MapSend File

Format Description

Revision 1.1

March 6, 2002

GENERAL

Purpose

This document describes the formats of the files in which MapSend stores routes, waypoints, track, GPS log and region information. All formats are based upon the Microsoft Foundation Class CArchive object.

Intended Audience

The intended user of this document is assumed to have some level of familiarity with file formats and data storage on PCs running the Microsoft Windows operating system. The intended user is also assumed to have some level of familiarity with the terminology used in C and C++ to describe data and data storage.

The document is intended to provide enough information for a user to be able to decode or modify the various MapSend data files.

Legal Disclaimer

The formats described in this document and used by MapSend are subject to change without notice. Thales Navigation does not assume any liability or responsibility for any use made of the information in this document.

FILE FORMATS

Data Types

Outside of the file header, all values are stored in the files using CArchive MFC-class. Numerical values are written as binary values in standard Intel format. Strings are preceded their length and don't have terminating nulls.

Position coordinates are given as longitude and latitude in degrees. Western longitudes are negative, Northern latitudes are negative. Altitude is always stored in meters above mean sea level.

File Header

All MapSend files start with an 18 byte file header. The file header has the following contents:

#	Field name	Size	Type	Value	Comments
1	Length	1	BYTE	13	Length of fields 2 and 3
2	Signature	11	char[11]	"4D533336 MS"	
3	Version	2	char[2]	"36"	30 – MapSend 1.0, 2.0 34 – MapSend 3.0 36 – MapSend 4.0, 4.10
4	Type	4	int		0 – region 1 – waypoints/routes 2 – track 3 – GPS log

Region File Data Block Format (.rgn)*

#	Field name	Size	Type	Version	Value	Comments
1	Region type	4	int		3	3 – rectangular
2	Size	4	int			Region size (bytes)
3	Is size real	4	BOOL			Is 0 if the size is estimated
4	Time	4	time_t			See C/C++ documentation
5	Br.Left (longitude)	4	float			Bounding rectangle coordinates
6	Br.Top (latitude)	4	float			
7	Br.Right (longitude)	4	float			
8	Br.Bottom (latitude)	4	float			
9	Left (longitude)	4	float			Coordinates for rectangular regions (they are the same as for the bound. rect.)
10	Top (latitude)	4	float			
11	Right (longitude)	4	float			
12	Bottom (latitude)	4	float			
13	Contains topo	4	BOOL	>=3.00		
14	Contains POI	4	BOOL	>=3.00		
15	Map datum name	*	String	>=3.00	"Unknown"	These values are not currently used.
16	Map datum ver	4	int	>=3.00	-1	
17	Topo datum name	*	String	>=3.00	"Unknown"	
18	Topo datum ver.	4	int	>=3.00	-1	
19	POI datum name	*	String	>=3.00	"Unknown"	
20	POI datum ver.	4	int	>=3.00	-1	
21	Rect. changed	4	BOOL	>=3.00		Is 0 if the region rectangle has not been changed since the last conversion
22	POI attr. changed	4	BOOL	>=3.00		Is 0 if the POI attributes have not been changed since the last conversion
23	POI cat num	4	BOOL	>=3.00		Number of POI blocks that follow
24	**POI Block**					
24.1	Cat. name	*	String	>=3.00		
24.2	Subcat. name	*	String	>=3.00		
25	Map size	4	int	>=3.00		Size of map (w/o POI and Topo parts)

Waypoints/Routes File Data Block Format (.wpt)*

#	Field name	Size	Type	Version	Comments
1	Total number of waypoints	4	int		Number of Waypoint blocks that follow
2	**Waypoint Block**				
2.1	Name	*	String		
2.2	Comment	*	String		
2.3	Number	4	int		
2.4	Icon	1	BYTE		Icon Id (0-41)
2.5	Status	1	BYTE		0 – off 1 – on, is not used in routes 2 – on, is used in routes
2.6	Altitude	8	double		
2.7	x	8	double		Longitude
2.8	y	8	double		Latitude
3	Total routes	4	int		Number of Route blocks that follow
4	**Route Block**				
4.1	Name	*	String		Route Name
4.2	Number	4	int		Route #
4.3	Total points in the route	4	int		Number of Route Waypoint blocks that follow
4.4	**Route Waypoint Block**				
4.4.1	Name	*	String		Waypoint name
4.4.2	Number	4	int		Waypoint number
4.4.3	x	8	double		Longitude
4.4.4	y	8	double		Latitude
4.4.5	Icon	1	BYTE		Icon Id (0-41)

Track File Data Block Format (.trk)*

#	Field name	Size	Type	Version	Comments
1	Name	*	String		Track's name
2	Total nodes	4	int		Number of Track Node blocks that follow
3	**Track Node Block**				
3.1	x	8	double		Longitude
3.2	y	8	double		Latitude
3.3	Altitude	4	int	< 4.0	
3.3'	Altitude	4	float	>= 4.0	
3.4	Time	4	time_t		
3.5	Validity	4	BOOL		
3.6	Centiseconds	1	BYTE	>= 3.0	hundredths of a second

GPS Log File Data Block Format (.gps)*

#	Field name	Size	Type	Version	Comments
1	Total nodes	4	int		Number of the Position Fix blocks followed next
2	**Position Fix Block (ver. < 4.0)**				
2.1	Time stamp	*	String	< 4.0	hhmmss.ss
2.2	Validity	4	BOOL	< 4.0	
2.3	y	4	float	< 4.0	Latitude
2.4	x	4	float	< 4.0	Longitude
2.5	Speed	4	float	< 4.0	km/h
2.6	Heading	4	float	< 4.0	True (north reference)
2.7	Date stamp	*	String	< 4.0	ddmmyy
2.8	Mag. var.	4	float	< 4.0	Magnetic variation
2.9	Altitude	4	float	= 3.0	
2'	**Position Fix Block (ver. >= 4.0)**				
2'.1	x	8	double	>= 4.0	Longitude
2'.2	y	8	double	>= 4.0	Latitude
2'.3	Altitude	4	float	>= 4.0	
2'.4	Validity	4	BOOL	>= 4.0	
2'.5	Time	4	time_t	>= 4.0	
2'.6	Speed	4	float	>= 4.0	km/h
2'.7	Heading	4	float	>= 4.0	True (north reference)
2'.8	Mag. var.	4	float	>= 4.0	Magnetic variation

