

Garmin GPS data processing – Software comparison

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This is a comparison of 3 different applications that let you take Garmin GPS Data and bring it into your GIS. Each application had its strengths and weaknesses and they have been summarized in the following table. There are also some brief overview info about each application as well as an attachment that shows how arcview treats the data from each application. Waypoint + maintains your precision the best but, the other two applications are a bit easier to use for downloading and uploading data. DNR Garmin was the easiest but also degraded your precision due to truncation and arcview interpretation of the DNRGarmin data.

Here are their internet sites where you can download the software:

Waypoint+: <http://www.tapr.org/~kh2z/Waypoint/>

DNR Garmin:

<http://www.dnr.state.mn.us/mis/gis/tools/arcview/extensions/DNRGarmin/DNRGarmin.html>

GPS Utility: <http://www.gpsu.co.uk/>

Type of Software	Precision	Ease of Use	Advantages	Disadvantages	Output Formats	Projection Conversion support
<p>Waypoint: To be able to upload and download Routes, Tracks, and Waypoints from the Garmin 45 to a PC, simplifying the processes of creating and editing these data. Saved data files can be in ASCII format with comma delimited fields and can be easily edited using Windows Notepad or Wordpad, taking advantage of their Cut and Paste capability.</p>	<p>Most precise of the three. Seems to maintain data integrity</p>	<p>Easy to use and bring into GIS with a little manipulation</p>	<p>Maintains data precision. No size limit on files</p>	<p>You have to convert the txt file into dbf file and change some headings.</p>	<p>You can select what format then it is saved to a text file Utm's in a txt file.</p> <p>Download File types: .txt (comma separated value)</p>	<p>Can define download projection</p>
<p>GPS Utility: Is a stand alone application for manipulating waypoint, route and trackpoint information</p>	<p>Truncates 2 decimal places</p>	<p>Very easy to use.</p>	<p>Easy transfer of data both directions</p>	<p>Some precision is lost but it is minimal. Limited to 150 waypoints at a time.</p>	<p>You can select which format.</p> <p>Download File types: .dbf (shape file)</p>	<p>Can define download projection</p>
<p>DNR Garmin: designed to work with arcview as an extension. (see insert)</p>	<p>Lowest precision. Data is degraded from the iterations to get it into Lat., Long</p>	<p>Very easy to use, once you have the DNR Garmin ext loaded</p>	<p>Very easy to bring into arcview.</p>	<p>Precision is lost as you go from lat/long to utm. The conversion process in arcview</p>	<p>Lat/long WG84</p> <p>Download File types: .dbf</p>	<p>Has to be converted thru arcview. Has no stand alone projection utility so data stored without going thru arcview will be saved as lat/long WGS84</p>

This arcview screen capture shows the difference in the data tables from the different applications as they are brought into arcview. The tables have been named according to which application they belong to.

ArcView GIS 3.2a

File Edit Table Field Window Help

0 of 30 selected

durgarmin.shp

Shape	Ident	Lat	Long	Comment	X_coord	Y_coord
Point	001	40.46124637	-109.5288152	03-APR-03 18:34	624795.00419	4479786.94001
Point	002	40.46148241	-109.5288581	03-APR-03 18:36	624790.92844	4479813.08093
Point	003	40.46185255	-109.5288688	03-APR-03 18:37	624789.33387	4479854.15307
Point	004	40.46186328	-109.5291639	03-APR-03 18:38	624764.29890	4479854.92737
Point	005	40.46190619	-109.5304996	03-APR-03 18:40	624650.96821	4479857.80474
Point	006	40.46112299	-109.5304513	03-APR-03 18:42	624656.50914	4479770.93397
Point	007	40.46067238	-109.5304245	03-APR-03 18:43	624659.61593	4479720.95199
Point	008	40.46076894	-109.5298398	03-APR-03 18:44	624709.01405	4479732.49595

waypoint_plus.dbf

Type	Datum	Pt_num	Zone	X	Y	Date
WP	UTM	1	12T	624797.293800	4479787.315000	20030403
WP	UTM	2	12T	624793.218500	4479813.456000	20030403
WP	UTM	3	12T	624791.624100	4479854.528000	20030403
WP	UTM	4	12T	624766.588800	4479855.302000	20030403
WP	UTM	5	12T	624653.257500	4479858.180000	20030403
WP	UTM	6	12T	624658.798300	4479771.309000	20030403
WP	UTM	7	12T	624661.905200	4479721.327000	20030403
WP	UTM	8	12T	624711.303700	4479732.871000	20030403

gps_util.dbf

Recnum	Nest_id	X_coord	Y_coord	Altitude	Name	Date	Time
1	001	624797.29	4479787.31	29	03-APR-03 18:34	12/31/1989	12/31/19
2	002	624793.22	4479813.45	29	03-APR-03 18:36	12/31/1989	12/31/19
3	003	624791.62	4479854.53	29	03-APR-03 18:37	12/31/1989	12/31/19
4	004	624766.59	4479855.30	29	03-APR-03 18:38	12/31/1989	12/31/19
5	005	624653.26	4479858.18	29	03-APR-03 18:40	12/31/1989	12/31/19
6	006	624658.80	4479771.31	29	03-APR-03 18:42	12/31/1989	12/31/19
7	007	624661.91	4479721.33	29	03-APR-03 18:43	12/31/1989	12/31/19
8	008	624711.30	4479732.87	29	03-APR-03 18:44	12/31/1989	12/31/19

Application Overviews:

WAYPOINT +

Feature Summary:

Upload and download data directly from a Garmin GPS receiver.

Reads and writes waypoint, routes, tracks and almanac data in Waypoint+ format.

Exports waypoint, route, track, and proximity data into text format.

Exports waypoint, route and track data into SA3 (Street Atlas v3.0) format.

Imports waypoint and route data from SA3 and SA4. Allows creation of waypoints and routes in SA3 and then uploads them to the Garmin GPS receiver. And the creation of waypoints, route and tracks in SA4 and then uploaded them into the Garmin GPS receiver

Imports and exports proximity waypoints into SA4 format.

Allows storage of lat/long in Degrees, Degrees/Minutes, or Degrees/Minutes/Seconds in a packed decimal format.

Waypoints can be created and edited within Waypoint+. Routes can be created and edited.

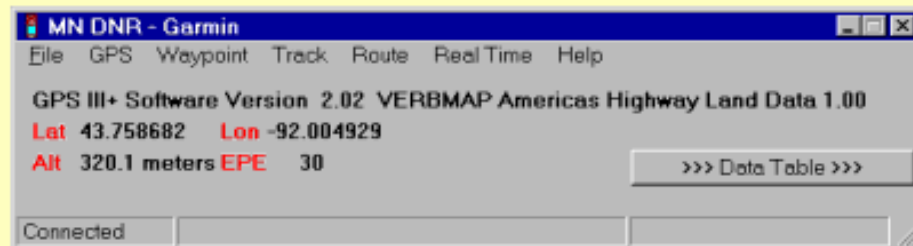
Waypoints, routes and tracks can be displayed graphically.

About GPS Utility

GPS Utility is a stand-alone application for manipulating [waypoint](#), [route](#) and [trackpoint](#) information. The main features are:

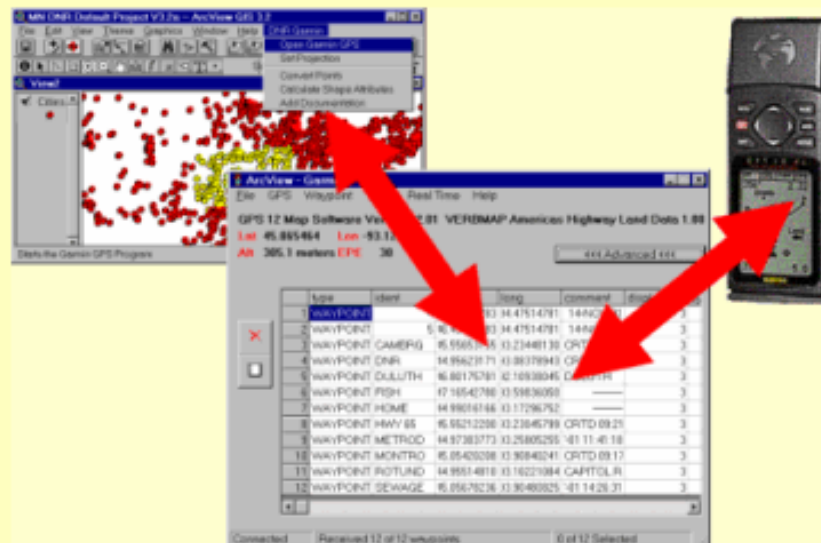
1. Basic [Edit](#) of GPS information
2. [Sort](#) waypoints
3. [Filter](#) waypoints and tracks
4. Convert coordinates between map [datums](#)
5. View different coordinate [formats](#). (including UTM/UPS, British, Irish, German, Swiss Grids)
6. [Downloading/Uploading](#) to Garmin, Magellan, MLR + other [GPS receivers](#) **
7. Load selected ([Marked](#)) waypoints or tracks to GPS receiver.
8. Produce [track and route leg distance and time information](#)
9. Automatically [generate Waypoints and Routes from tracks](#)
10. [Read/Write](#) files in several formats
11. [Print](#) GPS information
12. [Map](#) GPS information
13. [Print](#) the information as a bitmap
14. [Export](#) map as bitmap
15. [Overlay](#) GPS information on Bitmaps
16. [Digitise](#) GPS information from Bitmaps
17. [Real time current position](#) (create tracklog and Moving Map display).
18. [Position console](#) show current position speed etc.
19. Import data from [Microsoft's AutoRoute Express](#)
20. Import [MapsOnUs](#) and [MapBlast](#) data
21. Import and export (with limitations) to [DBF](#) and [MapInfo](#) files.
22. Import and export [Autocad](#) (DXF) and several other file types - see [File Formats](#)
23. Set [PC clock](#) from GPS time.
24. Generate [Search Patterns](#) round a waypoint
25. Deal with up to 65000 waypoints and 65000 trackpoints ([registered](#) version)
26. and more....

DNR Garmin 4.0 Overview



The DNR Garmin Extension is actually two separate programs, an ArcView extension and a VB Program. The VB Program, called DNRGARMIN.EXE is the part that communicates with the GPS receiver. The extension, DRNGarmin.AVX is used as a launching pad for the program and is also used to convert the information received into shapefiles or graphics.

To be able to use this extension and program effectively you need to understand the way in which it was designed. Principally, the ArcView – Garmin interface is used as a place to work with your waypoint, track, or route data in text format. You load waypoint, track, and/or route data into the ArcView – Garmin table (viewable by clicking the “Data Table” button) from ArcView or the Garmin GPS.



You can then edit the data as you wish, deleting rows or columns and editing data where necessary. Once you have it the way you want it you can upload it to the GPS or download it to ArcView as either shapefiles or graphics.