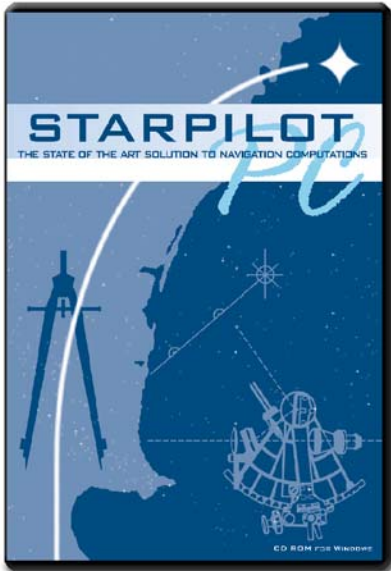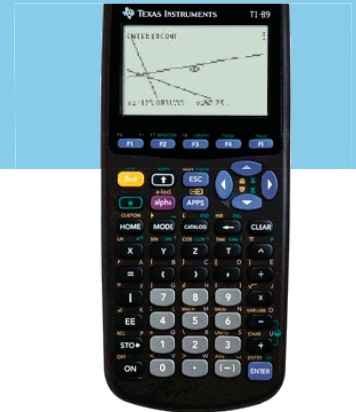# STARPILOT

StarPilot, LLC

www.starpilotllc.com

The StarPilot program is a navigator's dream come true in a self contained celestial navigation and piloting computer which may be used to guide you safely anywhere in the world. It does all computations that might arise in routine or even special case navigation: fast, easy, and highly accurate in the middle of the ocean or in coastal and inland waters. Students as well as experts will value the flexibility and ease of use of this program.

The StarPilot program is available in one of the following three ways

- Pre-installed on a TI-89 Calculator

- As a program on a CD which can be installed on a PC

- As an Internet download which can be installed by the owner on any of the following devices: PC, TI-86, TI-89, TI-89T, TI-92 plus, TI-Voyage 200.

StarPilot is pre-installed using the TI-89 calculator as a platform, and ready to go at the first touch of the ON button. It is menu driven for user friendliness. The TI-89 is a graphing calculator from Texas Instruments which means you can see each line of position (advance or retarded as necessary) that composes your fix. It allows your judgement to intervene for a more accurate assessment of them, and your modifications of the final fix. The graphing ability of the calculator also permits a pictorial display of the sky while sight planning in addition to the use of other advanced plotting features while analyzing data.The TI-89 is a very powerful general programmable calculator, and it's full array of normal functions is still available to you (including, for example, games, a day planner, calendar, etc.) if you care to use them. If you don't, you just need three buttons to operate all of the StarPilot navigation functions.

The StarPilot is archived in the TI-89's flash ROM permanent memory which means you can remove all the 3AAA and backup Li batteries without losing the program. World wide availability of the TI calculators means that your software investment is protected by making it easy to replace the the unit in the event of a mishap at a foreign port.The StarPilot 89 comes with the TI Guide Book, the StarPilot illustrated User's Guide with practice exercises and a CD with additional instructional material and resources. Options include a water and crush proof storage box is available. The calculators is 3.2x7.1 inches with a ship weight of 3 lbs. If you already own a Texas Instruments calculator model TI-86, TI-89, TI-92plus, or Voyage 200 you may just buy the program via an Internet download and load it yourself through the PC Link which is included in the calculator as a matter of course. The StarPilot download program includes a the StarPilot illustrated User's Guide with practice exercises as a downloadable PDF file.

PC operation of StarPilot is easy by just loading the StarPilot PC program into your PC with the supplied CD or via Internet download. It runs on any PC running Windows NT, Windows-95 or newer. The hard copy version of the StarPilot PC comes with a CD which includes the program, an illustrated manual, and additional educational resources. SW 1 lb.
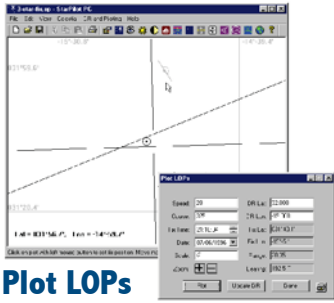
Celestial highlights

include a Sight Planner that plots out the full sky showing heights and bearings of all navigational bodies from which you call up a Best Sights function which displays the best triads of sights for the desired sky. Once sights are in hand, the Sight Analyzer function fits sequences of data to the correct theoretical shape so navigators can identify the best sights of the set. Celestial fixes can be obtained from its plotted LOPs or from computation. StarPilot also includes a versatile "Lunars" routine for finding GMT from lunar distances. You can analyze present data or historical data from early explorers such as the lunar distance measurements made by Lewis and Clark during their famous two year expedition in 1804. The internal almanac is accurate from the 16th century until 2100.
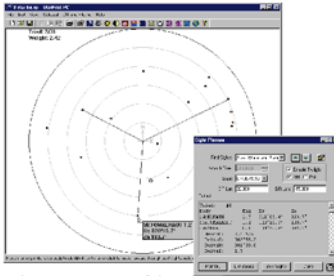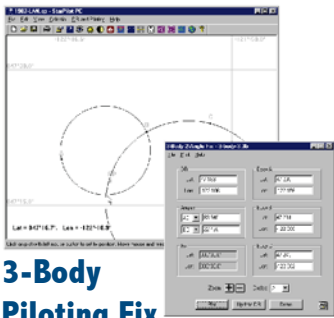
Piloting highlights

include numeric solutions to running fixes, sextant piloting with vertical angles, and highly accurate 3 point solutions with horizontal angles. All tidal vector current problems are solved, as well as geographic range, all route sailings, tide and current interpolators, bow angle fixes, wind vectors, speed-time-distance, DR updates by log or speed and much more. A magnetic variation calculator will compute the magnetic variation at your current location and time anywhere in the world.
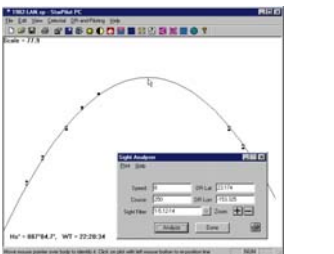
Plot LOPs

Find Best Sights

3-Body Piloting Fix

Analyze Sight Sequence

StarPilot Features

For the most part, these general features apply to all versions of StarPilot

General program design features... that save time, keystrokes, and minimize errors

Easy to use menu-driven interface
Stored settings of commonly used values
All bodies and star names stored internally, no need for separate lists
DR functions integrated with the celestial functions
Convenient DR updating by log or time
Input courses as true or magnetic
Convenient time input, with or without zone description and watch error
Graphing calculator plots LOPS, Fixes, DR positions, and Star maps
Program can be easily updated to incorporate latest version and features
Internal back-up battery (Li 5-yr) protects program and settings if main batteries (AAA 1-yr+) fail. (SP-86 & SP-89)
Versatile, modern calculators useful for multiple purposes besides navigation
Custom menu bar for quick navigation to often-used functions

Sight Planning

Sunrise, Sunset, times and bearings (amplitudes)
LAN, time, Equation of time, Hs max at LAN1
Nautical and Civil twilight times, and LHA Aries at midpoint between them
Moonrise, Moonset, Moon phase, and Moon age
Precompute specific values of Hc and Zn for any body
Planet and Star ID by observed height and bearing
SIGHT PLANNER function plots full sky showing moon, stars, and planets in
radar-like display of heights and bearings. Set Hc min/max and max# of
stars before computation. Set cursor and click to read the actual height
and bearing of a plotted body.
Special fast almanac mode allows full sky plot in less than 5 minutes
(instantaneous in the PC version)
Display internal list of 173 stars by name, brightness, and location
Unique BEST SIGHTS function selects the optimum triads of sights for any sky (89 and PC only)

Sight Reduction

Optional modes for sequential sights using repeated settings or unrelated individual sights
Perpetual almanac accurate to 2100+
Historically accurate almanac data to 16th century
Sight reduction of Sun, Moon, Mars, Venus, Jupiter, Saturn... plus Mercury!
Sight Reduction of 173 stars plus Polaris
"Assumed positions" read directly from DR section without extra input
View intercepts (a-values) with or without course and speed corrections
Full input data displayed with results to check for errors
Special center-body mode for artifical horizon data
Dip-short mode for practice at shorelines

Celestial Fixes

Unique SIGHT ANALYZER fits a sequence of sights to the right slope for optimum sight selection
All fixes corrected automatically for course and speed as needed
Fix accuracy independent of DR accuracy in all cases
Plots LOPS with live cursor position display
Fix computed by USNO algorithm in the Nautical Almanac
Zoom in on plot to see where computed fix is located
Fix can be obtained by graphic selection from the LOP plot
Automatic display of DR-to-Fix range and bearing
Optional automatic update of DR after fix
Display new course and distance to stored destination

Special Celestial Functions

Latitude and Longitude by Meridian passage
Latitude by Polaris sighting
High precision Azimuth of Polaris for surveying or compass checks
Recover lost GMT using unique Lunar distance analyzer
Compass calibration via sun shadow method — or ship's pelorus
Sight reduction by external almanac data — bypasses internal almanac for
literal checking of text book problems.

Route planning utilities

Rhumbline course and distance with automatic comparision to GC
Great circle course and distance
Great circle waypoints
Composite sailing track — latitude limited great circle route
Traverse Table computations
DR computations by speed and time or by log readings
Long-distance ETA computes local time and date of arrival, any time zone,
any longitude, any date
Distance outputs to 2 decimal places for DGPS comparisons

Piloting utilities

Distance off by vertical sextant angle — horizon to top
Distance off by vertical sextant angle — base to top
Distance off by vertical sextant angle — base to horizon
Distance off by two bow angles and distance run
Geographic Range computer
Numerical solutions to running fixes (PC only)
Numerical solutions to 3-point sextant fixes for precision PC piloting

Current Sailings

Find COG and SOG — from course and speed plus set and drift
Find course to steer — to make given COG, given set, drift, and speed
Find set and drift — from COG and SOG and course and speed
Find course to steer and speed — for given ETA across current

Miscellaneous Utilities

Convenient Speed-time-distance computer
Find true wind from apparent wind
Interpolate Tide height between highs and lows
Interpolate Current speed between peak and slack
Compute Magnetic Variation