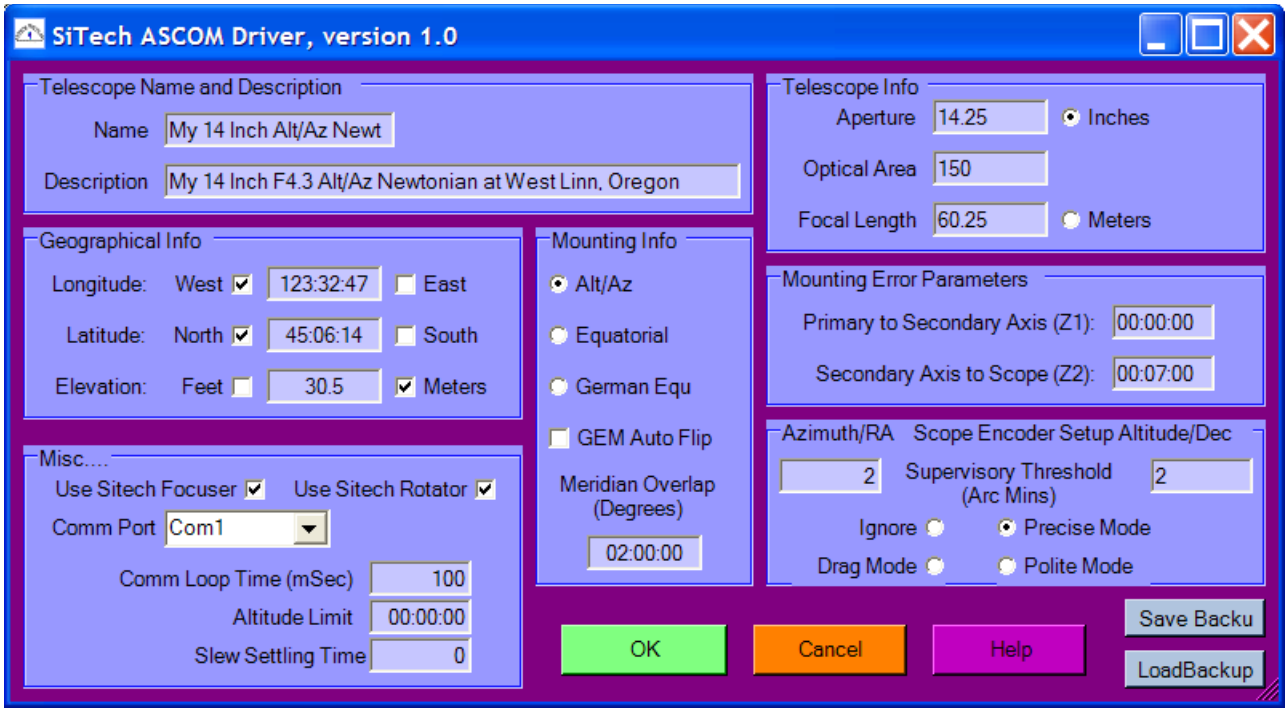
Q. How fast can I slew with the SiTech Dual Servo Controller?
A. That depends on your final gear ratio. We have a 16" Alt/Az scope for trade show use. This scope will slew faster than 12 degrees per second (Horizon to Zenith in about 8 seconds, including Ramp Up and Ramp Down!).

Q: I heard that the BBAstrodesigns/Sidereal Technology system is difficult to configure and use. Is this true?
A: No, not anymore. When first released, the configuration software was primitive, and difficult to use. ScopeII from BBAstrodesigns requires Java Runtime to be installed. It is extremely powerful, and any software with so many features, and with this much accuracy, can be challenging to learn. ScopeII requires a fast computer.
-Now there is free and easy to use SiTech Windows configuration software: *ServoConfig.*
-There is now a free, accurate, and easy to use ASCOM driver, that connects to any planetarium program. ScopeII is not required.
-You can now control with an Argo Navis™
-Technical support is free, email responses are returned promptly, and free phone support is available if required. Dan Gray's cell phone number is in the manual!

Q: What is ASCOM?
A: ASCOM is an interface between astronomy software, such as Planetarium programs, and a driver written by a manufacturer of a telescope, or telescope control system. This means Planetarium programs can send standard commands to the ASCOM interface, which dispatches the commands to the telescope driver. This makes it easy for telescope manufacturers (like Sidereal Technology) to have computer control of the telescope from virtually any planetarium software.

Q: Can you tell me more about the SiTech ASCOM driver?
A: Yes, we're extremely excited about this. We are almost ready to release it, and we have wonderful results from many beta testers using German Equatorial mounts, Other equatorial mounts, and Alt/Az telescopes (all absolutely love it), so with only a little more work, we will be ready to release it. In the meantime, you can download and use the Beta system on any type of telescope. It works just fine.

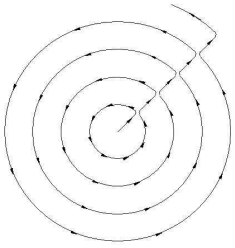
The ASCOM driver setup:



Q. Do you need the Argo Navis™ to be connected for the ASCOM driver to work?
A. No, all you need is a computer with a serial port, or USB to Serial converter. You need the free ASCOM platform installed.

Q: I notice on the configuration that the ASCOM driver has mounting error compensation. How can I find the mounting errors of my telescope?
A: You use the "Sync" function, from any planetarium software, sync to at least 10 stars, and the telescope mechanical errors will be calculated for you. These mechanical errors can be saved to the configuration. Dramatic improvement in both pointing and tracking are obtained. Dan Gray is getting better than 2 arc minute Average Pointing Accuracy with his 14" telescope.

Q. Does the system have a Spiral Search feature?



A. Yes, and no. No, because, it's not a spiral. Yes, because it's a superior search routine! We call our search routine the "Local Search". We've found that a true spiral will either miss sky, or have too much overlapping sky. Our local search feature is a series of circles, each larger than the other. It remains a true circle regardless of your altitude or declination. You can pause, reverse, speed up, slow down, during the search, and you have two radius choices, all from the handpad. The radii must be set up using the supplied configuration software, and can be set up for any radius distance. The local search works with any controlling device, or in the stand-alone mode.

Q. What about panning and guiding? Are they constant speed, or do the speeds increase while nearing the zenith (celestial pole for equatorials)?
A. These are configured for "Equal Area Panning and Guiding". The closer to the zenith (celestial pole for equatorials), the faster the azimuth/RA panning and guiding are. The stars appear to move the same amount, whether centering with altitude/Dec, or azimuth/RA. Once you experience this, you won't want to go back!!!

Q. Can I control the telescope with a PDA?
A. Cyrille Thieullet has started supporting the SiTech controller in his Palm program, AstroMist. This is really killer software for the Palm operating system. Soon to come is a JavaME program, that can be connected using a Bluetooth to serial adapter. Any PDA with Bluetooth, a Java runtime, and CLDC version 1.1 (think Cell Phone here) will be able to control the telescope using full GoTo's and Tracking!

Q. How do I mount the motors on the telescope?
A: There are many ways, but Sidereal Technology can supply you with a Dob kit, with gear reducers, with/or without clutches, bearings, etc. We're also excited about the possibility of Tom Osyposki from Equatorial Platforms, providing an installation service.

Q: I don't have a lot of money, but I have a laptop, and I can follow schematics, and am a telescope maker, so I can make my own handpad, and wire my own motors. What's the least I can spend, and have a full GoTo telescope system?
A: Buy the Controller for $350.00 (without ScopeII/III). Find surplus D.C. Servo Motors with encoders built into the motors (maybe $50 each). Wire your own handpad. Mount the motors on your telescope, using ideas already developed from the ATM community. You will be able to control the telescope with a computer using the free ASCOM driver from SiTech. Total, about $450!!! Inconceivable!!!

Q. I want to take photographs with my telescope. Is this possible with the SiTech system?
A. The SiTech system is easily configured for photography. We recommend purchasing a wireless handpad, so the auto-guider can be connected to the receiver. This is an industry standard connector, where you can plug an SBIG or other standard auto-guider. The autoguiding works extremely well, because of the "Equal Area Guiding," Backlash compensation, and instantaneous corrections. The auto-guider inputs are acted upon within milliseconds. Check out the latest astro photography on our website at www.siderealtechnology.com.

Q: I want to add a focuser that is ASCOM compliant, how can I do this?
A: You purchase a second controller and use the "Azimuth" channel for a focus motor. If you use the SiTech ASCOM driver, the focuser software is built in. It can be controlled using FocusMax, for perfect, automatic, focusing every time!

Q: I want to add a field de-rotator to my alt/az telescope. How can I do this?
A: You purchase a second controller (unless you've already a SiTech focuser motor). You use the "Altitude" channel for a field de-rotator motor. If you use the SiTech ASCOM driver, the field de-rotation software is built in.

Q: Does the system have PEC (Periodic Error Compensation)?
A: At this point, you will have PEC only if you use ScopeII. Later this year we will have PEC control built into the ASCOM driver.

Q: Does the system have built in backlash compensation?
A: Yes. This is set up with the *ServoConfig* software. It is instantaneous, and works wonderfully.

Q: What is available in the Dob kits:
A: You can choose a clutched system, or a direct drive system. The direct drive system is more economical, as you won't need telescope encoders, or the clutches. You also don't need to replace the Teflon bearings with ball bearings, so there is cost savings there as well. We sell a gear reducer with a motor already mounted on it, with a good gear ratio ideal for a belt drive. If you want a clutched system, we sell a gear/reducer clutch mechanism, and we also sell bearings that replace the DOB Teflon pads.

Q. What if Sidereal Technology comes out with new features. How can I upgrade?
A. SiTech has 3 software products: (1) The firmware in the telescope controller. You can download the latest firmware from our website, and install it using Servoconfig. (2) *ServoConfig* software. (3) The SiTech ASCOM driver. These will always be free for downloading and upgrading. ScopeII is provided by BBAstroDesigns, but upgrades are free as well. If you purchase ScopeII, you will have a free upgrade to ScopeIII when it is released.

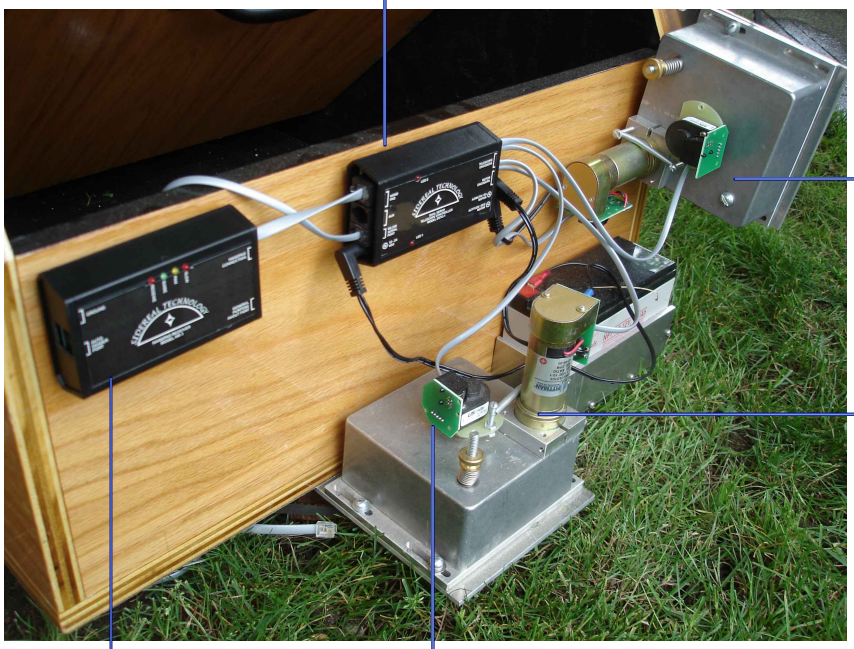
Q. How much does the system cost?
A. The SiTech servo controller with cabling costs $350.00. New motors cost $135.00 each. The radio handpad and receiver costs $350.00 each. Mel Bartels' ScopeII/III software costs $75 (not required). Should you choose the clutched DOB kit, the Gear/Clutch assembly cost $400.00 each (without motors).

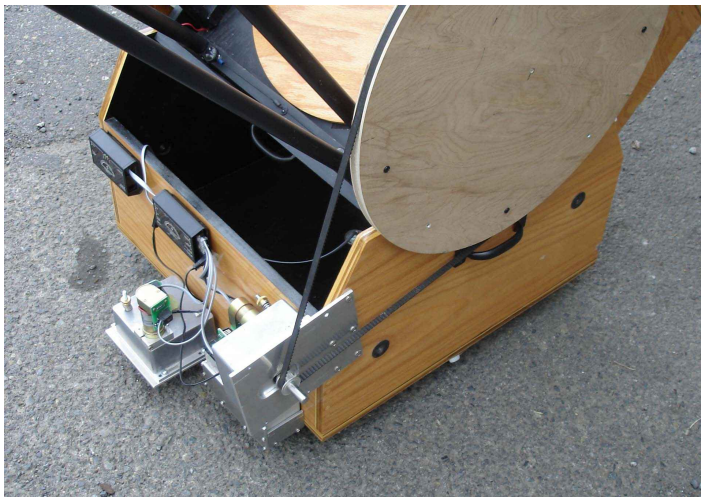
Q. Can I make my own handpad in order to save money?
A. Yes. All wiring information is documented in the manual at www.siderealtechnology.com.

Q. I'm a telescope manufacturer or a dealer. Can I get a quantity discount?
A. Yes, please contact us.

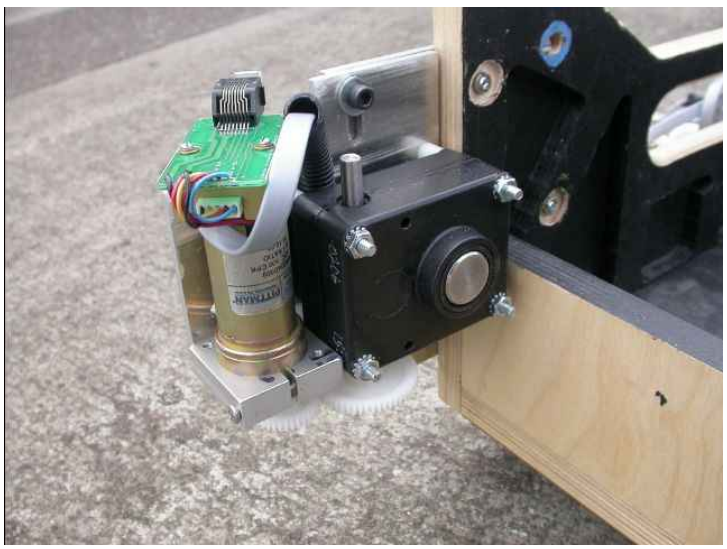
Q: Where do I buy the system?
A: You can purchase the system at BBAstroDesigns online at http://www.bbastrodesigns.com, and through Astrosystems online at www.astrosystem.biz or call 970-284-9471. Soon you will be able to order online with a credit card.

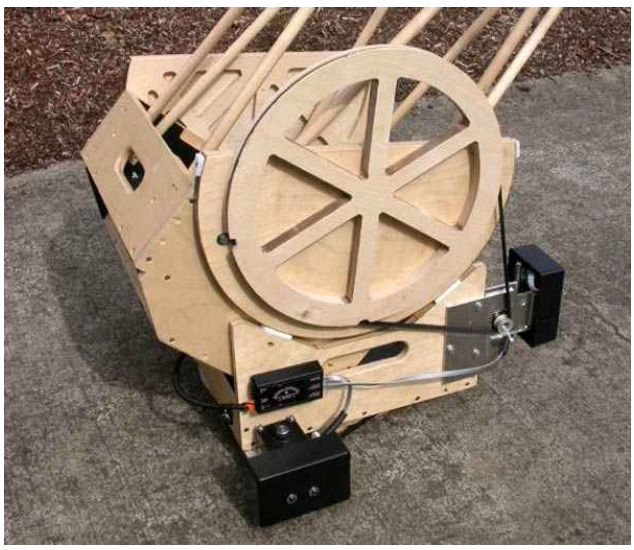
Converted 16" <u>Night Sky Scope</u> clutched system with built in telescope encoders. (Complete System)





***Don Peckham's 12.5" Non-clutched Telescope System (No telescope encoders required** Please visit Don's website for more: www.dbpeckham.com/Telescope/CompScope/Index.htm*





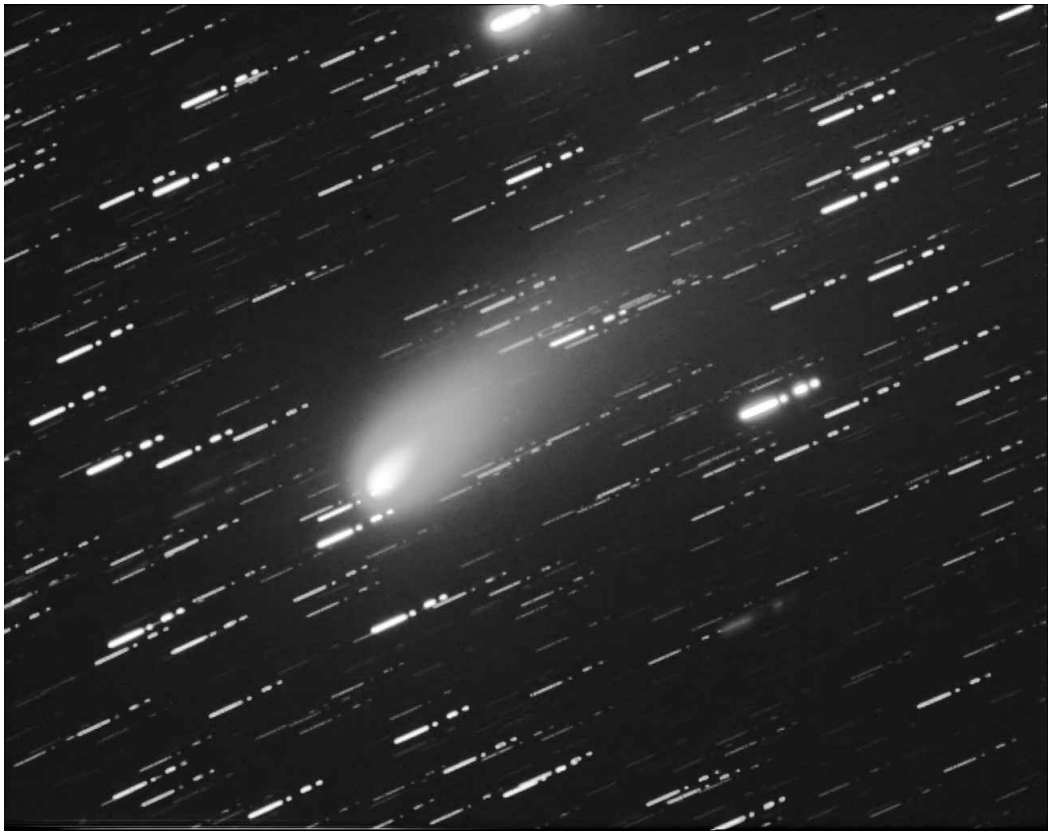
Recent Photographs taken using the Sidereal Technology System

To see more: visit www.siderealtechnology.com

Omega Centauri, By Chuck Shaw

M101, By Chuck Shaw

NGC5128, By Chuck Shaw



73-P, Schwassmann-Wachmann, Fragment C, By Chuck Shaw

Chuck Shaw took these photographs at the Texas Star Party 2006 Using the Sidereal Technology ASCOM driver, Modified Starliner GEM mount, with Orion ED80, F7.5.

Chuck Shaw's Observatory, Texas
See more of Chuck's work at: *www.ghg.net/cshaw/*

"The mount was running with the ASCOM driver. It ran perfectly every night, all night we were out on the observing field, and the GOTO's would put the target in the HX916's FOV 100% of time... This controller and ASCOM driver is OUTSTANDING!"

-Chuck Shaw about the SiTech system during Texas Star Party 2006

M51, By Dan Gray, from the city lights of West Linn, Oregon. Using his 14" F4.3, Alt/Az telescope, with SiTech's field de-rotator and ASCOM Driver, an SBIG ST-8XME Camera, and 45 total minutes of 5 minute self-guided exposures. Note: the same computer running MaximDL, Earth Centered Universe, and the SiTech ASCOM driver!

Steve Kennedy's 28" SpicaEyes, All-Aluminum, SlipStream GoTo Telescope, from Equatorial Platforms, controlled by SiTech, using the Argo Navis™ for GoTo and Tracking.

Tom Osypowski from Equatorial Platforms, standing with Steve Kennedy from Kennedy Optics, at the 2005 RTMC

SIDEREAL TECHNOLOGY

http://www.siderealtechnology.com

grayarea@siderealtechnology.com

Dealers:

Astrosytems

www.astrosystems.biz

970-284-9471

BBAstroDesigns

www.bbastrodesigns.com