

Garmin MapSource (MPS), GPS Database (GDB) and Folder and Item (GFI) File Format

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Garmin MapSource (MPS), GPS Database (GDB) and Folder and Item (GFI) File Format

Files with filename extension *.mps are created by Garmin MapSource. MapSource < version 3 used an old MPS format which is documented separately. From version 3 until and including version 5, the MPS format documented here was the standard format. Starting with version 6, MapSource introduced a slightly modified format using filename extension *.gdb, but it was still able to produce *.mps files using the Export menu entry.

Garmin BaseCamp is the successor of MapSource. It uses the same *.gdb format, but can't export *.mps format anymore. While MapSource saved only on explicit user action, BaseCamp automatically saves the last state to C:\Users\<username>\AppData\Roaming\Garmin\BaseCamp\Database\<Version> as AllData.gdb. In addition, it stores its user interface data in a very similar *.gfi format in the same directory as FolderData.gfi.

Garmin HomePort behaves the same as BaseCamp, just that the path for automatic saves is C:\Users\<username>\AppData\Roaming\Garmin\HomePort\Database\<Version>.

This documentation is based on own research and the sources listed in the references section.

Text highlighted like **this** is where further investigation is needed.

Basic data types

All values are serialized in little-endian byte order (least significant byte first).

Type	Length	Description
byte	1	8 bit unsigned integer (range 0 .. 255)
ushort	2	16 bit unsigned integer (range 0 .. 65535)
uint	4	32 bit unsigned integer (range 0 .. 4294967295)
ulong	8	64 bit unsigned integer (range 0 .. 18446744073709551615)
short	2	16 bit signed integer (range -32768 .. 32767)
int	4	32 bit signed integer (range -2147483648 .. 2147483647)
long	8	64 bit signed integer (range -9223372036854775808 .. 9223372036854775807)
float	4	32 bit floating point value according to [6]
double	8	64 bit floating point value according to [6]
char	1	A character in ISO/IEC 8859-1 [7]
string	1..n	0-terminated string (may be empty). Character set is either ISO/IEC 8859-1 [7] or UTF-8 [8].
flag	1	A byte, with allowed values 0=no and 1=yes
version	2	An ushort, whose value is computed as major version x 100 + minor version.
coord	4	An int which has to be multiplied by 360.0° and divided by 2 ³² to get a longitude or latitude coordinate.

Basic structures

fint

Type	Content
flag	0=no value 1=value
int	If flag=1: Present and content is the value If flag=0 and File Format Version <= 1.6: Value is present, but has to be ignored else (flag=0 and File Format Version > 1.6): Value is not present.

fdouble

Type	Content
flag	0=no value 1=value
double	If flag=1: Present and content is the value If flag=0 and File Format Version <= 1.6: Value is present, but has to be ignored else (flag=0 and File Format Version > 1.6): Value is not present.

fstring

Type	Content
flag	0=no string 1=string
string	Only present if flag =1

position

Type	Content
coord	Latitude
coord	Longitude

Subclass

Version	Type	Content
>= 1.0	int	Map segment ID for map objects 0 for user waypoint – not the same as the Map IDs in the "L" section!
>= 1.0	int	Map object ID for map objects -1 for user waypoint – unique identifier for each road, POI, river, area, intersection, city, airport, and so on.
>= 1.0	long	Subclass 1 Waypoint subclass for auto-routes. -1 for user waypoint.
1.0	byte	Subclass 2 Waypoint subclass. 0 for user waypoints.
> 1.0	short	Subclass 2 Waypoint subclass. 0 for user waypoints.
> 1.2	int	Subclass 3

Version	Type	Content
		Waypoint subclassing for auto-routes. -1 for user waypoint.

Mapping from GPX <http://www.garmin.com/xmlschemas/GpxExtensions/v3>, element RoutePointExtension/Subclass:

The element contains 36 hex digits for 18 bytes, e.g. 05C0F4B64F005220A9180F1EC400A0208227.

05C0 AND FF07 → Subclass 2; AND 00F8 SHR 3 → Map line 8
 F4B64F00 Map segment ID
 5220A918 Subclass 3
 0F1EC400A0208227 Subclass 1
 (set to FFFFFFFF Map object ID)

General file structure

Type	Content
char[4]	Signature "MsRc" (probably stands for "MapSource"): MPS and GDB "DifG" (probably stands for "GFI Database" backwards): GFI
version	Primary file format
Record 'D' – File format version	
Record 'A' – File author information	
string	Application field. Only present if Primary file format > 1.0.
List of further records	

Primary file format:

Value	as version	Meaning
0x0064	1.0	MPS
0x0065	1.1	old GDB used by MapSource 6.0.2 beta (and probably other early 6.0 betas)
0x0066	1.2	GDB and GFI

General record structure

All records have this general structure:

Type	Content
uint	Record length in byte, excluding the record length and type
char	Record type Identifies the record content. See table below.
byte[Record length]	Record content

Record type values:

Value	Meaning
'A'	File author information
'C'	Geocaching
'D'	File format version
'E'	??
'F'	Folder information
'G'	Image
'I'	Inventory item
'J'	Image
'J'	BirdsEye
'K'	BirdsEye
'L'	Map section
'O'	BirdsEye
'R'	Route
'T'	Track
'V'	Map set name
'W'	Waypoint
'X'	End of file

Records common for MPS, GDB and GFI file format

All file formats start with the two records 'D' and 'A' and then (if the primary file format version is > V1.0) the application field.

File format record (Type='D')

Type	Content
version	File format

MPS

Product versus primary file format version and file format version:

Product	Primary file format version (Header)	File format version (record 'D')
MapSource 3.0-3.5	1.0	1.0
MapSource 3.6	1.0	1.1
MapSource 4.0	1.0	1.2
MapSource 4.3-4.9	1.0	1.3
MapSource 4.10-4.13	1.0	1.4
MapSource >= 5.0	1.0	1.5

GDB and GFI

GFI is not used with MapSource, only with BaseCamp and HomePort.

Product versus primary file format version and file format version:

Product	Primary file format version (Header)	File format version (record 'D')
MapSource 6.0.2 Beta	1.1	1.6
MapSource 6.0-6.3 "Ver 1"	1.2	1.7
MapSource 6.5-6.11.6 "Ver 2", GPSTabel-1.3.4, -1.3.6 and -1.5.2	1.2	1.8
MapSource 6.12.2-6.16.3 "Ver 3"	1.2	1.9
BaseCamp 2.x	1.2	1.15
HomePort 2.0.x	1.2	1.19
BaseCamp 3.0.1-3.0.2	1.2	1.29
BaseCamp 3.0.3	1.2	1.31
BaseCamp 3.0.4-3.0.6	1.2	1.32
BaseCamp 3.1.x	1.2	1.38
BaseCamp 3.2.0.1 Beta	1.2	1.46
BaseCamp 3.2.0.2 Beta-3.2.1	1.2	1.47
BaseCamp 3.2.2	1.2	1.48
BaseCamp 3.3.x and HomePort 2.1.x	1.2	1.54
BaseCamp 4.0.0.2 Beta	1.2	1.58
BaseCamp 4.0.0.3 Beta-4.0.0.5 Beta	1.2	1.59
BaseCamp 4.0.0.6 Beta-4.0.x	1.2	1.60
BaseCamp 4.1.0	1.2	1.64
HomePort 2.2.x-2.3.x	1.2	1.69
BaseCamp 4.2.0.2 Beta	1.2	1.72
BaseCamp 4.2.0.4 Beta	1.2	1.77
BaseCamp 4.2.1	1.2	1.78
BaseCamp 4.2.2-4.2.4	1.2	1.79
BaseCamp 4.2.5	1.2	1.80
BaseCamp 4.3.0.1 Beta-4.3.1, 4.4.0.1 Beta	1.2	1.86
Basecamp 4.3.2-4.3.5	1.2	1.87
Basecamp 4.4.1-4.7.5	1.2	1.88

File author information record (Type='A')

Type	Content
version	Program version
string	Builder Usually "SQA" or "sqa", which probably stands for "Software Quality Assurance"
string	Build date, format is MMM dd yyyy or M/d/yyyy
string	Build time, format is HH:mm:ss or HH:mm:sszzz

Seen file author information records:

Product	File author information record (record 'A')			
	Program version	Builder	Builddate	Build time
MapSource 3.0	3.0	"SQA"	"Oct 7 1999"	"08:24:26"
MapSource 3.1	3.1	"SQA"	"Oct 11 1999"	"14:31:20"
MapSource 3.2	3.2	"SQA"	"Oct 20 1999"	"12:50:03"
MapSource 3.3	3.3	"SQA"	"Jan 4 2000"	"15:46:22"

Product	File author information record (record 'A')			
	Program version	Builder	Builddate	Build time
MapSource 3.5	3.5	"SQA"	"Jul 18 2000"	"13:56:29"
MapSource 3.6 Beta	3.6	"doherty"	"Jan 24 2001"	"18:11:17"
MapSource 3.6	3.6	"SQA"	"Feb 2 2001"	"13:46:01"
MapSource 4.0	4.0	"SQA"	"Feb 28 2001"	"09:55:29"
MapSource 4.1 Beta	4.1	"buell"	"Apr 6 2001"	"14:06:19"
MapSource 4.2 Beta	4.2	"buell"	"May 11 2001"	"11:45:54"
MapSource 4.3 Beta	4.3	"buell"	"May 25 2001"	"11:04:41"
MapSource 4.3	4.3	"SQA"	"Jun 12 2001"	"16:35:33"
MapSource 4.4 Beta	4.4	"hales"	"Oct 3 2001"	"14:00:17"
MapSource 4.5	4.5	"SQA"	"Oct 12 2001"	"13:37:16"
MapSource 4.6	4.6	"SQA"	"Oct 22 2001"	"15:45:05"
MapSource 4.7 Beta	4.7	"hales"	"Apr 12 2002"	"11:20:20"
MapSource 4.7	4.7	"SQA"	"Apr 29 2002"	"14:54:31"
MapSource 4.8	4.8	"SQA"	"May 13 2002"	"13:59:05"
MapSource 4.9	4.9	"SQA"	"Jun 3 2002"	"08:51:52"
MapSource 4.10 Beta	4.10	"hales"	"Nov 18 2002"	"14:11:40"
MapSource 4.10	4.10	"SQA"	"Dec 4 2002"	"14:56:32"
MapSource 4.11	4.11	"SQA"	"Dec 20 2002"	"16:41:26"
MapSource 4.12	4.12	"SQA"	"Feb 13 2003"	"13:24:05"
MapSource 4.13	4.13	"SQA"	"Mar 7 2003"	"15:12:28"
MapSource 5.0	5.0	"SQA"	"Jul 3 2003"	"08:35:33" and "08:35:39"!
MapSource 5.2	5.2	"SQA"	"Aug 26 2003"	"13:41:10"
MapSource 5.3	5.3	"SQA"	"Sep 24 2003"	"11:44:25"
MapSource 5.4	5.4	"SQA"	"Nov 6 2003"	"16:01:32"
MapSource 6.0.2 Beta	6.0	"holder"	"Mar 8 2004"	"14:13:31"
MapSource 6.0.6 Beta	6.0	"mesaadmin"	"Apr 16 2004"	"10:48:10"
MapSource 6.0.8	6.0	"SQA"	"May 6 2004"	"15:31:13"
MapSource 6.1	6.1	"SQA"	"May 18 2004"	"15:57:15"
MapSource 6.3	6.3	"SQA"	"Jun 21 2004"	"14:29:29"
MapSource 6.5.0 Beta	6.5	"hales"	"Nov 10, 2004"	"12:28:17"
MapSource 6.5	6.5	"SQA"	"Dec 27 2004"	"17:40:51"
MapSource 6.6.1 Beta	6.6	"neaderhi"	"May 19, 2005"	"17:16:51"
MapSource 6.6.2 Beta	6.6	"neaderhi"	"Jun 2 2005"	"14:04:28"
MapSource 6.7	6.7	"SQA"	"Jul 22 2005"	"13:50:50"
MapSource 6.8.0	6.8	"SQA"	"Aug 8 2005"	"10:17:17"
MapSource 6.9.0.2 Beta	6.9	"neaderhi"	"Sep 29 2005"	"12:59:37"
MapSource 6.9.1	6.9	"SQA"	"Oct 18 2005"	"12:03:34"
MapSource 6.10.0.2 Beta	6.10	"neaderhi"	"Jan 19 2006"	"22:01:48"
MapSource 6.10.0.3 Beta	6.10	"neaderhi"	"Feb 6 2006"	"13:13:38"
MapSource 6.10.2	6.10	"SQA"	"Mar 13 2006"	"17:49:25"
MapSource 6.11.1	6.11	"SQA"	"May 22 2006"	"12:17:10"
MapSource 6.11.3	6.11	"SQA"	"Jul 11 2006"	"16:36:02"
MapSource 6.11.5	6.11	"SQA"	"Aug 21 2006"	"11:56:45"
MapSource 6.11.6	6.11	"SQA"	"Nov 3 2006"	"12:19:11"

Product	File author information record (record 'A')			
	Program version	Builder	Builddate	Build time
MapSource 6.12.0.2 Beta (see below)	6.12	"neaderhi"	"Jan 17 2007"	"16:52:04"
MapSource 6.12.2	6.12	"SQA"	"Feb 20 2007"	"14:45:13"
MapSource 6.12.3	6.12	"SQA"	"Mar 20 2007"	"13:26:48"
MapSource 6.12.4	6.12	"SQA"	"May 1 2007"	"14:47:56"
MapSource 6.13.0.1 Beta	6.13	"neaderhiadmin"	"Aug 3 2007"	"10:59:15"
MapSource 6.13.1	6.13	"SQA"	"Aug 14 2007"	"18:14:36"
MapSource 6.13.2	6.13	"SQA"	"Aug 30 2007"	"15:29:23"
MapSource 6.13.4	6.13	"SQA"	"Sep 17 2007"	"17:00:00"
MapSource 6.13.5	6.13	"SQA"	"Nov 8 2007"	"17:21:34"
MapSource 6.13.6	6.13	"SQA"	"Nov 28 2007"	"11:23:32"
MapSource 6.13.7	6.13	"SQA"	"Jan 21 2008"	"14:11:50"
MapSource 6.14.0.1 Beta	6.14	"schulzem"	"May 21 2008"	"16:26:51"
MapSource 6.14.1	6.14	"sqa"	"Jun 26 2008"	"18:40:52"
MapSource 6.15.3	6.15	"sqa"	"Dec 26 2008"	"16:08:03"
MapSource 6.15.4	6.15	"sqa"	"Feb 9 2009"	"11:31:30"
MapSource 6.15.5	6.15	"sqa"	"Mar 18 2009"	"12:12:39"
MapSource 6.15.6	6.15	"sqa"	"Apr 14 2009"	"15:02:31"
MapSource 6.15.7	6.15	"sqa"	"Sep 21 2009"	"15:33:52"
MapSource 6.15.11	6.15	"sqa"	"Jan 26 2010"	"11:31:06"
MapSource 6.16.0.2 Beta	6.16	"schulzem"	"Feb 26 2010"	"09:04:38"
MapSource 6.16.0.3 Beta	6.16	"schulzem"	"Mar 18 2010"	"13:35:29"
MapSource 6.16.1	6.16	"sqa"	"May 7 2010"	"13:22:26"
MapSource 6.16.2	6.16	"sqa"	"Jun 15 2010"	"11:06:04"
MapSource 6.16.3	6.16	"sqa"	"Oct 14 2010"	"08:33:45"
BaseCamp 2.0.5	2.0	"sqa"	"May 12 2009"	"13:56:02"
BaseCamp 2.0.6	2.0	"sqa"	"Jul 6 2009"	"11:51:05"
BaseCamp 2.0.7	2.0	"sqa"	"Aug 14 2009"	"15:50:48"
BaseCamp 2.0.8	2.0	"sqa"	"Nov 23 2009"	"16:07:02"
BaseCamp 2.0.9	2.0	"sqa"	"Dec 22 2009"	"16:54:00"
BaseCamp 3.0.1	3.0	"sqa"	"Mar 25 2010"	"13:31:51"
BaseCamp 3.0.2	3.0	"sqa"	"Apr 9 2010"	"10:07:54"
BaseCamp 3.0.3	3.0	"sqa"	"May 10 2010"	"15:58:14"
BaseCamp 3.0.4	3.0	"sqa"	"May 19 2010"	"09:01:19"
BaseCamp 3.0.5	3.0	"sqa"	"Jun 7 2010"	"13:51:32"
BaseCamp 3.0.6	3.0	"sqa"	"Aug 26 2010"	"09:56:44"
BaseCamp 3.1.1	3.0	"sqa"	"Oct 13 2010"	"10:20:36"
BaseCamp 3.1.2	3.1	"sqa"	"Nov 11 2010"	"08:18:12"
BaseCamp 3.1.3	3.1	"sqa"	"Jan 27 2011"	"12:55:49"
BaseCamp 3.2.0.1 Beta	3.2	"neaderhi"	"May 5 2011"	"15:51:44"
BaseCamp 3.2.0.2 Beta	3.2	"neaderhi"	"May 26 2011"	"15:37:38"
BaseCamp 3.2.1	3.2	"sqa"	"Jun 21 2011"	"09:27:26"
BaseCamp 3.2.2	3.2	"sqa"	"Aug 5 2011"	"16:47:53"
BaseCamp 3.3.0.2 Beta	3.3	"neaderhi"	"Dec 13 2011"	"15:43:24"

Product	File author information record (record 'A')			
	Program version	Builder	Builddate	Build time
BaseCamp 3.3.0.3 Beta	3.3	"neaderhi"	"Dec 28 2011"	"20:42:48"
BaseCamp 3.3.1	3.3	"sqa"	"Feb 6 2012"	"12:24:13"
BaseCamp 3.3.2	3.3	"sqa"	"Mar 8 2012"	"16:21:17"
BaseCamp 4.0.0.2 Beta	4.0	"neaderhi"	"Jun 12 2012"	"14:12:15"
BaseCamp 4.0.0.3 Beta	4.0	"neaderhi"	"Jun 29 2012"	"08:48:06"
BaseCamp 4.0.0.4 Beta	4.0	"schulzem"	"Jul 9 2012"	"17:14:04"
BaseCamp 4.0.0.5 Beta	4.0	"neaderhi"	"Jul 24 2012"	"11:55:10"
BaseCamp 4.0.0.6 Beta	4.0	"neaderhi"	"Aug 21 2012"	"15:22:30"
BaseCamp 4.0.1	4.0	"sqa"	"Aug 27 2012"	"11:52:28"
BaseCamp 4.0.2	4.0	"sqa"	"Sep 20 2012"	"16:12:33"
BaseCamp 4.0.4	4.0	"sqa"	"Oct 25 2012"	"15:58:58"
BaseCamp 4.0.5	4.0	"sqa"	"Nov 13 2012"	"08:35:42"
BaseCamp 4.1.0	4.1	"sqa"	"Jan 15 2013"	"12:10:55"
BaseCamp 4.1.1	4.1	"sqa"	"Jan 31 2013"	"15:55:05"
BaseCamp 4.1.2	4.1	"sqa"	"Mar 4 2013"	"12:11:44"
BaseCamp 4.2.0.2 Beta	4.2	"neaderhi"	"Apr 10 2013"	"15:24:06"
BaseCamp 4.2.0.3 Beta	4.2	"sqa"	"Apr 12 2013"	"07:56:59"
BaseCamp 4.2.0.4 Beta	4.2	"neaderhi"	"May 6 2013"	"15:32:48"
BaseCamp 4.2.1	4.2	"sqa"	"Jun 19 2013"	"15:23:09"
BaseCamp 4.2.x.x	4.2	"sqa"	"Jun 20 2013"	"14:58:26"
BaseCamp 4.2.x.x	4.2	"sqa"	"Jun 24 2013"	"10:17:49"
BaseCamp 4.2.x.x	4.2	"kolling"	"Jul 2 2013"	"14:18:27"
BaseCamp 4.2.2	4.2	"sqa"	"Jul 18 2013"	"15:16:56"
BaseCamp 4.2.x.x	4.2	"sqa"	"Jul 19 2013"	"14:15:47"
BaseCamp 4.2.x.x	4.2	"sqa"	"Jul 25 2013"	"07:41:36"
BaseCamp 4.2.3	4.2	"SQA"	"Sep 23 2013"	"11:17:06"
BaseCamp 4.2.x.x	4.2	"sqa"	"Oct 16 2013"	"07:59:43"
BaseCamp 4.2.4	4.2	"SQA"	"Oct 18 2013"	"15:57:08"
BaseCamp 4.2.5	4.2	"SQA"	"Dec 12 2013"	"13:57:14"
BaseCamp 4.3.0.1 Beta	4.3	"michlowitz"	"Mar 18 2014"	"10:06:43"
BaseCamp 4.3.0.2 Beta	4.3	"michlowitz"	"Mar 27 2014"	"13:37:59"
BaseCamp 4.3.0.3 Beta	4.3	"dev"	""	""
BaseCamp 4.3.0.x Beta	4.3	"sqa"	"May 6 2014"	"15:43:12"
BaseCamp 4.3.1	4.3	"SQA"	"5/8/2014"	"15:23:55-07:00"
BaseCamp 4.3.2	4.3	"SQA"	"5/29/2014"	"11:00:39-07:00"
BaseCamp 4.3.3	4.3	"SQA"	"6/4/2014"	"17:20:06-07:00"
BaseCamp 4.3.4	4.3	"SQA"	"6/23/2014"	"15:42:03-07:00"
BaseCamp 4.3.5	4.3	"SQA"	"7/24/2014"	"09:38:04-07:00"
BaseCamp 4.4.0.1 Beta	4.3	"dev"	""	""
BaseCamp 4.4.1	4.4	"SQA"	"9/19/2014"	"15:26:19-07:00"
BaseCamp 4.4.2	4.4	"SQA"	"9/30/2014"	"11:30:44-07:00"
BaseCamp 4.4.4	4.4	"SQA"	"11/17/2014"	"07:47:47-07:00"
BaseCamp 4.4.6	4.4	"SQA"	"12/11/2014"	"15:56:37-07:00"
BaseCamp 4.4.7	4.4	"SQA"	"4/15/2015"	"09:11:53-07:00"

Product	File author information record (record 'A')			
	Program version	Builder	Builddate	Build time
BaseCamp 4.5.0	4.5	"SQA"	"7/17/2015"	"15:53:32-07:00"
BaseCamp 4.5.1	4.5	"SQA"	"8/14/2015"	"15:34:21-07:00"
BaseCamp 4.5.2	4.5	"SQA"	"8/31/2015"	"16:34:39-07:00"
BaseCamp 4.6.1	4.6	"dagsqa"	"1/29/2016"	"12:39:16-07:00"
BaseCamp 4.6.2	4.6	"dagsqa"	"2/12/2016"	"14:47:41-07:00"
BaseCamp 4.7.0	4.7	"dagsqa"	"5/23/2018"	"13:44:49-07:00"
BaseCamp 4.7.1	4.7	"dagsqa"	"10/14/2019"	"15:20:43-07:00"
BaseCamp 4.7.2	4.7	"dagsqa"	"6/3/2020"	"18:58:45-07:00"
BaseCamp 4.7.3	4.7	"dagsqa"	"9/9/2020"	"15:22:55-07:00"
BaseCamp 4.7.4	4.7	"dagsqa"	"5/10/2021"	"11:25:40-07:00"
BaseCamp 4.7.5	4.7	"dagsqa"	"2/27/2023"	"15:19:13-07:00"
HomePort 2.0.2	2.0	"sqa"	"Nov 6 2009"	"14:01:48"
HomePort 2.0.3	2.0	"sqa"	"Dec 21 2009"	"12:46:12"
HomePort 2.0.4	2.0	"sqa"	"Jul 9 2010"	"13:29:47"
HomePort 2.1.0	2.1	"sqa"	"Apr 3 2012"	"16:01:28"
HomePort 2.1.1	2.1	"sqa"	"May 14 2012"	"11:42:32"
HomePort 2.2.1	2.2	"sqa"	"Mar 25 2013"	"11:49:25"
HomePort 2.2.5	2.2	"SQA"	"Jun 4 2014"	"16:07:41"
HomePort 2.2.9	2.2	"SQA"	"Jan 23 2015"	"16:40:20"
HomePort 2.2.10	2.2	"sqa"	"Nov 2 2015"	"10:26:01"
HomePort 2.3.0	2.3	"hosage"	"May 21 2018"	"16:06:21"
HomePort 2.3.1	2.3	"dagsqa"	"May 31 2018"	"17:45:11"
HomePort 2.3.2	2.3	"dagsqa"	"Dec 10 2018"	"12:04:00"
GPSTabel 1.3.4	6.5	"GPSTabel-1.3.4"	"Jul 14 2007"	"21:06:14"
GPSTabel 1.3.6	6.5	"GPSTabel-1.3.6"	"Sep 11 2008"	"20:41:43"
GPSTabel 1.5.2	6.5	"GPSTabel-1.5.2"	"Apr 14 2011"	"01:30:01"

<https://www.naviboard.de/showthread.php?t=18458> shows that the version with this date/time is 6.12.0.2 Beta.

GPSTabel version info according to source (not seen yet):

"A].GPSTabel_1.2.7-beta*Sep 13 2005*20:10:00" - gpsbabel V1.2.7 BETA

"A].GPSTabel_1.2.8-beta*Jan 18 2006*20:11:00" - gpsbabel 1.2.8-beta01182006_clyde

"A].GPSTabel_1.2.8-beta*Apr 18 2006*20:12:00" - gpsbabel 1.2.8-beta20060405

"A].GPSTabel-1.3*Jul 02 2006*20:13:00" - gpsbabel 1.3.0

"A].GPSTabel-1.3.1*Sep 03 2006*20:14:00" - gpsbabel 1.3.1

"A].GPSTabel-1.3.2*Nov 01 2006*22:23:39" - gpsbabel 1.3.2

New since 11/01/2006:

version: version and release of gpsbabel (defined in configure.in)

timestamp: date and time of gdb.c (handled by CVS)

"A].GPSTBabel-1.3.2*Nov 01 2006*22:23:39" - gpsbabel 1.3.2

"A].GPSTBabel-beta20061125*Feb 06 2007*23:24:14" gpsbabel beta20061125

"A].GPSTBabel-1.3.3*Feb 20 2007*20:51:15" - gpsbabel 1.3.3

Application field (no record!)

Type	Content
string	"MapSource", "HomePort", or "BaseCamp" GPSTBabel writes "MapSource" here

Records specific for MPS and GDB File Format

Sequence of records after the common records:

'W'*, 'R'*, 'T'*, 'G'*, 'O'*, 'L'*, 'j'*, 'J'*, 'C'*, 'V', 'E'?, 'X'? (is there an order for G, O, L, j and J?)

* = 0..n times, + = 1..n times, ? = optional (0..1 times)

Records 'G', 'O' and 'X' were introduced with File Format version 1.29, i.e. BaseCamp V3.0.1

Records 'j' and 'J' were introduced with File Format version 1.31, i.e. BaseCamp V3.0.3

Waypoint record (Type='W')

File formats < 1.46:

Version	Type	Content
>= 1.0	string	Waypoint name
>= 1.0	uint	Waypoint class
>= 1.0	string	Country code
>= 1.0	Subclass	
>= 1.0	position	Position
>= 1.0	fdouble	Altitude in meter
>= 1.0	string	Comment
>= 1.0	fdouble	Proximity in meter
>= 1.0	uint	Display mode, see table below
>= 1.0	uint	Color, see table below
>= 1.0	uint	Symbol, see table below
>= 1.0	string	City
>= 1.0	string	State
>= 1.0	string	Facility
>= 1.0	byte	Map line 8 (term according to [1])

Version	Type	Content
		On importing a GPX file, this value is derived from XML element RoutePointExtension/Subclass, see Subclass above.
>= 1.0	fdouble	Depth in meter
>= 1.0	string	Street
>= 1.0	fstring	Unknown1. Is accepted and preserved, but not shown.
>= 1.2	uint	Predicted leg time in seconds for auto-routed routes.
>= 1.2	string	Directions
1.6-1.8	string	Link
>= 1.9	uint	Number of links
>= 1.9	Number of links x string Link	
>= 1.6	ushort	Categories 1-16 (bit 0 = category 1, .. bit 1 = category 16)
>= 1.6	fdouble	Temperature in °C
>= 1.6	fint	Creation time (Unix time, seconds since 1970-01-01)
>= 1.9	uint	Number of phone numbers
	The next two fields repeat Number of phone numbers times:	
>= 1.9	string	Phone Number
>= 1.9	fstring	Category (like "Home", "Work", "Mobile" etc.)
>= 1.9	string	Country
>= 1.9	string	Postal Code
>= 1.15	flag	Show direction icon It seems that show direction icon and thumbnail present are mutually exclusive.
>= 1.15	byte	Direction icon, see table below Value is 0 (none) if show direction icon flag is clear
>= 1.15	flag	Thumbnail present
	The next three fields are only present when Thumbnail present flag is set:	
>= 1.15	string	Origin
>= 1.15	uint	Size of embedded PNG file
>= 1.15	byte[Size]	Thumbnail in PNG format
	The next field is only present if Show direction icon flag is set:	
>= 1.15	flag	Unknown6
	The next field is only present when Unknown6 flag is set:	
>= 1.15	byte[6]	Unknown7 6 x 0 is ok, 38 38 38 7F 7F 7F not
>= 1.29	fint	Unknown8 (not seen present)
>= 1.29	fint	Unknown9 (not seen present)

File formats >= 1.46:

Version	Type	Content
	string	Waypoint name
	uint	Waypoint class
	position	Position
	string	Comment
	fdouble	Proximity in meter
	uint	Display mode, see table below
	uint	Icon, see table below

Version	Type	Content
	uint	Color, see table below
	byte	Unknown1=0 (fstring as above?)
>= 1.54	flag	Subclass1 present
		Subclass1 (in >= 1.54 only present if Subclass1 present flag set)
>= 1.54	flag	Subclass2 present
>= 1.54		Subclass2 (only present if Subclass2 present flag set)
	fdouble	Altitude in meter
	byte	Unknown2=0
	uint	Number of links
		Number of links x string Link
	fdouble	Temperature in °C
	fint	Creation time (Unix time, seconds since 1970-01-01)
	byte	Unknown3=0
	flag	Thumbnail present
		The next fields are only present when Thumbnail present flag is set:
	string	Origin
	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
	8 x byte	Unknown4=0

Display mode:

Value	Meaning
0	Symbol
1	Symbol & Name
2	Symbol & Comment
3	Image
4	Image & Name

Color:

Value	Meaning
0	Default
1	Black
2	Dark red
3	Dark green
4	Dark yellow
5	Dark blue
6	Dark magenta
7	Dark cyan
8	Light grey
9	Dark grey
10	Red
11	Green
12	Yellow
13	Blue
14	Magenta
15	Cyan

Value	Meaning
16	White
17	Transparent

Icon: (see [3], file MapSourceHelpers.cpp)

Value	Meaning
0	Anchor
1	Bell
2	DiamondGrn
3	DiamondRed
4	Dive1
5	Dive2
6	Dollar
7	Fish
8	Fuel
9	Horn
10	House
11	Knife
12	Light
13	Mug
14	Skull
15	SquareGrn
16	SquareRed
17	Wbuoy
18	WptDot
19	Wreck
20	Mob
21	BuoyAmbr
22	BuoyBlck
23	BuoyBlue
24	BuoyGrn
25	BuoyGrnRed
26	BuoyGrnWht
27	BuoyOrng
28	BuoyRed
29	BuoyRedGrn
30	BuoyRedWht
31	BuoyViolet
32	BuoyWht
33	BuoyWhtGrn
34	BuoyWhtRed
35	Dot
36	Rbcn
37	BoatRamp
38	Camp
39	Restrooms

Value	Meaning
40	Showers
41	DrinkingWtr
42	Phone
43	1stAid
44	Info
45	Parking
46	Park
47	Picnic
48	Scenic
49	Skiing
50	Swimming
51	Dam
52	Controlled
53	Danger
54	Restricted
55	Ball
56	Car
57	Deer
58	ShpngCart
59	Lodging
60	Mine
61	TrailHead
62	TruckStop
63	UserExit
64	Flag
65	CircleX
66	MiMrkr
67	Trcbck
68	Golf
69	SmlCty
70	MedCty
71	LrgCty
72	CapCty
73	AmusePk
74	Bowling
75	CarRental
76	CarRepair
77	Fastfood
78	Fitness
79	Movie
80	Museum
81	Pharmacy
82	Pizza
83	PostOfc
84	RvPark
85	School

Value	Meaning
86	Stadium
87	Store
88	Zoo
89	GasPlus
90	Faces
91	WeighSttn
92	TollBooth
93	Bridge
94	Building
95	Cemetery
96	Church
97	Civil
98	Crossing
99	HistTown
100	Levee
101	Military
102	OilField
103	Tunnel
104	Beach
105	Forest
106	Summit
107	Airport
108	Heliport
109	Private
110	SoftFld
111	TallTower
112	ShortTower
113	Glider
114	Ultralight
115	Parachute
116	Seaplane
117	Geocache
118	GeocacheFound
119	ContactAfro
120	ContactAlien
121	ContactBalCap
122	ContactBigEar
123	ContactBiker
124	ContactBug
125	ContactCat
126	ContactDog
127	ContactDreads
128	ContactFem1
129	ContactFem2
130	ContactFem3
131	ContactGoatee

Value	Meaning
132	ContactKungFu
133	ContactPig
134	ContactPirate
135	ContactRanger
136	ContactSmiley
137	ContactSpike
138	ContactSumo
139	WaterHydrant
140	FlagRed
141	FlagBlue
142	FlagGreen
143	PinRed
144	PinBlue
145	PinGreen
146	BlockRed
147	BlockBlue
148	BlockGreen
149	BikeTrail
150	FHSFacility
151	PoliceStation
152	SkiResort
153	IceSkating
154	Wrecker
155	NoAnchor
156	Beacon
157	CoastGuard
158	Reef
159	WeedBed
160	DropOff
161	Dock
162	Marina
163	BaitTackle
164	Stump
165	CircleRed
166	CircleGreen
167	CircleBlue
168	DiamondBlue
169	OvalRed
170	OvalGreen
171	OvalBlue
172	RectRed
173	RectGreen
174	RectBlue
175	SquareBlue
176	LetterARed
177	LetterAGreen

Value	Meaning
178	LetterABlue
179	LetterBRed
180	LetterBGreen
181	LetterBBlue
182	LetterCRed
183	LetterCGreen
184	LetterCBlue
185	LetterDRed
186	LetterDGreen
187	LetterDBlue
188	Number0Red
189	Number0Green
190	Number0Blue
191	Number1Red
192	Number1Green
193	Number1Blue
194	Number2Red
195	Number2Green
196	Number2Blue
197	Number3Red
198	Number3Green
199	Number3Blue
200	Number4Red
201	Number4Green
202	Number4Blue
203	Number5Red
204	Number5Green
205	Number5Blue
206	Number6Red
207	Number6Green
208	Number6Blue
209	Number7Red
210	Number7Green
211	Number7Blue
212	Number8Red
213	Number8Green
214	Number8Blue
215	Number9Red
216	Number9Green
217	Number9Blue
218	TriangleBlue
219	TriangleGreen
220	TriangleRed
221	ContactBlonde
222	ContactClown
223	ContactGlasses

Value	Meaning
224	ContactPanda
225	MultiCache
226	LetterboxCache
227	PuzzleCache
228	Library
229	BusStation
230	CityHall
231	Winery
232	ATV
233	BigGame
234	Blind
235	BloodTrail
236	Cover
237	Covey
238	FoodSource
239	Furbearer
240	Lodge
241	SmallGame
242	AnimalTracks
243	TreedQuarry
244	TreeStand
245	Truck
246	UplandGame
247	Waterfowl
248	WaterSource

Direction icon:

Value	Icon	Meaning
0		none
2, 15, 18		right
3		sharp right
4		U-turn
5		sharp left
6, 16, 19		left

Value	Icon	Meaning
8, 11, 13, 17, 20, 21, 22, 23		ahead
10		turn right
12		ferry
14		circle
24, 25		turn left

Route record (Type='R')

Version	Type	Content
>= 1.0	string	Route name
>= 1.0	flag	Auto-name
>= 1.46	uint	Number of route points in route
>= 1.46	Number of route points in route x Route point	
>= 1.46	3 x byte	Unknown1=0
>= 1.0	flag	No bounds
	The following 4 fields are only present if the No bounds flag is clear:	
>= 1.0	position	Position max
1.0 - < 1.46	fdouble	Altitude max
>= 1.0	position	Position min
1.0 - < 1.46	fdouble	Altitude min
1.0 - < 1.46	uint	Number of route points in route
1.0 - < 1.46	Number of route points in route x Route point	
1.6-1.8	string	Link
>= 1.9	uint	Number of links
>= 1.9	Number of links x string Link	
>= 1.9	uint	Color
>= 1.9	flag	Auto-route info present
	The following fields up to and including the "Number of waypoints to create" are only present if Auto-route info present flag is set	
>= 1.9	flag	Try to avoid toll roads
>= 1.9	flag	Try to avoid unpaved roads
>= 1.9	flag	Try to avoid u-turns
>= 1.9	flag	Try to avoid carpool lanes
>= 1.9	flag	Try to avoid ferries
>= 1.9	flag	Try to avoid date and time closures

Version	Type	Content
>= 1.9	byte	Route style, 0= use direct routes, 1= use auto-routing
>= 1.9	uint	Calculation style, 0=Faster time, 1=Shorter distance
>= 1.9	byte	Vehicle, see table below
>= 1.9	uint	Road selection: -3 (minor roads) to 3 (highways)
>= 1.9	double	Average driving speed for residential street, in 1/10 meter per second
>= 1.9	double	Average driving speed for collector road, in 1/10 meter per second
>= 1.9	double	Average driving speed for other highway, in 1/10 meter per second
>= 1.9	double	Average driving speed for major highway, in 1/10 meter per second
>= 1.9	double	Average driving speed for interstate highway, in 1/10 meter per second
>= 1.9	uint	Number of area avoidances (used starting with MapSource 6.16.3)
>= 1.9		Number of area avoidances x area avoidance
>= 1.9	uint	Number of road avoidances (used starting with MapSource 6.16.3)
>= 1.9		Number of road avoidances x road avoidance
>= 1.15	uint	Create waypoints On a (normal) route, it is always 1. On a filtered route, this value represents the setting in tab "Route Options", "Filtered Waypoints": 1 means "Create waypoints every X km" and 2 means "Create X waypoints".
>= 1.15	double	Distance between waypoints in meter
>= 1.15	uint	Unknown9=0
>= 1.15	uint	Number of waypoints to create
>= 1.9	string	Notes (may be empty)
>= 1.15	flag	"Is filtered route"
>= 1.15	uint	Number of filtered points
		Number of filtered points x Link point
>= 1.15	flag	Unknown10
		The next two fields are only present when Unknown10 flag is clear:
>= 1.15	Link point	?
>= 1.15	Link point	?
>= 1.29	byte	Unknown11=0
>= 1.46	uint	Activity profile, see table below

Route point:

Version	Type	Content
>= 1.0	string	Point name
>= 1.0	uint	Waypoint class
1.0 - < 1.46	string	Countrycode
1.0 - < 1.46	Subclass	
>= 1.0	fstring	Unknown1. Is accepted and preserved, but not shown.
>= 1.0	uint	Unknown2=0, 1 or 3 A value of 2 is accepted and preserved, but there is no visible change.
>= 1.0	uint	Unknown3=0 or 0xFFFFFFFF or 0x00????? Sometimes: Same as Map segment ID from Subclass, or Subclass 3 from Subclass
>= 1.0	uint	Unknown4 is 0 if Unknown3 is 0 or 0xFFFFFFFF else is often 0x00??????

Version	Type	Content
		Sometimes: Same as Subclass 3 from Subclass, or Map segment ID from Subclass
1.0	byte	Unknown5=0
> 1.0	ushort	Unknown5=0-12, 19, 22 or 26 At least in BaseCamp: Same as Subclass 2 ID from Subclass
>= 1.0	uint	Unknown6=0, 1 or 2 1 means "Autoroute-Point follows" When set to >2 the file is not accepted anymore.
>= 1.0	uint	Number of link points
		Number of link points x Link point
>= 1.0	flag	Omit bounding box
		The next 4 fields are only present if the omit bounding box flag is clear:
>= 1.0	position	Position max
1.0 - < 1.46	fdouble	Altitude max
>= 1.0	position	Position min
1.0 - < 1.46	fdouble	Altitude min
>= 1.8	byte[8]	Unknown7=0xFFFFFFFFFFFFFFFF
1.15 - < 1.46	uint	Unknown9=0 When set to <>0, the file is not accepted anymore, even when more data is given here (tried string and 1, 2, 4, and 8 byte).
1.15 - < 1.46	byte	Unknown10=1
>= 1.9	fint	Unknown11. Time? Coord?
>= 1.9	fint	End time (Unix time, seconds since 1970-01-01)
>= 1.29	fdouble	Only present if end time given: Duration in seconds (Difference between time of last point and time of first point)
1.29 - < 1.46	uint	Some length
1.29 - < 1.46	byte[some length]	??
>= 1.46	uint	Number of autoroute points
>= 1.46		Number of autoroute points x Autoroute point

Autoroute point:

Version	Type	Content
	position	Position
	uint	Unknown1=8
	byte[16+2]	Subclass
	byte[11]	=0
	byte[4]	=0xFF
	byte[6]	=0
	uint	=1
	uint	Number of link points
		Number of link points x Link point
	flag	Omit bounding box
		The next 4 fields are only present if the omit bounding box flag is clear:
	position	Position max
	position	Position min

Version	Type	Content
	byte[8]	Unknown7=0xFFFFFFFFFFFFFFFF

Link point:

Version	Type	Content
	position	Position
< 1.46	fdouble	Altitude
1.6 ? 1.60?	8 x byte	= 0 seems to be some fint / fdouble / or empty strings

Area avoidance:

Version	Type	Content
	string	Name
	flag	Omit bounding box, =0 Setting this to 1 does not really make sense. Probably this flag is just there so the same subroutine can be used for reading as in the Route point.
	The next 4 fields are only present if the omit bounding box flag is clear:	
	position	Position max
	fdouble	Altitude max – but is not shown
	position	Position min
	fdouble	Altitude min – but is not shown

Road avoidance:

Version	Type	Content
	string	Name
	ushort	Product ID
	ushort	Family ID
	position	Position max
	fdouble	Altitude max – but is not shown
	position	Position min
	fdouble	Altitude min – but is not shown
	uint	Number of link points
	Number of link points x link point	
	uint	Number of road segments
	Number of road segments x road segment	

Road segment:

Version	Type	Content
	uint	Map number (= Family ID x 10000 + consecutive number) E.g. 0x03B28106 = 62030086 → Family ID is 6203 and consecutive number is 86.
	uint	Unknown – seen same on all road segments, maybe a road ID
	uint	Seems to be a "from" position
	uint	Seems to be a "to" position

The "to" position of one entry is usually the "from" position of the next entry.

Vehicle type:

Value	Meaning
0	Car/Motorcycle
1	Bus
2	Taxi
4	Pedestrian
5	Bicycle
6	Truck
8	Delivery
9	Ambulance
10	Motorcycle (since V1.46)

Activity profile:

Value	Meaning
0	Custom
1	Automotive
2	Motorcycling
3	Walking
4	Bicycling
5	Trucking
6	Direct

Track record (Type='T')

File formats < 1.46:

Version	Type	Content
>= 1.0	string	Track name
>= 1.0	byte	Track display (0=no, 1=yes)
>= 1.0	uint	Track color, see table above
>= 1.0	uint	Number of points in track
>= 1.0	Number of points in track x Point	
1.6-1.8	string	Link
>= 1.9	uint	Number of links
>= 1.9	Number of links x string Link	
>= 1.15	string	Notes (may be empty)

Point:

Version	Type	Content
>= 1.0	position	Position
>= 1.0	fdouble	Altitude in meter
>= 1.0	fint	Time (Unix time, seconds since 1970-01-01)
>= 1.0	fdouble	Depth in meter
>= 1.6	fdouble	Temperature in °C
>= 1.29	fdouble	Unknown1
>= 1.29	fdouble	Unknown2

Version	Type	Content
>= 1.29	byte	flag=0
>= 1.29	byte	Present if previous flag != 0
>= 1.29	byte	flag=0
>= 1.29	byte	Present if previous flag != 0

File formats >= 1.46:

Version	Type	Content
	string	Track name
	byte	Track display (0=no, 1=yes)
	uint	Track color, see table above
	uint	Number of links
	Number of links x string Link	
	string	Notes (may be empty)
	double	Area in m ²
	fdouble	Unknown2
	byte	Unknown3=0
	position	Position max
	position	Position min
	fdouble	Duration in seconds
	double	Length in m
	fint	Start time (Unix time, seconds since 1970-01-01)
	uint	Number of Track segments
	Number of Track segments x Track segment	
	uint	Total number of points
	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"

Track segment:

Version	Type	Content
	byte	Unknown1=0
	position	Position max
	position	Position min
	uint	Number of Points in Track segment
	Number of Points in Track x Point	

Point:

Version	Type	Content
	position	Position

Image record (Type='G')

This record was introduced with File Format version 1.29, i.e. BaseCamp V3.0.1

Version	Type	Content
>= 1.29	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
>= 1.29	fstring	Unknown1

Version	Type	Content
>= 1.29	string	Web path
>= 1.29	byte	0 = web path is absolute, 1 = web path is relative
>= 1.29	byte	Unknown3=1 if set to 0, the file is corrupt, even when deleting the next 4 or 8 byte
>= 1.29	double	Unknown4=0.0
>= 1.29	fint	Unknown5=present and 11, 15 and 18 – could be zoom level
>= 1.29	uint	Unknown6=0
>= 1.29	byte	Unknown7=1 could be the flag byte of an fdouble, but setting it to 0 breaks the file even if the next 8 bytes are deleted
>= 1.29	double	Area coverage (in square miles)
>= 1.29	uint	Unknown8=11, 15 and 18 (seems to be same value as Unknown5)
>= 1.29	ushort	Unknown9=24, 136, 147, 156, 241 and 256
>= 1.29	uint	Unknown10=17, 90, 181, 182, 208 and 256
>= 1.29	position	Position max
>= 1.29	fdouble	Altitude max (but value is not present)
>= 1.29	position	Position min
>= 1.29	fdouble	Altitude min (but value is not present)
>= 1.29	uint	Download state: <= 2 "Remaining", 3= "Download failed", 4= "Completed"
>= 1.29	ushort	Unknown11=1
>= 1.29	float	Unknown12=24.0, 136.0, 147.0, 156.0, 241.0 and 256.0 (seems to be same value as Unknown9)
>= 1.29	float	Unknown13=17.0, 90.0, 181.0, 182.0, 208.0 and 256.0 (seems to be same value as Unknown10)
>= 1.29	uint	Size of image in byte
>= 1.29	uint	Unknown15=0
>= 1.29	byte	Unknown16=1 if set to 0, the file is corrupt
>= 1.29	byte	Unknown17=0, 1

BirdsEye record (Type='O')

This record was introduced with File Format version 1.29, i.e. BaseCamp V3.0.1

Version	Type	Content
	string	Name
	byte	Unknown1=0
	position	Position max
	fdouble	Altitude max
	position	Position min
	fdouble	Altitude min
	string	Web path
	byte	Unknown2=1
	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
	string	Unknown3
	string	Unknown4
	3 x byte	Unknown5=0
	position	Position max
	fdouble	Altitude max

Version	Type	Content
	position	Position min
	fdouble	Altitude min
	string	Detail level Known value "Standard", "High" and "Highest"
	uint	count
	count x string	Source of data / copyright or something
	uint	Unknown6=11 – could be zoom level for "Standard"
	count x string	Source of data / copyright or something
	uint	Unknown7=15 – could be zoom level for "High"
	count x string	Source of data / copyright or something
	uint	Unknown8=18 – could be zoom level for "Highest"
	uint	Unknown9=0
	uint	Unknown10 Seen values: 0, 0x43560187 which would be 214.006 if float If set to != 0, "Total size of images: 0 KB" and a button "Download Again" appears.
	byte	Unknown11 Seen values: 0, 1 This is a flag, because BaseCamp normalizes any value != 0 to 1.
	fint	Date downloaded (Unix time, seconds since 1970-01-01)
	uint	Number of Images
	Number of Images x string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx" References an Image record (Type='G')

Map section record (Type='L')

Version	Type	Content
	ushort	Product ID, see table below
	ushort	Family ID, see table below
	uint	Segment ID
	string	Product Name
	string	Segment Name
	string	Area Name
	flag	?
	4 byte	? Only present if previous flag=1 Last byte must be 0
	flag	?
	4 byte	? Only present if previous flag=1 Last two bytes must be 0
	flag	?
	4 byte	? Only present if previous flag=1 Last three bytes must be 0
	flag	?

Version	Type	Content
	4 byte	? Only present if previous flag=1 All bytes must be 0

Product ID:

MG = MetroGuide

Value	Meaning
1	[Use Family ID]
5	WorldMap
6	US Topo East
7	US Topo West
8	US Topo Hawaii
9	US Topo Alaska
13	GB R&R
15	GB MG

Family ID:

MG = MetroGuide

Value	Meaning
0	[Use Product ID]
4	MG USA v4
9	GPSMAP 162/168 Tide Points
12	European City Select v4
14	European MG v4
26	Australian MG v4
37	European MG v5
46	MG USA v5
51	MG Canada v4
64	Trip/Waypoint Manager v2
85	City Select N America v6
99	City Select Europe v7
449	City Navigator Europe NT
1395	Topo Schweiz V.2
2949	TOPO Deutschland v6 PRO
4473	City Navigator Europe NTU 2017.30
7286	City Navigator Europe NTU 2018.20
7362	City Navigator Europe NTU 2018.30
7506	City Navigator Europe NTU 2019.10
7677	City Navigator Europe NTU 2019.20
7844	City Navigator Europe NTU 2019.30

Image record (Type='j')

This record was introduced with File Format version 1.31, i.e. BaseCamp V3.0.3. It is the successor of record 'G'.

Version	Type	Content
>= 1.31	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
>= 1.31	byte	0 = web path is absolute, 1 = web path is relative
>= 1.31	string	Web path
>= 1.31	uint	Download state: <= 2 "Remaining", 3= "Download failed", 4= "Completed"
>= 1.31	uint	Size of image in byte
>= 1.31	double	Area coverage (in square miles)
>= 1.31	uint	Unknown2=11, 15 and 18 – could be zoom level
>= 1.31	ushort	Unknown3=24, 136, 147, 156, 241 and 256
>= 1.31	uint	Unknown4=17, 90, 181, 182, 208 and 256
>= 1.31	position	Position max
>= 1.31	fdouble	Altitude max (but value is not present)
>= 1.31	position	Position min
>= 1.31	fdouble	Altitude min (but value is not present)
>= 1.31	byte	No bounds flag, 0=no, 1=yes
	The following 6 fields are only present if the No bounds flag is 0.	
>= 1.31	position	Position max
>= 1.31	fdouble	Altitude max (but value is not present)
>= 1.31	position	Position min
>= 1.31	fdouble	Altitude min (but value is not present)
>= 1.31	byte	Unknown5=1 if set to 0, the file is corrupt

BirdsEye record (Type='J')

This record was introduced with File Format version 1.31, i.e. BaseCamp V3.0.3. It is the successor of record 'O'.

Version	Type	Content
>= 1.31	string	Name of BirdsEye
>= 1.31	uint	Number of Images
>= 1.31	Number of Images x string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx" References an Image record (Type='j')
>= 1.31	string	Web path
>= 1.31	string	UUID in format "xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx"
>= 1.31	string	Unknown1
>= 1.31	string	Unknown2
>= 1.31	string	Detail level Known value "Standard", "High" and "Highest"
>= 1.31	ushort	Unknown3=0
>= 1.31	byte	=0 setting to 1 breaks file
>= 1.31	position	Position max
1.31 - < 1.46	fdouble	Altitude max

Version	Type	Content
>= 1.31	position	Position min
1.31 - < 1.46	fdouble	Altitude min
>= 1.31	uint	count
>= 1.31	count x string	Source of data / copyright or something
>= 1.31	uint	Unknown4=11 – could be zoom level for "Standard"
>= 1.31	count x string	Source of data / copyright or something
>= 1.31	uint	Unknown5=15 – could be zoom level for "High"
>= 1.31	count x string	Source of data / copyright or something
>= 1.31	uint	Unknown6=18 – could be zoom level for "Highest"
>= 1.31	uint	Unknown7=0 or 1 Flag or number of images
		JNX Image, if Unknown7=1
>= 1.31	byte	DownloadStatus: 1=Completed 0=shows button "Pause Download"
>= 1.31	byte	Unknown8=0 setting to 1 breaks file

Geocaching record (Type='C')

This record was introduced with File Format version ...

Version	Type	Content
	...	

Map set name record (Type='V')

Version	Type	Content
	string	Map set name, may be empty
	byte	Auto name flag, 0x00 = user-named, 0x01 = auto-named

?? record (Type='E')

Version	Type	Content
	uint	Unknown1=0

End of file record (Type='X')

This record was introduced with File Format version 1.29, i.e. BaseCamp V3.0.1.

Version	Type	Content
>= 1.29	string	"EndOfFile"

Records specific for GFI File Format

GFI is not used with MapSource, only with BaseCamp and HomePort.

Sequence of records after common records:

'F'*, 'I'*, 'R'*, 'T'*, 'W'*, 'K'*, 'J'*

* = 0..n times, + = 1..n times, ? = optional (0..1 times)

Folder information record (Type='F')

Version	Type	Content
>= 1.15	uint	Folder ID (starting with 0, 0xFFFFFFFF is the predefined folder "My Collection")
>= 1.15	string	Folder name
>= 1.15	uint	Parent Folder ID (for the "My Collection" folder, this must be the "My Collection" folder)
>= 1.15	uint	Number of subordinated elements
>= 1.15		Nr of subordinated elements times: Reference to element (see below)
>= 1.15	byte	Unknown1=1
1.15-1.38, 1.69	uint	Unknown2=0

Reference to element:

Version	Type	Content
>= 1.15	uint	Type: 0=Item, 1=Folder
>= 1.15	uint	Item or Folder ID

Item record (Type='I')

In 1.15, 1.29, 1.31, 1.32 and 1.38, folders could not be nested, therefore there is no Parent Folder ID.

Version	Type	Content
>= 1.15	uint	Item ID
>= 1.15	string	Item name (UTF-8)
>= 1.15	uint	Created by: 0 = User, 1= Auto-created on import, 8 = at item "Unlisted Data"
For 1.29, 1.31, 1.32 and 1.38:		
	byte	Unknown1=1
	uint	Unknown2=seems to be Item ID repeated
For 1.8, 1.9, 1.46, 1.54, 1.69 and 1.88:		
	uint	Parent Folder ID
	The remaining fields are present if Created by != 0	
	byte	Unknown1=1
	uint	Unknown2=1
	uint	Unknown3=9

Route record (Type='R')

Version	Type	Content
>= 1.15	uint	Parent Item ID
>= 1.15	string	Route name
>= 1.15	byte	0 = Route was made from Track by program 1 = User made this Route

Track record (Type='T')

Version	Type	Content
>= 1.15	uint	Parent Item ID
>= 1.15	string	Track name
For 1.8, 1.9, 1.69, and 1.88:		
	uint	Unknown1=0 or 1

Waypoint record (Type='W')

Version	Type	Content
>= 1.15	uint	Parent Item ID
>= 1.15	string	Waypoint name
>= 1.15	uint	Waypoint class. Values seen: 0 and 1
For 1.8, 1.15, 1.29, 1.31, and 1.38:		
	string	Countrycode
	Subclass	

BirdsEye record (Type='K')

This record was introduced with File Format version 1.29, i.e. BaseCamp V3.0.1

Version	Type	Content
>= 1.29	uint	Parent Item ID
>= 1.29	string	BirdsEye name

BirdsEye record (Type='J')

This record was introduced with File Format version 1.31, i.e. BaseCamp V3.0.3

Version	Type	Content
>= 1.31	uint	Parent Item ID
>= 1.31	string	BirdsEye name

References

Used sources of information

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- [2] GPSBabel <https://www.gpsbabel.org/>, file <https://github.com/gpsbabel/gpsbabel/blob/master/gdb.cc>
- [3] GPSMapEdit partial source code <http://www.geopainting.com/en/src.html>
- [4] MapEdit++ <https://sourceforge.net/projects/gmeaddons/?source=navbar>
- [5] <https://forums.garmin.com/showthread.php?1165-via-points-in-MapSource&p=131057>

Standards and specifications

- [6] ISO/IEC/IEEE 60559:2011 Information technology – Microprocessor Systems – Floating-Point arithmetic (or IEEE Std 754-2019)
- [7] ISO/IEC 8859-1:1998, Information technology – 8-bit single-byte coded graphic character sets, Part 1: Latin alphabet No. 1
- [8] IETF RFC 3629, UTF-8, a transformation format of ISO 10646, available at <http://tools.ietf.org/html/rfc3629>

Sources of sample files

- [9] <http://www.neve-trek.be/organisation/GPS2006/org-gps2.htm>
- [10] <http://www.militarycampgrounds.us/files/download/5-gps-and-mapping-data-files/14-garmin-mapsource-mps>
- [11] <https://planyourhike.com/maps/gps-waypoints/>
- [12] <http://www.herkuleshof.com/touren.php>
- [13] <https://www.fernwege.de/gps/>
- [14] <http://www.wandern-auf-bergmannsspuren.de/download.html>
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- [17] <http://gpstracklog.com/2012/08/garmin-gpsmap-78-review.html>
- [18] http://www.schwarzwald-bike.de/tour_detail.php?tour_nr=142
- [19] https://www.questconnect.org/wa_route_maps.htm