



CAMNAV

Operating Manual

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Getting Started

Introduction to CamNav capabilities

CamNav is a simple-to-use device that allows camcorder users to 'tag' their video footage with GPS data (see below) including time and geographic location anywhere in the world. The same unit is used to decode the information for viewing via a variety of methods. CamNav comes with a simple program that displays the co-ordinates of the image on a PC screen (cables supplied) but also integrates with many off-the-shelf or downloadable mapping software programs as well as our high specification and versatile GIS package (see below), which allows the video image and the co-ordinates to be viewed side by side on the same PC screen, the system also includes a frame grab facility.

Introduction to GPS

The GPS (Global Position System) program is run by the US Department of Defense and is made available for civilian use. The system consists of 24 satellites in orbit around the Earth, whose orbits are such that from any point on the planet at any time at least three and usually more satellites are visible 24 hours a day in an unobstructed view of the sky. These satellites permanently broadcast a signal, which allows a receiver on the ground to ascertain its position on the planet to an accuracy of around 10 metres.

Introduction to GIS

Geographical Information Systems – a development of computer technology related to data based geographical information, which may be accessed by a variety of methods such as position, postcodes, demographic details etc. Several developers such as Blueglenn, ArcView, Mapinfo, Autoroute and similar programs are available which operate on Windows, Apple and other platforms provide a comprehensive geographical database.

Installation of PC Program

If you are using the CamNav Mapper program please refer to the installation and operation instructions provided with the program. If you are using the 'CamNav Display' program provided follow the instructions below for installation.

Insert the CD-ROM into the CD-ROM drive. Click the 'Start' button on the Windows menu and select 'Run...'. Type X:\setup.exe, where X is the letter of the CD-ROM drive. The program will install from here.

Encoding

Set-up

If using an external power supply attach it to socket A indicated on the unit.
Connect the GPS antenna to socket B indicated on the unit.
Connect the phono/mic' lead to the signal phono on the CamNav (socket C) and the 3mm jack plug into the camcorder microphone socket.

Set the Encode/Decode selector switch to 'Encode' as indicated (switch set toward the data connector).

Switch on the CamNav and observe the three LED indicators. The red LED will flash at approx 1 second intervals followed by the orange LED at a lower rate.

When the green LED flashes constantly at 1-second intervals the GPS receiver has a position fix and recording can commence.

Positioning of GPS Antenna

The GPS antenna should be positioned with as clear a view of the sky as possible. A lock cannot be achieved if the antenna is used indoors or in too built up an area. The antenna can move but consideration to the 'open sky' requirement should be maintained.

Power Supply

CamNav runs from either its internal battery or an external supply. The internal battery is of type PP3 (9Volts-500 mAh), Duracell Ultra or similar is recommended. An external supply must be a dc supply, such as a 12 Volts dc (car supply) with a 15 Volts maximum. The power supply specified above should be connected after all other connections are made.

Use of Microphone Adapter

CamNav uses one channel of a stereo audio track to record the GPS data, thus ensuring that the data and images are synchronized. Should you wish to record onto the spare channel whilst encoding, you will need to use a microphone adapter which combines the left and right hand stereo channels of the mic plug from two mono sockets.

Operation

Ensure the camcorder has a tape inserted, and the camera settings are as required. Start the recorder running. The recording will now have the GPS data recorded onto the sound track.

Ensure that the GPS antenna has a clear view of the sky and that any objects, which may cut off the satellite signals, do not obscure it. **Note**, operation indoors, in buildings tunnels etc., will not provide position fixes - indicated by the green LED **not** flashing.

Decoding

Set-up

If using an external power supply attach it to socket A indicated on the unit. Connect a phono-to-phono lead from the camcorder audio (LH) output into the phono input of the CamNav (socket C). Set the Encode /Decode switch to Decode (switch set toward the phono socket) Switch on the CamNav and start the camcorder playback. Note the LEDs are flashing similarly to the encode mode – Red at once per second and the orange at a lesser rate. The green LED should be off in decode.

GPS data is now output from pin 2 of the data connector (Com = Pin 5). By connecting the serial lead (supplied) to the PC serial input port, the data may be observed on any PC through the “CamNav.exe” display program supplied on the CD. Note that the program must be installed to run. See ‘Installation’ above.

If a video card is available on the PC, the video from the camcorder may be displayed on a window from this device alongside the data display using “CamNav.exe”.

Alternatively, by using CamNav-Mapper the position and picture may be simultaneously plotted on the moving map by following the instructions for this comprehensive mapping software package.

If a suitable mapping package has been installed on the PC, this can read the GPS information being supplied via the serial port.

Operation

Ensure that the correct tape is inserted in the camcorder and commence playback.

Low Battery Indicator

Should the output from the internal battery fall below 6 volts, the LEDs will flash on and off simultaneously at ½ second intervals. When this occurs the battery should be replaced as soon as possible or an external supply connected.

Technical Specification

System	Bi-phase data modulation 4800 baud NMEA 0183/ASCII data messages
GPS	12 channel all in view, fully dynamic GPS receiver
Accuracy	Better than 15 metres RMS unaided, 3 metres DGPS.
Power	9 volts PP3 battery (500mAH), 4 hours continuous use
Size	145 x 82 x 32 – robust extruded aluminium case
Data output	RS232 NMEA 0183 as input from GPS receiver. GPS data - real time 1 PPS from internal GPS receiver – real time NMEA 0183 messages:- \$GPGGA, \$GPRMC, \$GPZDA
Connections	Modulated data input/output - Phono (RCA jack) RS232 output, GPS data, 1PPS, etc - 9 way “D” socket 2.1mm - DC power jack
Monitoring	GPS fix/1PPS Sync Lock Bit lock
Serial data	9 Way D socket (for DCE modem type connections)

Pin

1 = DCD	1 = Encode, 0 = Decode	6 = DSR	1 PPS from internal GPS receiver
2 = TX o/p	GPS data - RS232 o/p	7 = RTS	link to CTS - pin 8
3 = RX i/p	Ext GPS or DGPS (RTCM)	8 = CTS	link to RTS - pin 7
4 = DTR	1 = Ext' GPS data i/p	9 = RI	“1” (~9 v) link to pin 4 for ext' GPS
5 = 0 volts	Common return input/output	SCR	Shell/Jack screw = 0 volts



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