

MapDekode

>V5.4.10

Reference Manual

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LIMITATION OF LIABILITY

Under no circumstance will the author will be responsible for any damage that has been caused to any PC, to the GPS receiver, or to any equipment connected to them.

If you find errors or something that is not clearly formulated, you miss something or you can't understand my English, send me an E-mail to: <mailto:mapdecode@gmx.net>

Peter

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General

Each project (**R&R-v3 and MG-v3 etc.**) in MapSource contains several files:

- the content file **project.TDB**: This file contains the Project ID number and name, the copyright info, an entry for the general map and an entry for each detail map (with the map name/number, **and the size of each map section** TRE, LBL, RGN [,NET]).

- the general (overview) map **general.IMG**: This map contains some map elements (points, cities, lines and areas) in a simple format (not very accurate), the definition area (0x4A) for the detail maps (to select a detail map in MapSource for download to the GPS) and a list of the cities for the find function in MapSource.

- one or more detail maps **detail.IMG**: This map contains all map elements in three or more different resolution options, e.g. zone 0 the best, zone 1 medium and zone 2 the lowest resolution.

R&R and MG's use: For detail map zone 0,1,2,83[,84] and for the general map zone 2,3,4,85,86[,87].

NB! Only the detail maps are functional in the GPS unit!

The zones 8x include no data (map elements) and are only for organizing the project.

Zone 2 from the detail map (highest zone with lowest resolution) have the same resolution as the zone 2 from the general map (lowest zone with best resolution for the general map).

World maps use zone 1,2,3,4,5,86 for the detail maps and zone 2,3,4,5,86 for the general map.

- the **keys** in the Windows **registry**: The name and location of the product content file, the name and location of the general map and the location of the detail maps (all detail maps must be in the same folder).

e.g. **14**=project number for R&R Germany:

HKLM\Software\Garmin\MapSource\Products\14\TDB	"C:\Gps\MapSource\RR_Germany.tdb"
HKLM\Software\Garmin\MapSource\Products\14\Bmap	"C:\Gps\MapSource\RR_Germany.img"
HKLM\Software\Garmin\MapSource\Products\14\Loc	"F:\Germany\RR_Germany"

MapDecode uses a database for storing the map elements (*.DBX). The name of this database **must** be **eight letters**, for **detail** maps **eight numericals** (**12345678.DBX**) and for the **general** map **eight letters and/or numericals** (**abcdefgh.DBX**)!

The name of the map must be the same as the name of the database (**12345678.DBX** -> **12345678.IMG**).

If you create the map elements in GPS-Trackmaker®, you can save this directly as a MapDecode database and create the map from this database (*.IMG).

The second method to create a database is to use OZI data (*.plt and *.wpt) as input.

You can also create a database with a third party program or with a text editor by hand, but be careful!

After creating the detail maps from the detail databases, you can create the general map manually (in the same way as the detail maps, but with the other max-zone values, and the definition areas), or you can create the database for the general map automatically from the detail *.DBX (by using the control file **AUTOGENMAP.DAT**)
You will find an example in the sample-project in the SETUP files).

If you have all detail maps and the general map, move them to a new folder, create the project content file (*.TDB) and register the project in the Windows registry.

Later when you alter/change detail maps, you must update the project content file, because the size of the map sections (TRE, LBL, RGN) will be different. If not, you will get errors in MapSource when you try to download these maps to the GPS!

After registration, you can start MapSource and select your new project.

All coordinates in all files are in datum WGS84 and in decimal degrees.

Limitations

MapDekode supports only the creation of the IMG format R&R version 3, with the zones 0,1,2,83,84 for the detail maps and zones 2,3,4,85,86 for the general map. The map sections utilized, are TRE (organization of the map), LBL (all texts and labels) and RGN (the map data);
The NET section (used in MG with street numbers) is not supported.

MapDekode **cannot** read BlueChart or CitySelect, because parts of these maps are encrypted.

With the parameter "lowest accuracy zone number" (default=0) set to 1, you can create detail maps that fit better to the existing World maps (then you have zone 1,2,3,84,85 for detail and zone 3,4,5,86,87 for a general map).
If you use 1 as lowest accuracy zone number, don't forget to use the max accuracy zone values 1, 2, 3 (not 0, 1, 2) in the detail maps, and 3, 4, 5 in the general map.

The best accuracy of a position is defined by the zone factor ZF (best is ZF=18 means 2,4 meter).
Higher accuracy is not possible with **MapSource**.

The reason: Garmin stores the coordinates as three byte hex, $+180^\circ = 0x7FFFFFFF$ and $-180^\circ = 0x80000000$, but the LSB (the lowest byte) is removed, so the smallest step is $0x100 \Rightarrow 0,0000214577^\circ \Rightarrow 2,384m$.

The default ZF for the best zone in an R&R detail map is 17 (4,8 meter) and 11 (305 meter) in the general maps.

The expansion of the maps, depends on the zone factor ZF. ZF=18 means a maximum expansion of $\pm 0,7^\circ$ for east-west and north-south, a ZF=17 means $\pm 1,4^\circ$ and a ZF=11 means $\pm 90^\circ$.

Before you start a new project, you must consider the following:

a) size of the detail maps b) what resolution you require.

The largest file size of an *.IMG created with MapDekode, depends on the block size used: 512 bytes block size gives a maximum of 1Mb of an *.IMG, 1024 for 2 Mb and 2048 for 4 Mb.

Don't create larger IMG's than 1Mb (500kB is better), because MapDekode uses a simpler method to create the IMG's than Garmin (but display not so fast).

Language support

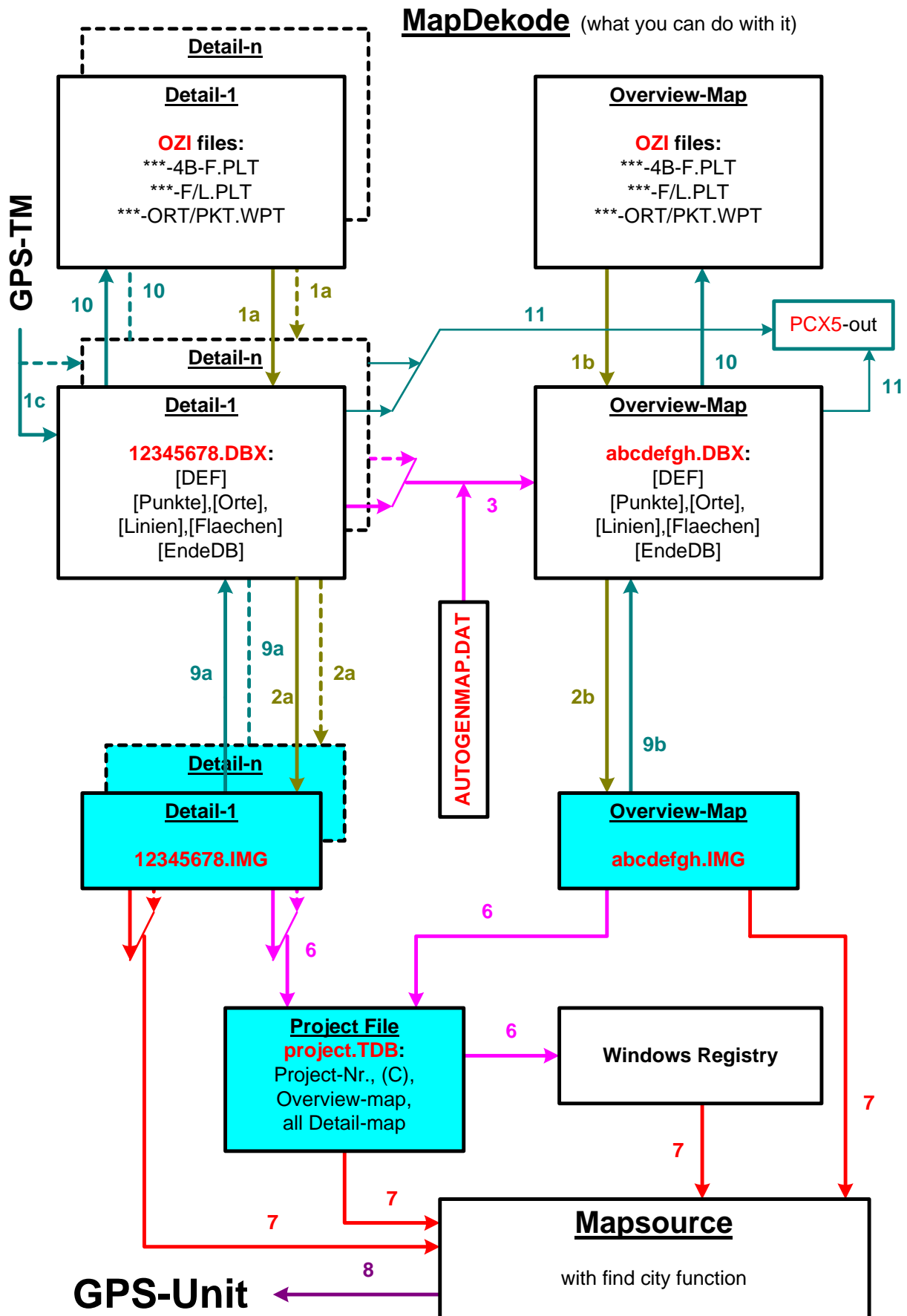
Select the language file in the menu **OPTION**. If you select German, you must restart MapDekode.

For each MapDekode version you need the appropriate version of the msgtext_xx.dat file.

If you edit the file, don't change the order or the number of the rows, change only the text.

UNICODE support is new in the msgtext_xx.dat (sample: msgtext_en_U.dat).

Diagram



The numbers in the diagram show the numbers of the paragraphs that describe this function.

1 Create a DBX from data

1a Create a DBX for a Detail Map from Ozi data files

Create all Ozi data files in one directory. The minimum is the *-4B-F.plt with the background area of the map. The other Ozi data files (*-L.plt, *-F.plt, *-ort.wpt, *-pkt.wpt) can also be in a sub-directory of the DBX directory.

In MapDekode, select: "**Database / Create DB from Ozi *.wpt/*.plt**", then select the path and name of the detail database (**12345678.DBX** must be **eight numericals**).

The database will create this in the same directory that the Ozi files are in.

Use a new directory for the detail map.

1b Create the DBX for a General Map from Ozi data files

Create all Ozi data files in one directory. The minimum is the *-4B-F.plt with the background area of the map and for each detail map the reference area (type 4A).

The other Ozi data files (*-L.plt, *-F.plt, *-ort.wpt, *-pkt.wpt) can also be in a sub-directory of the DBX directory.

In MapDekode, select: "**Database / Create DB from Ozi *.wpt/*.plt**", then select the path and name of the general database (**abcdefgh.DBX** must have **eight letters and/or numericals**).

The database will be created in the same directory that the Ozi files are in.

Use a new directory for the general map.

1c Create a DBX for a Detail or General map with GPS-Trackmaker®

Create the map elements in GPS-Trackmaker® (points, lines, areas) and save as MapDekode database (*.DBX).

A description how you do this in GPS-Trackmaker® can be found at:

http://www.gpstm.com/eng/dekode_eng.htm written by: Odilon Ferreira Junior

2 Create a IMG map from a DBX

2a Create a IMG for a Detail Map from a DBX

In MapDekode, select: "**Map Create / Detail-map from DB (*.DBX -> *.img)**". Set your parameters in the Parameter window and then select the path and name of a detail database (**12345678.DBX** must have **eight numericals**).

If the **FIND-CITY** function is active (Option menu), the find function will be included (for the GPS).

Parameters for IMG construction:

use old DBn: Default **OFF**, use this parameter only if you **do not** require automatic creation of the databases for the single zones (with **OFF**, MapDekode creates the files *.DB0, *.DB1 and *.DB2 from the *.DBX and then from these three files, the map *.IMG).

If you wish to manipulate the *.DB0/1/2 manually, or prefer additional attributes in the single zones that MapDekode does not generate automatically, set to **ON**, then MapDekode will use the existing *.DB0/1/2.

When **ON**, no changes from the DBX will be included!

optimize lines: Default **ON**, reduce the number of points in the polygons (lines, areas) in all zones, except in the most detailed zone.

block size: Default 512 bytes, if you create maps greater than 1 Mb, increase it.

zone factor: Default 17, sets the accuracy in the most detailed zone and the maximum expansion of the map (17 means an accuracy of 4,8 meters and a map size of +/- 1,4°). If you need a greater detail map use a lower ZF with a lower accuracy level.

lowest zone number: Default 0, set the zone number of the most detailed zone; use 0 for R&R and 1 for the World map.

If you use the function "**Database / auto create an overview DBX from detail DBX**" (function 3 in the diagram), **all** detail maps in this project must have the same lowest zone number!

transparent map:

This makes the map transparent, like a POI map. The map is always on top (see [13 Tips and tricks](#))

8 Bit Code:

Use an 8 bit code for the labels, not the reduced 6 bit code. Not all GPS's support this code (e.g. the GPSIII+)

The IMG will be created in the same directory as the DBX.

2b Create the IMG for the General Map from a DBX

In MapDecode, select: "[Map create / Overview-map from DB \(*.DBX -> *.img\)](#)", in the parameter window set your parameters and then select the path and name of the general database ([abcdefgh.DBX](#) must **eight letters or numericals**).

If the **FIND-CITY** function is active, the find function will be included for MapSource use.

Parameters for IMG construction:

use old DBn: Default OFF, use this parameter only if you **do not** require automatic creation of the databases for the single zones (With **OFF**, MapDecode creates the files *.DB2, *.DB3 and *.DB4 from the *.DBX and then from these three files, the map *.IMG).

If you wish to manipulate the *.DB2/3/4 manually or if you prefer additional attributes in the single zones that MapDecode does not generate automatically, set to **ON**, then MapDecode uses the existing *.DB2/3/4.

optimize lines: Default ON, reduce the number of points in the polygons (lines, areas) in all zones except in the most detailed zones.

block size: Default 1024 bytes, if you create maps greater than 2 Mb, increase it.

zone factor: Default 11, sets the accuracy in the most detail zone and the maximum expansion of the map. (11 means an accuracy of 305 meters and a map size of +/- 90°). If you need a larger general map use a lower ZF with a lower accuracy level.

lowest zone number: Default 2, set the zone number of the most detail zone; use 2 for R&R and 3 for the World map.

The IMG will be created in the same directory as the DBX.

2c Create a IMG for a Detail Map from Ozi data files

In MapDecode, select: "[Map create / Detail-map from Ozi \(*.wpt/*.plt -> *.img\)](#)"

Same as function **1a + 2a**.

2d Create the IMG for the General Map from Ozi data files

In MapDecode, select: "[Map create / Overview-map from Ozi \(*.wpt/*.plt -> *.img\)](#)"

Same as function **1b + 2b**.

2e Maps with POI's

For OZI: If you want to add additional information to a point (e.g. address, city, zip code, phone number etc.) you must use the POI data format in the *-pkt.wpt file.

For GTM: Write the additional information in the comment field of each point.

(see: http://www.gpstm.com/eng/decode_eng.htm)

The POI range is 0x2900 – 0x303F and 0x6400 – 0x663f, but R&R-v4, MG-v3/4/5 & CS-v4/5 only uses the range 0x2A00 – 0x303F.

Worldmap uses 0x59xx for airports, not 0x2F04. With a GPS-III+ you can view all points and POI's in the "Nearest" menu (from 0x0100 – 0x663f).

A GPS-V shows only 0x2A00 – 0x303F and 0x6400 – 0x663f in the find POI menu!

If you load a World map on a GPS-V, you won't "find" the airports. If you point to a POI from 0x6400 – 0x663f on the GPS-V map, you won't "find" the POI information (like address, zip, etc), only in the *Find* menu.

I don't know how other GPS units handle the POI range. If you have new information, please inform me.

3 Create the DBX for the General Map from the detail DBX automatically

In MapDecode, select: "[Database / auto create overview DBX from a detail DBX](#)" and select the path and name of the general database (**abcdefgh.DBX** must have **eight letters or numerals**).

In the folder of the general *.DBX, MapDecode needs the control file **AUTOGENMAP.DAT** (see [A3 Description of the control file AUTOGENMAP.DAT](#)).

After this, you can use function **2b** to create a general *.IMG file from the DBX without source data.

4 obsolete since 5.4.x

5 obsolete since 5.4.x

6 Create the project file TDB and register the project

In MapDecode, select: "[Project](#)".

Show all registered projects:

If the field "Project ID" is empty or "*" press [Enter] or [CTRL]+R or select "[Registry / Reg-info of project](#)".

You get a list of all projects (only in R&R/MG version 3; not version 4, CS, BC).

First column in the list is the *Project ID* (project number) and the second, *the TDB path and name*.

To see the registry entries of a project, double click on a project in the list (you see the TDB name in the field "*Name of TDB*" and the project number in the field "Project ID").

Press [CTRL]+R or select "[Registry / Reg-info of project](#)".

The three fields are the three registry keys.

To load the content file of the project (*.TDB) press [CTRL]+O or select "[TDB / Load TDB from file](#)".

The fields: **Project ID**: the project number (1 to 999)

Project version: 203 means map data version 2.03 (increase every time you change the map data)

Version of TDB format: the map and TDB format version (MapDecode can create only version 3)

Text for MapSource help(three times): this text you can view in the MapSource product-info help

Project name: Project name in MapSource (for selection)

Title in MS-Help: in the MapSource product-info help

Name of TDB: full name and path of the TDB file (registry key)

Overviewmap: full name and path of the general map *.IMG file (registry key)

Path *.img's: path of all the detail maps (registry key)

In the list: one line for the general map and one line for each detail map.

For detail maps you see the IMG number in the first column, then the country number, the four boundary values and the map name.

New project:

Complete the fields: **Project ID**, **Project version**, **text for MapSource help** (three times), **Project name**, **Title in MS-Help**, **Name of TDB**, **Overviewmap**, **Path *.img's**, and add all relevant detail maps with [CTRL]+A or "[Maplist / add Map to list](#)" to the list. (You can select up to 100 detail maps simultaneously).

Don't add the general map to the list!

Now press [CTRL]+S or select "[TDB / Save TDB and make Reg-entry](#)". If the **TDB** already exists, you are asked whether to overwrite it or not.

If the **project** is already registered, you are asked whether to overwrite the registry entries or not.

Change a Project ID (number):

Enter the old Project number, display the registry info with [CTRL]+R and load the TDB with [CTRL]+O.

Change the Project ID number and save it with [CTRL]+S and overwrite the existing file.

Alternatively, create a **new TDB** with a **new Project ID** number and delete the unused Project ID number in the registry (see next point).

Delete a project in the registry:

Enter the Project ID number, display the registry info with [CTRL]+R to check if it exists, and delete it with [CTRL]+K or select "[Registry / delete project in registry](#)". Only the registry keys are deleted, no files.

WARNING: *If you register a project, but later move or delete one of the files in this project, you won't be able to open the file in MapSource! In such a case delete the project in the registry or correct the registry entries.*

Add a detail map to a project:

If you add a new detail map to your project, you must also create a new general map with the reference area for the new detail map, or you may create a new general DBX and IMG file automatically with function **3**, after editing the **AUTOGENMAP.DAT** then add the detail map to the TDB.

Enter the Project ID number, display the registry info with [CTRL]+R and load the existing TDB with [CTRL]+O. Add the new detail map with [CTRL]+A or "[Maplist / add Map to list](#)" to the list.
(You can select up to 100 detail maps simultaneously)

Don't add the general map to the list! Save the TDB with [CTRL]+S and overwrite the existing TDB.
It is not necessary to overwrite the registry.

Update a project file *.TDB:

If you have an updated/larger detail map in your project, you should update the TDB too. If you don't, you will receive errors in MapSource if you try to download such larger detail maps to the GPS unit.

Update only one detail map in the TDB:

Enter the Project ID number, display the registry info with [CTRL]+R. Load the existing TDB with [CTRL]+O. Select the detail map that you want to update from the list. Press [CTRL]+U or select "[TDB / Change Param of one IMG in TDB](#)". For the selected detail map, the map section sizes are now changed.
To view this, you have to load the TDB again with [CTRL]+O.

Update all detail maps in the TDB:

Enter the Project ID number and display the registry info with [CTRL]+R.
Load the existing TDB with [CTRL]+O and press [CTRL]+S to save or select "[TDB / Save TDB and make Reg-entry](#)".
Overwrite the TDB. Now you have a new TDB.

Update only the registry entries:

Enter the Project ID number, display the registry info (with [CTRL]+R).
Load the existing TDB ([CTRL]+O), update the fields, press [CTRL]+S or select "[TDB / Save TDB and make Reg-entry](#)".
Don't overwrite the TDB, only overwrite the registry.
This is vital if you have moved one of the files (*.TDB, general.IMG or detail.IMG's) to a new folder.

Search a IMG number or name in the project file *.TDB:

Load a TDB, enter a search string in the field below and press [CTRL]+F or select "[Maplist / Search line in list](#)".
Only the first hit will be displayed.

To load a map from the list, double click on the *Map Name* line and the name will be copied to the main window into the field: *File Name*, the **Path *.img's** must be set.
Close the project window and press [Load] in the main window.

Output of the map list in a text file

Load a TDB, and press [CTRL]+L or select "[Maplist / Output map list](#)".
The file name is file.tdb -> file_**TDB_List.txt** (e.g. OLYMPUS1.tdb -> OLYMPUS1_**TDB_List.txt**)

NEW since 5.4.10: autocreate TDB

Since MDK version 5.4.10 a new batch function is available. To create the TDB in batch mode ([12 Command line interface](#)) you need the control file **AUTOAGENTDB.DAT** ([A3a Description of the control file AUTOAGENTDB.DAT](#)).

7 Load a new project in Mapsource©

Start MapSource - If you get errors and MapSource closes, check the registration of the new project and the project files. In Mapsource, select: "[View / Region / Project](#)" and select the zoom and area that you prefer.

8 Load detail maps in the GPS

Same as in all original MapSource projects. Use only **MapSource**, because other programs don't check the IMG before download!

9 Create a DBX from an IMG

9a Create a DBX from a Detail IMG

In MapDekode, select: "[File / Open *.img](#)" or double click the file name field and select a detail *.IMG. After loading the IMG file, select "[Database / Create DB from *.img](#)" and select a folder. By default, the IMG name is used for the DBX name as well.

If you enter in the [OPTION – General](#) menu:

- "use FIND-CITY function", MapDekode add the find-city data to the cities in the DBX.
- "use POI's", add the POI's as POI's to the DBX, not as points.
- "height in meters not feet", the high value in the lines 0x20-0x25, points 0x62yy/0x63yy and the cities 0x62/0x63 will be in meters in the DBX.

9b Create a DBX from a General IMG

In MapDekode, select: "[File / Open *.img](#)" or double click the file name field and select a general *.IMG. After loading the IMG file, select "[Database / Create DB from *.img](#)" and select a folder. By default the IMG name is used for the DBX name.

If you enter in the [OPTION – General](#) menu:

- "use FIND-CITY function", MapDekode add the find-city data to the cities in the DBX.
- "use POI's", add the POI's as POI's to the DBX, not as points.
- "height in meters not feet", the high value in the lines 0x20-0x25, points 0x62yy/0x63yy and the cities 0x62/0x63 will be in meters in the DBX.

10 Create the OZI data files from a DBX

In MapDekode, select: "[Output / OZI Format / Lines or Areas or Cities or Points from DB](#)", select the database.

Lines: For each line type and label, you get an Ozi *.plt file with the name **12345678--type/label-TT-L.plt**.

12345678: DBX and IMG name

Type or Label: If the line has no label, the type is used

TT: line-type in hex;

-L.plt: line marker

e.g.: **26711682--Arterial_Road-04-L.plt** (26711682: DBX name; Arterial Road: type; 04: line-type in hex)

If you enter in the [OPTION - DBX->Ozi - name](#) menu "**name2**" the name is:

26711682--L04-Arterial_Road-L.plt (sorted by line/area-type not by type/label)

All lines and/or areas with the same label and the same line type should be in **one** file.

Areas: Same as the lines, not *-L.plt but *-F.plt (F=Flächen in German)

A special area is the ***-4B-F.plt**, this is the background of the map (type 75 = 0x4B).

Cities: All cities come in the file **12345678-oz-ort.wpt** (e.g.: 26711682-oz-ort.wpt)

Points: All points come in the file **12345678-oz-pkt.wpt** (e.g.: 26711682-oz-pkt.wpt)
POI's get the prefix "**POI:**" in the label (e.g. 2A012\$**POI:0D**:Mike's;;;;;)

If you only need the Ozi data from a smaller area than the whole map, enter in the **OPTION - DBX->Ozi - Ozi output range** menu, the boundary of the sub area. With this file you only get elements from this area in the Ozi files.

If you only need one type of points/cities, enter in the **OPTION - DBX->Ozi - Ozi output type** menu, the type and you get a file such as "12345678—2A04-OZ-PKT.wpt" with only this type.
You can enter more than one type separated with comma in hex and decimal (e.g. 0x2A03, 25089).

If you like for each line/area type a new subfolder, activate "Create subfolders by type ...".

11 Create the PCX5 data files from a DBX

In MapDecode, select: "**Output / PCX5 Format / Lines or Areas or Cities or Points from DB**", select the database.

Lines: All lines are in the file **12345678-pcx5-li.trk** (e.g.: 26711682-pcx5-li.trk)

Areas: All areas are in the file **12345678-pcx5-fl.trk** (e.g.: 26711682-pcx5-fl.trk)

Cities: All cities are in the file **12345678-pcx5-or.trk** (e.g.: 26711682-pcx5-or.trk)

Points: All points are in the file **12345678-pcx5-pu.trk** (e.g.: 26711682-pcx5-pu.trk)

You can import these files into MapSource.

12 Command line interface

Some functions can be used in batch mode too: (you can use only one command for each call)

commands: **/DMO** path-oz-data = create **detail** map from **oz**i data (need param /ND)
/GMO path-oz-data = create **general** map from **oz**i data (need param /NG)
/DMX path+name-DBX = create **detail** map from **DBX**
/GMX path+name-DBX = create **general** map from **DBX**
/FC path+name-DBX = create **FIND-CITY.txt** from the DBX
/ACG path+name-DBX = create **general DBX** from the detail DBX
/TDB path+name-autogentdb.dat = create the **TDB** from the Detail/General IMG's

parameter: **/ND** 12345678 = IMG number for detail map, from 1 to 99999999 (8 digits)
/NG abcd1234 = IMG name for general map (8 characters)
/BK nnn = block size, 512, 1024 or 2048 (default=512)
/ZF nn = zone factor, 18 to 11 (default for detail=17, for general=11)
/ZN nn = min zone number, 0 to 4 (default for detail=0, for general=2)
for detail World map use: /zn 1
/TR transparent map (no additional value)
/LG auto save of the history to a file
/OSD use sub-folder to search Ozi input data
/8B 8 bit code for labels, instead of the reduced 6 bit code e.g. (GPS-type dependant)

C:\Mapdecode\mapdecode.exe /dmo C:\Mapdecode\xx\kavala_83 /nd 26711683 /zn 1 /tr

C:\Mapdecode\mapdecode.exe /dmx C:\Mapdecode\xx\xanti_82\26711682.DBX /zf 18 /bk 512

13 Tips and tricks / known Problems

To **delete** the **status line** in the main window, double click on it with the mouse (e.g. to delete the last error).

To open a **history window for the status line**, click on the status line.

You can save the history to the file "Status_History.txt" in the DBX folder.

In elements with "**height**" in the label e.g. line 0x20 to 0x25 or point 0x62nn/0x63nn, use only **numericals**, not letters, because newer MapSource versions generate errors (except "m", see next point).

Use only **full** numbers, no decimal points (e.g 147 not 146.8)!!!

From version 4.10.4 onwards, you can use **meter values** as well. MapDecode converts them into feet.

This works for: **lines** Type=0x20 – 0x25; **points** Type=0x62xx and 0x63xx and **cities** Type=0x62 and 0x63.

Sample: Land contour L210\$200**m** ; Hight point 63012\$1483**M** ; High as city entry 632\$572**m** .

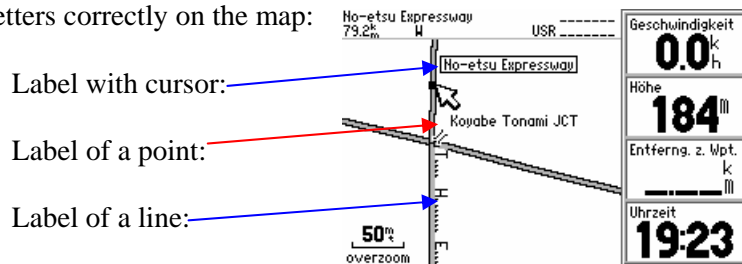
With the "**m**" or "**M**" MapDecode converts the numbers into feet.

If you try to run **SETUP** to install MapDecode and get the error "**wrong command line parameter**", move the SETUP files to a folder with a short and simple name (e.g. C:\temp\) and try again.

Since SETUP 5.x.x (with VB6) often generates a message: "**system DLL can not be overwritten**".

Ignore this and continue the Setup. I could not solve this yet. It's a problem in the setup1.exe of VB6.

If you use lower case letters in labels for lines or areas (e.g. **R**[1B]**o**[1B]**a**[1B]**d** -> Road), some GPS won't display these letters correctly on the map:



Don't use lower case letters in lines or areas.

Transparent maps:

With this option, you can make maps transparent. These maps will then always be on top and transparent, like POI maps. You can see and select all elements from both maps (Tested with GPS-V).

List of all control files: (in the **mapdecode.exe** folder)

notresub MDK save no TRE boundary files

nodbn MDK delete the DBn after IMG creation

Appendix

A1 Description of the OZI data files

If you use OZI data files as source files for the DBX, they must have special names:

All lines: abc123-**L.PLT** , all areas: abc123-**F.PLT** , the background area: abc123-**4B-F.PLT**

All points/POI's: abc123-**PKT.WPT** , all cities: abc123-**ORT.WPT**

POI's are since 5.4.x in the DBX too ! ([A5 Description of the POI data in the ozi *-pkt.wpt](#))

abc123 is a valid Windows name, *.PLT is an OZI track and *.WPT is an OZI waypoint file.

Points

You can have more than one point file abc123-**PKT.WPT**.

Format:

OziExplorer Waypoint File Version 1.1

WGS 84

Reserved 2

garmin

```
1,P580 ,40.638069,24.512879,33605.00000,70,1,6,0,65535,1B0F4$BLZ.(2)W.10S 13M 6SM,0,0,0,
-777,6,0,17
2,P582 ,40.606465,24.774535,33605.00000,70,1,6,0,65535,1B0F3$ ,0,0,0,-777,6,0,17
3,3 ,41.142852,24.780216,37027.69659,15,1,6,0,65535,62011$3839 ,0,1,0,-777,6,0,17
.....
```

MapDekode uses only the position and the comment fields (with the control information):

1B0F4\$BLZ.(2)W.10S 13M 6SM: **1B0F** = point type in hex (see [A6 Listing of the Point \(POI\) and City types](#)), **always four characters!**

4 = max-zone (point is shown in zone 0 – 4 if available)

\$ = mark

BLZ.(2)W.10S 13M 6SM = label shown in MapSource / on GPS

1B0F3\$: 1B0F = point type; 3 = max-zone; \$ = mark; **no label**, the point type is shown

62011\$3839: 6201 = point type; 1 = max-zone; \$ = mark; **special label** (for this point type) **height in feet** since v4.10.4 you can use meter: e.g. "62011\$1170m"

Description of the POI labels: [A5 Description of the POI data in the ozi *-pkt.wpt](#)

Cities

You can have more than one city file abc123-**ORT.WPT**.

Format:

OziExplorer Waypoint File Version 1.1

WGS 84

Reserved 2

garmin

```
1,x1 ,40.826659,24.704939,36920.56266,15,1,6,0,65535,282$thassopoula ,0,0,0,-777,6,0,17
2,x-KAR2,40.906643,24.709988,33605.00000,15,1,6,0,65535,0D2$NEA KARIA ,0,0,0,-777,6,0,17
3,xANTI ,41.139279,24.887861,33605.00000,13,1,6,0,13158342,032$Xanti ,0,0,0,-777,6,0,17
.....
```

MapDekode use only the position and the comment filed (with the control information):

282\$thassopoula: **28** = city type in hex (see [A6 Listing of the Point \(POI\) and City types](#)), **always two characters!**

2 = max-zone (city is shown in zone 0 – 2 if available)

\$ = mark

thassopoula = label shown in MapSource / on GPS

032\$Xanti: 03 = city type; 2 = max-zone; \$ = mark; Xanti = label

since MDK 5.4.x the find-city data are also in the label of the city (see [A4 Description of the FIND-CITY data in the city label \(DBX and ozi *-ort.wpt\)](#))

Lines

You can write all lines with the same line type and label in one Ozi abc123-**L**.PLT file.

Format:

```
OziExplorer Track Point File Version 2.1
```

```
WGS 84
```

```
Altitude is in Feet
```

```
Reserved 3
```

```
0,3,255,L022$HwE-2,0,0,2,8421376
```

```
222
```

```
40.965440, 24.496120,1, -777,36659.5219560, 13-Mai-00, 12:31:36
40.964270, 24.502770,0, -777,36659.5220370, 13-Mai-00, 12:31:43
40.963980, 24.504380,0, -777,36659.5221181, 13-Mai-00, 12:31:51
40.963720, 24.505750,0, -777,36659.5221991, 13-Mai-00, 12:31:58
40.963170, 24.508900,1, -777,36659.5223958, 13-Mai-00, 12:32:14
40.962640, 24.511920,0, -777,36659.5225926, 13-Mai-00, 12:32:32
40.962370, 24.513380,0, -777,36659.5226968, 13-Mai-00, 12:32:41
40.961920, 24.515850,0, -777,36659.5228704, 13-Mai-00, 12:32:56
40.961710, 24.517600,0, -777,36659.5229861, 13-Mai-00, 12:33:05
.....
```

← start first line

← start second line

MapDecode uses only the positions and the comment fields (with the control information):

L022\$HwE-2: L = line

02 = line type in hex (see [A7 Listing of the Line types](#)), **always two characters!**

2 = max-zone (line is shown in zone 0 – 2 if available)

\$ = mark

HwE-2 = label shown in MapSource / on GPS (see [A10 Special characters for roads](#))

Areas

You can write all areas with the same area type and label in one Ozi abc123-**F**.PLT file.

Format:

```
OziExplorer Track Point File Version 2.1
```

```
WGS 84
```

```
Altitude is in Feet
```

```
Reserved 3
```

```
0,1,12632256,F031$Potos,0,10,0,12632256
```

```
26
```

```
40.612161, 24.604066,1, -777,36921.5472388, 30-Jan-01, 13:08:01
40.611588, 24.604664,0, -777,36921.5472388, 30-Jan-01, 13:08:01
40.610672, 24.605036,0, -777,36921.5472388, 30-Jan-01, 13:08:01
40.609355, 24.606381,0, -777,36921.5472388, 30-Jan-01, 13:08:01
```

← start first area

MapDecode use only the positions and the comment filed (with the control information):

F031\$Potos: F = area

03 = area type in hex (see [A8 Listing of the Area types](#)), **always two characters!**

1 = max-zone (area is shown in zone 0 – 1 if available)

\$ = mark

Potos = label shown in MapSource / on GPS

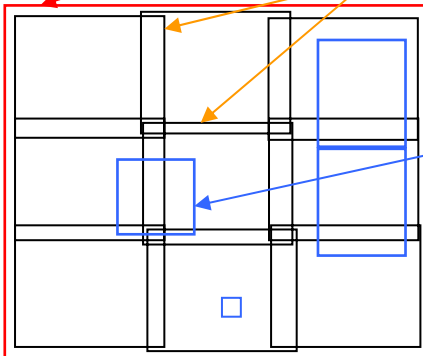
Attention: Areas from type **0x4B** and **0x4A** must have the largest zone as **max-zone** (or always use 6).

Areas from type **0x4A** (only for general maps) need a special label: **name-detail[1D]12345678**

e.g.: **F4A6\$Drama[1D]16711684** where **Drama** is the detail map name and **16711684** is the detail IMG and DBX file name (16711684.DBX and 16711684.IMG). This is needed to find the detail maps.

Special areas for TRE2 definition

The lowest and the middle zone of each map is split in nine equal sub areas (TRE2 areas). In the highest zone the whole map is equal one TRE2 area. If you use more than the default number of nine TRE2 areas, the display time on your GPS will be shorter, but the time to create the map will increase.



If you have a lot of data in some map area (cities with many roads or points), it can speed up the display time on your GPS if you include this area with an extra TRE2 area.

Such an extra TRE2 area is a normal Ozi *.plt within one rectangle and with file name **TRE2-abc123.PLT** and the comment is "**TRE2-name**".

The maximum of TRE2 areas in MapDecode are 900.

MapDecode searches for the TRE2-***.plt files, stores the areas in a table and checks which elements fits in which TRE2 area.

First, MapDecode checks for the manual TRE2 areas created by the user and only the elements that don't fit into these areas, will reflect in the nine default areas.

After creating the map you will see **TRE-x.PLT** files that are the real TRE2 areas used.

A2 Description of the DBX Database

The format of the DBX is the same for the detail- and the general map. The main difference is the "maximum zone" number of the elements and the expansion of the map.

The area type **0x4A** (reference area of a detail map) can only exist in a general map! To create such an area manually, copy the background area (if you use Ozi input data the *-4B-F.plt) from the detail map, to the folder of the general map and modify this file (type 0x4B -> 0x4A and write in the comment "F4A6\$name[1D]12345678").

You can edit this file with a normal text editor.

Format:

```
"[DEF]"
"Name=", "16711682.img"
"Text=", "Xanti"
"Max Nord=", 41.24
"Max Sued=", 40.82
"Max Ost =", 25
"Max West=", 24.5
""
"[Punkte]"
"P0020 ", 490513516, 294202778, 25089, 1, "000053", "3402"
"P0101$", 490700013, 290387511, 10755, 1, "400000", "POI0D00000$dionysos$#12$& -
road-1$%Main City$!60123$@0234-79548-648$*"
"P0070F", 488201249, 293737907, 12036, 2, "0000E5", "Airport"
"P0102$", 490761823, 290953382, 11523, 1, "400035", "POI0D00001$cinema1$#road-4$% -
Main City$!60123$@"
""
"[Orte]"
"O0080 ", 487081014, 294741403, 40, 2, "00010C", "thassopoula;greece[1D]GR"
"O00802", 488035260, 294801640, 13, 2, "000115", "NEA KARIA"
"O0110 ", 490810716, 296923747, 3, 2, "00011C", "Xanthi;Xanthi;greece[1D]GR"
""
"[Linien]"
"L00001", 492023686, 293377929, 20, 2, "000493", "Railroad"
"D00001", -64615, 22513
"D00002", -51027, 31556
```

```

. . . . .
"D00255",-34014,49643
"L00005",487256976,292296325,27,2,"000497","kavala-prinos"
"D00001",-248487,297845
"D00002",-20640,20520
" "
"[Flaechen]"
"F00001",486997572,293803943,40,2,"000000"," "
"D00001",415073,0
"D00002",0,17824
"D00003",7982,8900

. . . . .
"D00255",0,8912
"F00004",487001569,292296385,75,3,"00011C","Xanti"
"D00001",5010795,0
"D00002",0,5965232
"D00003",-5010795,0
"[EndeDB]"

```

Only the strings are enclosed in "", all fields are separated with a comma.

Section [DEF]

Name= String, the name of the **IMG/DBX** file (only comment)
Text= String, the **map name**, used in MapSource
Max Nord= Single, **boundary north** (in decimal degree)
Max Sued= Single, **boundary south** (in decimal degree)
Max Ost = Single, **boundary east** (in decimal degree)
Max West= Single, **boundary west** (in decimal degree)

Section [Punkte] (Points)

One row for each point (POI)

P0020 String, **wpt name** (e.g. from OZI), six characters start with "P"
you can have double name without problems

490513516 Integer, **north/south** coordinate absolutely decimal
North = $490513516 / (2^{30}/90) = 41.11436795^\circ \text{ N}$ $(2^{30}/90)=11\ 930\ 464.71$
Range from 1073741824 (0x40000000) = 90° N to -1073741824 (0xC0000000) = 90° S

294202778 Integer, **east/west** coordinate absolutely decimal
East = $294202778 / (2^{30}/90) = 24.65979198^\circ \text{ E}$
Range from 2147483647 (0x7FFFFFFF) = 180° E to -2147483648 (0x80000000) = 180° W

25089 Integer, **point type** decimal (25089 = 0x6201 = altitude point, the label is the value in feet, don't use characters!) Range from 1 to 32767

1 Integer, **maximum zone** decimal, you can see this point in zone 0 and 1 if you use the zones 0,1 and 2 by default. If you use lowest zone number = 1 (for World maps) when you create the IMG, you have the zones 1,2 and 3 and see this point only in zone 1.

In the DBX for the **general** map you must use 2,3 or 4 as maximum zone (3,4 or 5 for World).

The areas type **0x4B** (background) and **0x4A** (reference for detail maps) **must** always have the highest maximum zone (2 or 3 for detail and 4 or 5 for World). I recommend that you always use **6** for these types of areas in all maps! Range from 0 to 9

000053 String, label **offset**, *only for MapDecode*; If you create a DBX by hand use "FFFFFF"

3402 String, **label** of the point (in the case of this point example = 0x6201, 3402 is the altitude in feet = 1037m)

(For special characters, see: [A11 Special Codes for labels in MapDekode](#))

POI's

POI's (Points of Interest) are normal point entries with a special label (**POI0D00000\$dionysos** . . .) and with extra information (facilities, like address, city, zip code, phone number).

POI0D00000\$dionysos\$#12\$&road-1\$%Main City\$!60123\$@0234-79548-648\$*

"POI" is a **marker**

"0D" is the **display style** of the address (see [A5 Description of the POI](#))
must be the same in all POI in this DBX

"00000" is the **poi number** (00000 = first POI, 00001 = second POI, ...)

"\$" is a **marker**

"dionysos\$#" is the **name** of the poi with its **end mark**

"12\$&" is the **house number** with its **end mark**

"road-1\$%" is the **street** name with its **end mark**

"Main City\$!" is the **city** with its **end mark**

"60123\$@" is **zip** code with its **end mark**

"0234-79548-648\$*" is the **phone** number with its **end mark**

You must not use all fields (see second POI sample). The first field should be the name.

The order and number of the POI's is no longer important. MDK sort the POI's intern.

Section [Orte] (Cities)

One row for each city (for details see [Section \[Punkte\]](#))

000802 String, **wpt name** (e.g. from OZI), six characters starting with "O", not zero.
You could create double names without problems

488035260 Integer, **north/ south** coordinates in decimal degrees = 40.90664294° N

294801640 Integer, **east/ west** coordinates in decimal degrees = 24.70998801° E

13 Integer, **city type** decimal, Ranging from 1 to 127

2 Integer, **maximum zone** decimal, you can view this city in zone 0,1 and 2

000115 String, label **offset**, only for MapDekode; If you create a DBX by hand, use "FFFFFF"

NEA KARIA String, **label** of the city (for special characters see: [A11 Special Codes for labels in MapDekode](#))
Since MDK 5.4.x the find-city data are also in the label (see: [A4 Description of the FIND-CITY data in the city label \(DBX and ozi *-ort.wpt\)](#))

Section [Linien] (Lines)

One row for the first point of the polygon and one row for each delta point (1 up to 255)
(For details see [Section \[Punkte\]](#))

L00001 String, **line** name, six characters start with "L"
you can create double names without problems

492023686 Integer, **north/ south** coordinates in decimal degrees = 41.24094894° N

293377929 Integer, **east/ west** coordinates in decimal degrees = 24.59065394° E

20 Integer, **line type** decimal, Ranging from 1 to 63

2 Integer, **maximum zone** decimal, you can view this line in zone 0,1 and 2

000493	String, label offset , only for MapDekode; If you create a DBX by hand, use "FFFFFF"
Railroad	String, label of the line (for special characters see: A11 Special Codes for labels in MapDekode) For lines type 32 to 37 (0x20 to 0x25 = land / depth contour) this is the altitude in feet
D00001	String, delta point, six characters starting with "D" and ranging from 1 to 255
-64615	Integer, north/ south coordinate relative decimal degrees South = $-64615 / (2^{30}/90) = 0.005415966^{\circ}\text{S}$ Range depends on the used zone factor (maximum map size): e.g.: ZF = 17 is +/- 1.4° size, so range is +/- 16702650 = +/- 1.4°
22513	Integer, east/ west coordinate relative decimal degrees East = $22513 / (2^{30}/90) = 0.002138474^{\circ}\text{E}$ Range depends on the used zone factor (maximum map size): e.g.: ZF = 17 is +/- 1.4° size, so range is +/- 16702650 = +/- 1.4°

Section [Flaechen] (Map areas)

One row for the first point of the polygon and one row for each delta point (1 up to 255)
(For details see [Section \[Punkte\]](#))

F00001	String, area name, six characters starting with "F" You can create double names without problems
486997572	Integer, north/ south coordinates in decimal degrees = 40.81966493° N
293803943	Integer, east/ west coordinate in decimal degrees = 24.62636202° E
40	Integer, area type decimal, Ranging from 1 to 127
2	Integer, maximum zone decimal, you can view this line in zone 0,1 and 2
000000	String, label offset , only for MapDekode; If you create a DBX by hand, use "FFFFFF"
" "	String, label of the area (for special characters see: A11 Special Codes for labels in MapDekode) For area type 75 (0x4B) this is the map name For area type 74 (0x4A) this is the reference to the detail map: "name-detail[1D]12345678" and 12345678 is the detail map file name!
D00001	String, delta point, six characters start with "D" from 1 to 255
415073	Integer, north/ south coordinate relative decimal degree South = $415073 / (2^{30}/90) = 0.034791016^{\circ}\text{N}$ Range depends on the used zone factor (maximum map size): e.g.: ZF = 17 is +/- 1.4° size, so range is +/- 16702650 = +/- 1.4°
0	Integer, east/ west coordinate relative decimal degree East = $0 / (2^{30}/90) = 0.0^{\circ}\text{E}$ Range depends on the used zone factor (maximum map size): e.g.: ZF = 17 is +/- 1.4° size, so range is +/- 16702650 = +/- 1.4°

The minimum in a DBX database is the full section [DEF], the section [Flaechen] with the background (type 75) and the end mark [EndeDB].

A3 Description of the control file **AUTOGENMAP.DAT**

If you want to use the function "[Database / auto create an overview DBX from detail DBX](#)" MapDekode needs the file **AUTOGENMAP.DAT** in the same folder as the general DBX. You must create it by hand.

This file tells MapDekode which detail maps and which elements from these should be used for the new general DBX. You will find an example of the **AUTOGENMAP.DAT** file in the sample project in the third SETUP file of MapDekode.

Format:

```
[DEF]
MINZONEU,2
MINZONED,0
NAME,Nord-ost-GR

[FILEIN]
C:\Mapdekode\Thassos\kavala_83\16711683.dbx
C:\Mapdekode\Thassos\drama_84\16711684.dbx
.....

[Punkte]
16FF,1
17FF,1
2F04,2
.....

[Orte]
1,2
2,2
.....

[Linien]
1,2
2,2
.....

[Flaechen]
1,2
2,2
.....

[Ende]
```

In section [DEF]:

MINZONEU is the **lowest zone** number that you want to use for the **general** map (use 2 for R&R and 3 for World), range from 0 to 4. Use this value as **lowest zone** when you create the IMG.

MINZONED is the **lowest zone** number that you use in the **detail** maps (must be the same in all detail maps). For R&R use 0, for World 1. Use this value as **lowest zone** when you create the maps.

NAME this name is used as "TEXT" in the general DBX and as map name in the background area type 75 (0x4B) for the general DBX.

In section [FILEIN] are the **full path and filenames** of all the used DBX from the **detail maps**.

In section [Punkte], for each point type, an entry is possible:

16FF,1 means: points from type 1600 – 16FF will be used from the detail DBX and get the max-zone **3** in the general DBX (if you have [MINZONEU,2](#) in the [DEF] -> **2** + **1** = **3**).

2F04,2 means: points from type 2F04 will be used from the detail DBX and get the max-zone **4** in the general DBX (**2** + **2** = **4**)

In section [**Orte**],[**Linien**] and [**Flaechen**], for each element type an entry is possible, same as in [**Punkte**]:

2,0 means: element type 2 will use DBX and get the max-zone **2** in the general DBX (**2** + **0** = **2**)

Attention: all element types are in HEX

Attention: MapDekode works as follows: **1.)** Read all [DEF] in all detail DBX and build the new [DEF] for the general DBX (new boundary, Text in the DBX = NAME from the **AUTOGENMAP.TXT**)

2.) Read point by point in the first detail DBX, check that the max-zone of the point is equal to, or greater than the largest zone from the detail map -> if not, read next point; if yes, use this point and continue.

If you use zone 0,1 and 2, for the detail maps, then 0 is the lowest zone (**MINZONED**, 0 in [DEF] from the **AUTOGENMAP.TXT**) in the detail map and 2 is the largest zone. For a World detail map, 1 is the lowest and 3 is the highest zone).

3.) Check if this point type exists in an entry in the **AUTOGENMAP.TXT**, if not, read next point; if yes add the **MINZONU** and the **entry value** and write the point with the **new max-zone** to the general DBX.

4.) Do this for all elements in all detail DBX.

A3a Description of the control file **AUTOGENMDB.DAT**

If you use the batch function /TDB to create a TDB automatic, you need this file for control.

Format:

```
[TDB]
Projectnumber=222
Projectversion=123
Projectname="Sample Project"
Projectnameshort="Sample"
CRtext1="Sample Text1"
CRtext2=
CRtext3=
TDB=C:\Mapdekode\Sample\SAMPLEMD.tdb
Overviewmap=C:\Mapdekode\Sample\SAMPLEMD.img
IMGpath=C:\Mapdekode\Sample
IMG=3000*.img
Registry=yes
```

Description:

Projectnumber	is the project number in the Registry (1-999)
Projectversion	is the version of the map data (123 means 1.23)
Projectname	the project name for selection in Mapsource
Projectnameshort	the name for the Mapsource Help
CRtext1/2/3	up to three copyright text (Mapsource)
TDB	path and name of the new/updated TDB
Overviewmap	path and name of the general map
IMGpath	path of the detail IMG's
IMG	search string for the detail IMG's: 3000*.img use all 3000nnnnn.img *.img use all detail (all numeric! use letters for the general IMG!)) 16*.img use all IMG's start with 16nnnnnn
Registry	yes=add/update the project in the Registry (no or yes)

A4 Description of the **FIND-CITY** data in the city label (DBX and ozi *-ort.wpt)

To use the find-city function, switch it on in the Option menu.

If you use Ozi source data, the cities are in a *-ort.wpt waypoint file.

With GTM cities are points with name Oxxxxx or Cxxxxx and the label in the description field.

For the find-city function MDK need for the cities the region and country information.

e.g. "Xanthi;Xanthi;greece[1D]GR" or "Xanthi;;greece[1D]GR"

Xanthi	the label of the city (double city names are not longer a problem)
Xanthi	the label of the region (must be unambiguous)
greece[1D]GR	the label of the country, with the short form (must be unambiguous)

You don't need a region. If you have the city and region, or only the city, but no country, the map name is used as default country.

A5 Description of the POI data in the ozi *-pkt.wpt

Since MDK 5.4.x, no POI.txt is needed for the POI's.

Now the **POI** data are in the label of the point. The maximum length of all must be **100** characters (Ozi limit).

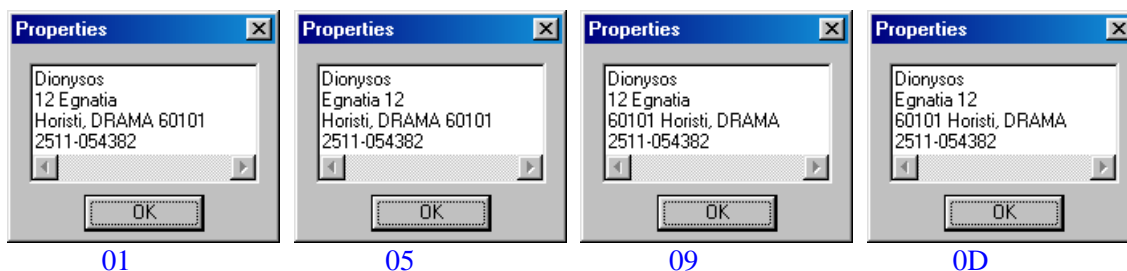
e.g. "2A031\$POI:09:Restaurant1;12;road-1;Main City;60123;0234-79548-648"

2A03	POI type in hex (A6 Listing of the Point (POI) and City types)
<u>Only type 2Axx to 30xx and 64xx to 66xx are valid POI's (e.g. for "airport" use 2F04 not 590x).</u>	
1	Max Zone number
\$POI:	Marker for POI's
09	Display style of the POI information (see lower)
:	Marker
Restaurant1	Label of POI
;12	House number (optional), digits and letters allowed (e.g. 125A or 1A/3). some special house numbers:
	12- 3 → 12 # 3
	12-03 → 12 # 3
	12-13 → 12 APT 3
	12-23 → 12 BLDG 3
	12-33 → 12 DEPT 3
	12-43 → 12 FL 3
	12-53 → 12 RM 3
	12-63 → 12 STE 3
	12-73 → 12 UNIT 3

;road-1	Street (optional)
;Main City	City (optional)
;60123	Zip code (optional)
;0234-79548-648	Phone number (optional), only numerals and "-" are allowed.

The separators ";" are NOT optional, you must include all 5 in each POI (e.g. 2A031\$POI:09:Restaurant1;;;;;0234)

The **display style** is 01, 05, 09 or 0D. It determines the position of the house number and zip code.



These values are valid for all POI's in the detail map.

A6 Listing of the Point (POI) and City types

All values in Hex, for **cities** use only the **first byte** (e.g.: 0x06 not 0x0600)

From 0100 Up to 0600	Large City name(Point, big)
From 0700 , 0800	Medium City name(Point, medium)
From 0900 Up to 0E00	Small City name (Point)
From 0C00 , 0D00	Small Town name (Point)
From 1200 Up to 123F	Marine Service
From 1400 Up to 153F	Country name (no Point, big)
From 1E00 Up to 1E3F	State name (no Point, medium)

From 1F00 Up to 1F3F **County name** (no Point, medium)
 From 20xx **Exit**(xx in Exit: 2^0=food; 2^1=fuel; 2^2=lodging; 2^3=truck stop; 2^4=medical)
 From 21xx **Exit**(with facilities)
 From 22xx **Exit**(Restroom)
 From 23xx **Exit**(Convenience Store)
 From 24xx **Exit**(Weighbridge)
 From 25xx **Exit**(Tollbooth)
 From 26xx **Exit**(Information)
 From 27xx **Exit**(small dot)
 From 2800 Up to 283F **Island name** (no Point, small)
 From 2900 **Fire Station**
 From 2A00 **Dining**(Other)
 From 2A01 **Dining**(American)
 From 2A02 **Dining**(Asian)
 From 2A03 **Dining**(Barbecue)
 From 2A04 **Dining**(Chinese)
 From 2A05 **Dining**(Deli/Bakery)
 From 2A06 **Dining**(International)
 From 2A07 **Fast Food**
 From 2A08 **Dining**(Italian)
 From 2A09 **Dining**(Mexican)
 From 2A0A **Dining**(Pizza)
 From 2A0B **Dining**(Sea Food)
 From 2A0C **Dining**(Steak/Grill)
 From 2A0D **Dining**(Bagel/Donut)
 From 2A0E **Dining**(Cafe/Diner)
 From 2A0F **Dining**(French)
 From 2A10 **Dining**(German)
 From 2A11 **Dining**(British Isles)
 From 2A12 **Specialty Food Products**
 From 2B00 **Lodging**(Other)
 From 2B01 **Hotel/Motel**
 From 2B02 **Bed & Breakfast in**
 From 2B03 **Camping/RV-Park**
 From 2B04 **Resort**
 From 2C00 **Attraction**
 From 2C01 **Amusement Park**
 From 2C02 **Museum/Historical**
 From 2C03 **Libraries**
 From 2C04 **Land Mark**
 From 2C05 **School**
 From 2C06 **Park**
 From 2C07 **Zoo**
 From 2C08 **Arena, Stadium**(point)
 From 2C09 **Fair, Conference**(point)
 From 2C0A **Wine restaurant**(point)
 From 2C0B **Place of Worship**
 From 2C0C **Hot Spring**
 From 2D00 **Entertainment**
 From 2D01 **Theater**
 From 2D02 **Bar**
 From 2D03 **Movie**
 From 2D04 **Casino**
 From 2D05 **Golf**
 From 2D06 **Skiing Center**
 From 2D07 **Bowling**
 From 2D08 **Ice/Sporting**
 From 2D09 **Swimming**
 From 2D0A **Sports**(point)
 From 2D0B **Public Sport Airport**
 From 2E00 **Shopping**
 From 2E01 **Department Store**
 From 2E02 **Grocery**
 From 2E03 **General Merchandiser**
 From 2E04 **Shopping Center**
 From 2E05 **Pharmacy**
 From 2E06 **Convenience Store**
 From 2E07 **Apparel**

From	2E08	House & Garden
From	2E09	Home Furnisher
From	2E0A	Specialty Retail
From	2E0B	Computer/Software
From	2F00	Generic Service
From	2F01	Fuel/Gas
From	2F02	Car Rental
From	2F03	Car Repair
From	2F04	Airport
From	2F05	Post Office
From	2F06	Bank
From	2F07	Car Dealer(point)
From	2F08	Bus Station
From	2F09	Marina
From	2F0A	Wrecker Service
From	2F0B	Parking
From	2F0C	Restroom/Tourist Information
From	2F0D	Automobile Club
From	2F0E	Car Wash
From	2F0F	"G" GARMIN Dealer
From	2F10	Personal Service
From	2F11	Business Service
From	2F12	Communications
From	2F13	Repair Service
From	2F14	Social Service
From	2F15	Utility
From	2F16	Truck Stop
From	2F17	Transit Service
From	3000	generic Emergency/Government
From	3001	Police Station
From	3002	Hospital
From	3003	Government(point)
From	3004	Justice
From	3005	Concert hall(point)
From	3006	Border Station(point)
From	3007	Government Office
From	3008	Fire Department
From	4000 Up to 403F	Golf
From	4100 Up to 413F	Fishing Spot
From	4200 Up to 423F	Wreck
From	4300 Up to 433F	Marina
From	4400 Up to 443F	Gas
From	4500 Up to 453F	Restaurant
From	4600 Up to 463F	Bar
From	4700 Up to 473F	Boat Ramp
From	4800 Up to 483F	Camping
From	4900 Up to 493F	Park
From	4A00 Up to 4A3F	Picnic Area
From	4B00 Up to 4B3F	First Aid
From	4C00 Up to 4C3F	Information
From	4D00 Up to 4D3F	Parking
From	4E00 Up to 4E3F	Restroom
From	4F00 Up to 4F3F	Shower
From	5000 Up to 503F	Drinking Water
From	5100 Up to 513F	Telephone
From	5200 Up to 523F	Scenic Area
From	5300 Up to 533F	Skiing
From	5400 Up to 543F	Swimming
From	5500 Up to 553F	Dam
From	5600 Up to 563F	Controlled Area
From	5700 Up to 573F	Danger Area
From	5800 Up to 583F	Restricted Area
From	5900	Airport(Other)
From	5901	Large Airport
From	5902	Medium Airport
From	5903	Small Airport
From	5904	Heliport
From	5905 Up to 593F	Airport

From 5A00	Up to 5A3F	Mile Marker
From 5B00	Up to 5B3F	Bell
From 5C00	Up to 5C3F	Diving Area
From 5D00	Up to 5D3F	Daymark, Green Square
From 5E00	Up to 5E3F	Daymark, Red Triangle
From 5F00	Up to 5F3F	Point of Interest
From 6000	Up to 603F	Horn
From 6100	Up to 613F	House
From 62xx	Depth without point	in feet or meter (62012\$147m)
From 63xx	Height with point	in meter or feet (62012\$482)
From 6400	Manmade Feature	
From 6401	Bridge	
From 6402	Building	
From 6403	Cemetery	
From 6404	Church	
From 6405	Civil	
From 6406	Crossing	
From 6407	Dam	
From 6408	Hospital	
From 6409	Levee	
From 640A	Locale	
From 640B	Military	
From 640C	Mine	
From 640D	Oil Field	
From 640E	Park	
From 640F	Post	
From 6410	School	
From 6411	Tower	
From 6412	Trail	
From 6413	Tunnel	
From 6414	Drink water	
From 6415	Ghost Town	
From 6416	Subdivision	
From 6500	Water Feature	
From 6501	Arroyo	
From 6502	Sand Bar	
From 6503	Bay	
From 6504	Bend	
From 6505	Canal	
From 6506	Channel	
From 6507	Cove	
From 6508	Falls	
From 6509	Geyser	
From 650A	Glacier	
From 650B	Harbor	
From 650C	Island	
From 650D	Lake	
From 650E	Rapids	
From 650F	Reservoir	
From 6510	Sea	
From 6511	Spring	
From 6512	Stream	
From 6513	Swamp	
From 6600	Land Feature	
From 6601	Arch	
From 6602	Area	
From 6603	Basin	
From 6604	Beach	
From 6605	Bench	
From 6606	Cape	
From 6607	Cliff	
From 6608	Crater	
From 6609	Flat	
From 660A	Forest	
From 660B	Gap	
From 660C	Gut	
From 660D	Isthmus	
From 660E	Lava	

```

From 660F    Pillar
From 6610    Plain
From 6611    Range
From 6612    Reserve
From 6613    Ridge
From 6614    Rock
From 6615    Slope
From 6616    Summit
From 6617    Valley
From 6618    Woods
From 6E00 Up to 6F3F    Navaid
From 7000 Up to 703F    Danger Area
From 7100 Up to 713F    Navaid
'*****
'Nautical 1601 to 1D01
From 1B00, 1A00, 1900, 1800, 1700, 1600    Navaid
From 1B01, 1A01, 1901, 1801, 1701, 1601    Fog Horn
From 1B02, 1A02, 1902, 1802, 1702, 1602    Radio Beacon
From 1B03, 1A03, 1903, 1803, 1703, 1603    Racon
From 1B04, 1A04, 1904, 1804, 1704, 1604    Daybeacon, red Triangle
From 1B05, 1A05, 1905, 1805, 1705, 1605    Daybeacon, green Square
From 1B06, 1A06, 1906, 1806, 1706, 1606    Daybeacon, white Diamond
From 1B07, 1A07, 1907, 1807, 1707, 1607    unlit Navaid, white
From 1B08, 1A08, 1908, 1808, 1708, 1608    unlit Navaid, red
From 1B09, 1A09, 1909, 1809, 1709, 1609    unlit Navaid, green
From 1B0A, 1A0A, 190A, 180A, 170A, 160A    unlit Navaid, black
From 1B0B, 1A0B, 190B, 180B, 170B, 160B    unlit Navaid, yellow or amber
From 1B0C, 1A0C, 190C, 180C, 170C, 160C    unlit Navaid, orange
From 1B0D, 1A0D, 190D, 180D, 170D, 160D    unlit Navaid, multi colored
From 1B0E, 1A0E, 190E, 180E, 170E, 160E    Navaid, unknown
From 1B0F, 1A0F, 190F, 180F, 170F, 160F    lighted Navaid, white
From 1B10, 1A10, 1910, 1810, 1710, 1610    lighted Navaid, red
From 1B11, 1A11, 1911, 1811, 1711, 1611    lighted Navaid, green
From 1B12, 1A12, 1912, 1812, 1712, 1612    lighted Navaid, yellow or amber
From 1B13, 1A13, 1913, 1813, 1713, 1613    lighted Navaid, orange
From 1B14, 1A14, 1914, 1814, 1714, 1614    lighted Navaid, violet
From 1B15, 1A15, 1915, 1815, 1715, 1615    lighted Navaid, blue
From 1B16, 1A16, 1916, 1816, 1716, 1616    lighted Navaid, multi colored
From 1C00    unclassified Obstruction
From 1C01    Wreck
From 1C02    submerged Wreck, dangerous
From 1C03    submerged Wreck, non-dangerous
From 1C04    Wreck, cleared by Wire-drag
From 1C05    Obstruction, visible at high Water
From 1C06    Obstruction, awash
From 1C07    Obstruction, submerged
From 1C08    Obstruction, cleared by Wire-drag
From 1C09    Rock, awash
From 1C0A    Rock, submerged at low Water
From 1C0B    Sounding
From 1C0C    Airplane
(From 1Dxx    Tide Prediction) not supported in MapDecode

```

A7 Listing of the Line types

all values in Hex

```

01=Major HWY (blue [255] thick)
02=Principal HWY (red [255] thick)
03=Principal HWY (red [255] medium)
04=Arterial Road (black [0] medium)
05=Arterial Road (black [0] thin)
06=Road (gray [64] thin)
07=Alley (gray [64] thin)
08=09=Ramp (gray [128] thick)
0A=Unpaved Road (gray [64] thin)
0B=Major HWY Connector (gray [64] thick)
0C=Roundabout (black [0] thin)

```

14=**Railroad** (black [0] thin)
 15=**Shoreline** (black [0] thin)
 16=**Trail** (black [0] thin)
 18=**Straem** (blue [63,152,255] thin)
 19=**Time-Zone** (Boundary (black [192] medium)
 1A=1B=**Ferry** (black [0] thin)
 1C=**Political Boundary** (gray [192] medium)
 1D=**Conty Boundary** (gray [192] medium)
 1E=**Intl. Boundary** (gray [192] medium)
 1F=**River** (blue [63,152,255] thin)
 20=**Land Contour** (thin) Height **in feet or meter (201\$200m)**
 21=**Land Contour** (medium) Height ...
 22=**Land Contour** (thick) Height ...
 23=**Depth Contour** (thin) Depth ...
 24=**Depth Contour** (medium) Depth ...
 25=**Depth Contour** (thick) Depth **in meter or feet (251\$656)**
 26=**Intermittend River** (blue [63,152,255] thin)
 27=**Airport Runway** (black [0] thin)
 28=**Pipeline** (black [0] thin)
 29=**Powerline** (black [0] thin)
 2A=**Marine Boundary** (no line)
 2B=**Marine Hazard** (no line)

A8 Listing of the Area types

all values in Hex

01=02=03=**City** (gray [230])
 04=**military** (white[255])
 05=**parking lot** (white[255])
 06=**parking garage** (white[255])
 07=**Airport** (white[255])
 08=**shoping center** (white[255])
 09=**marina** (white[255])
 0A=**University** (white[255])
 0B=**Hospital** (white[255])
 0C=**Industrial** (white[255])
 0D=**Reservation** (white[255])
 0E=**Airport Runway** (gray[128]) (not GPSIII+)
 14-16=**Nationalpark** (Gr)
 17=**city park** (Gr)
 18=**golf** (Gr)
 19=**sport** (Gr)
 1A=**Cemetery** (Gr)
 1E,1F,20=**State park** (Gr)
 28=**Ocean** (blue)
 29,3B,45=**blue-Unknown**
 32=**sea** (blue)
 3C-44=**Lake** (blue)
 41=**small Lake** (blue)
 46-49=**River** (blue)
 4A=**Definition area** for detail map, only available on the general map, in the
 text field: name-detail-map[1D]069nnnnn
 4B=**Background area**
 4C=**Intermittent River/sheet** (blue)
 4D=**Glaciers** (blue)
 4E=**Orchard**
 4F=**Scrub**
 50=**Woods**
 51=**Wetland**
 52=**Tundra**
 53=**Flat**
 54=**Area**

A9 Character set for labels

Reduced 6 bit code:

0 – 9 shown as 0 - 9

A – Z and a - z **shown as** A – Z

[1B]a – [1B]z **shown as** a - z

@ ! " # \$ % & ' () * + , - . / : ; < = > ? [\] ^ _ ` **shown as** @ ! " # \$ % & ' () * + , - . / : ; < = > ? [\] ^ _ `

Since v5.3.x MapDecode supports 8 bit code (ANSI) for label. But not all GPS's support this (e.g. GPSIII+)

You can use most of the characters from 0x20 – 0xFF. Don't use the codes 0x22 (") , 0x7f, 0x8b (<), 0x9b (>), 0xab («), 0xbb (»); these are control codes!

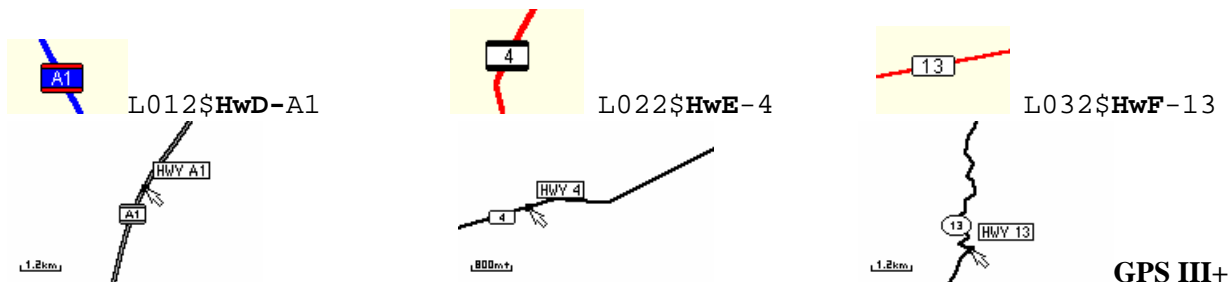
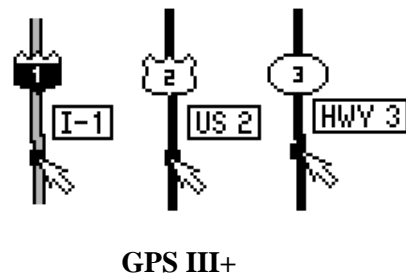
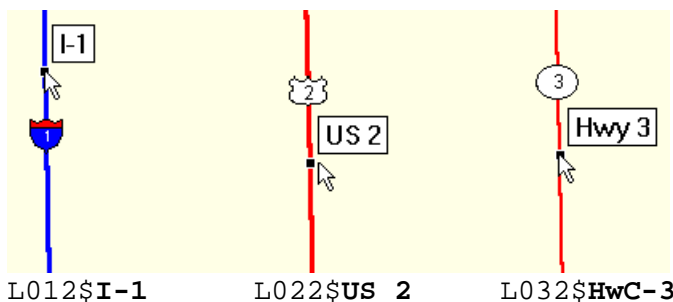
Not all characters will displayed on the GPS (e.g. GPS-V: !#\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNPOQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~...™;©®°±¿ÀÁÂÃÄÅÆÇÈÉÊËÌÍÎÏÐÑÒÓÔÕÖ×ØÙÚÛÜÝÞßàáâãäåæçèéêëìíîïðñòóôõö÷øùúûüýþÿ)

A10 Special characters for roads

"I-"	Interstate Highway	(name: only numericals)
"US "	US-Road	(name: only numericals)
"HwC-"	Highway character oval	(name: only numericals)
"HwD-"	Highway - large symbol	(name: letters & numericals)
"HwE-"	Main Road - medium symbol	(name: letters & numericals)
"HwF-"	Road - small symbol	(name: letters & numericals)



Next we see an example of how the label of a highway is viewed in the MapSource, when the tracks have the following descriptions:



A11 Special Codes for labels in MapDecode

These special codes can be used anywhere in a label:

"[1B]n" n will displayed on the GPS as lowercase e.g. r[1B]i[1B]v[1B]e[1B]r -> **River**

">" code=155 (0x9B) word separator, you see the **second** word e.g. Rue d'>Italy -> **ITALY**

"<" code=139 (0x8B) -||-, you see the **first** word e.g. BAHNHOF<STRASSE -> **BAHNHOF**

If you drag the cursor over the object, you see **RUE D'ITALY / BAHNHOFSTRASSE**

">>" code=187 (0xBB) -||-, you see the **second** word e.g. CALLE>>MAYOR -> **MAYOR**

"<<" code=171 (0xAB) -||-, you see the **first** word e.g. ALTE<<STRASSE -> **ALTE**

if you drag the cursor on the object you see **CALLE MAYOR / ALTE STRASSE**

It also depends on the zoom level, whether you see only a part of the name, or the whole name.

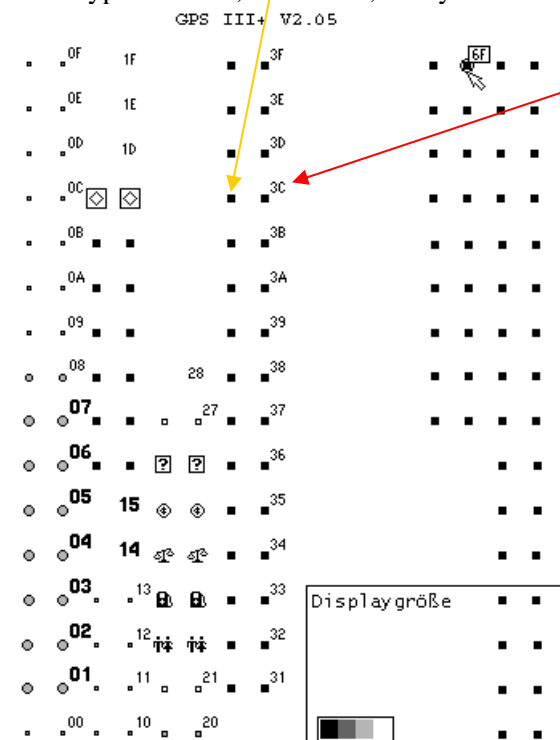
A12 Picture how the GPSIII+ display the areas

From type 00 to 7F, left in each field the shown type without a label and right the type as label.

UNKNOWN 00	UNKNOWN	PARK 20	UNKNOWN	LAKE 40	WOODS 50	UNKNOWN	UNKNOWN
CITY	UNKNOWN	UNKNOWN	UNKNOWN	SMALL LAKE 41	WETLAND 51		
CITY	UNKNOWN	UNKNOWN	OCEAN/SEA 32	LAKE 42	TUNDRA 52		
CITY	MAN-MADE AREA 13	UNKNOWN	UNKNOWN	LAKE 43	FLAT 53		
MILITARY BASE 04	PARK 14	UNKNOWN	UNKNOWN	LAKE 44	UNKNOWN		
PARKING LOT 05	PARK 15	UNKNOWN	UNKNOWN	UNKNOWN			
PARKING GARAGE 06	PARK 16	UNKNOWN	UNKNOWN	RIVER 46			
AIRPORT 07	PARK 17	UNKNOWN	UNKNOWN	RIVER 47			
SHOPPING CENTER 08	GOLF COURSE 18	OCEAN/SEA 28	UNKNOWN	RIVER 48			
MARINA 09	SPORTS COMPLEX 19	UNKNOWN	UNKNOWN	RIVER 49			
UNIVERSITY 0A	CEMETERY 1A	UNKNOWN	UNKNOWN	UNKNOWN			
HOSPITAL 0B	UNKNOWN	UNKNOWN	UNKNOWN				
INDUSTRIAL COMPLEX 0C	UNKNOWN	UNKNOWN	LAKE 3C	INTERMITTENT WATER 4C			
RESERVATION 0D	UNKNOWN	UNKNOWN	LAKE 3D	GLACIER 4D			
UNKNOWN	PARK 1E	UNKNOWN	LAKE 3E	ORCHARD 4E			
UNKNOWN	PARK 1F	UNKNOWN	LAKE 3F	SCRUB 4F			

A13 Picture how the GPSIII+ display the cities

From type 00 to 7F, on the left, the symbol for each city without labels and on the right, the symbols with labels.



Display size and gray scale of the GPSIII+

A14 Picture how the GPSIII+ display the lines

From type 00 to 2B, left over land without a label and right over the sea with label.

Linientypen des GPS III+

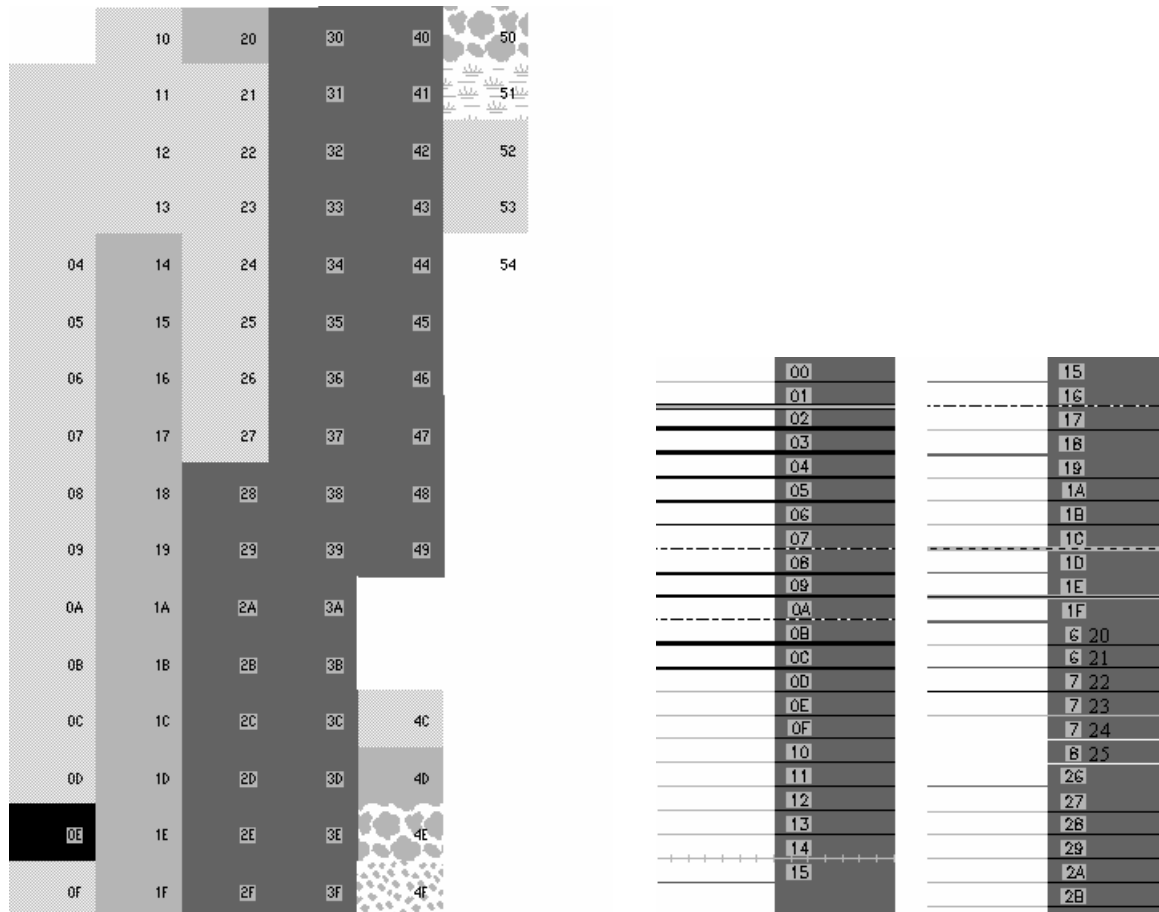
Über Land	Über Wasser	Über Land	Über Wasser
Road 00		Trail 16	
Road 01		Unknown 17	
Road 02		Stream 18	
Road 03		Unknown 19	
Road 04		Ferry 1A	
Road 05		Ferry 1B	
Road 06		St/Prv Border 1C	
Road 07		County Border 1D	
Alley 08		Intl Border 1E	
Ramp 09		River 1F	
Ramp 0A		Contour Line 6 20	
Unpaved Road 0B		Contour Line 6 21	
Roundabout 0C		Contour Line 7 22	
Unknown 0D		Contour Line 7 23	
Unknown 0E		Contour Line 7 24	
Unknown 0F		Contour Line 8 25	
Unknown 10		Intermittent Stream 26	
Unknown 11		Runway 27	
Unknown 12		Pipeline 28	
Unknown 13		Powerline 29	
Railroad 14		Unknown 2A	
Unknown 15		Unknown 2B	

Graustufen:

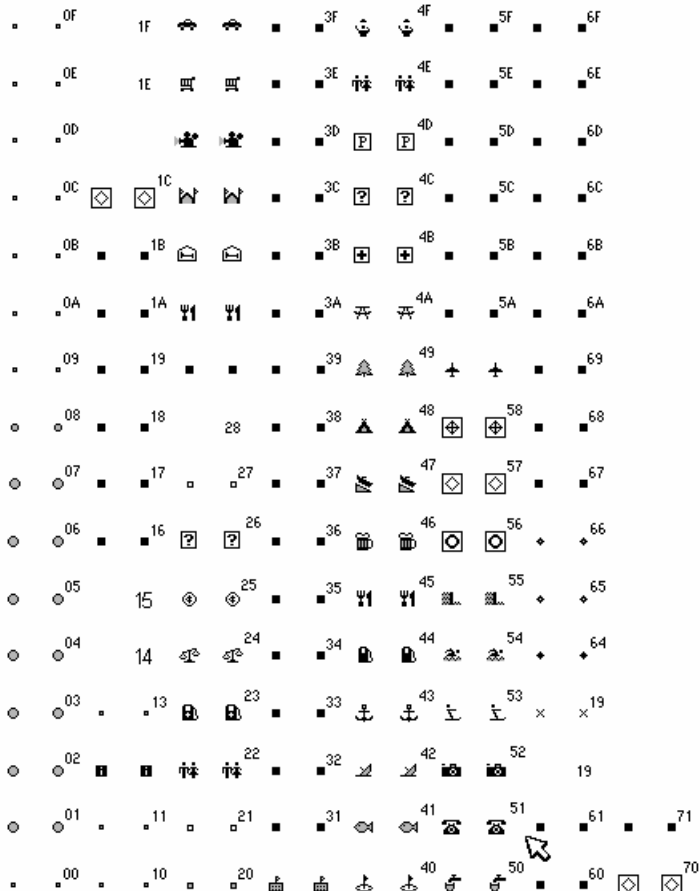


The line type 1A and 1B (ferry) you can't see over the sea ☹ this is a software bug in the GPSIII+. I have made a patch for the versions 2.05 and 2.06 (only GPSIII+) to show the ferry as railroad so that you can see it. If somebody need this patched version send me a e-mail.

A15 Picture to demonstrate how the GPSV displays the areas and lines



A16 Picture how the GPSV display the cities



A17 Picture how the GPSV display points

Points 16xx - 1Cxx Navaid's	Points 2Axx - 30xx = POI Range	Points 64xx - 66xx
1616 1716 1816 1916 1A16 1B16 1C16	xx17	6418 6518 6618
1615 1715 1815 1915 1A15 1B15 1C15	xx16	6417 6517 6617
1614 1714 1814 1914 1A14 1B14 1C14	xx15	6416 6516 6616
1613 1713 1813 1913 1A13 1B13 1C13	xx14	6415 6515 6615
1612 1712 1812 1912 1A12 1B12 1C12	xx13	6414 6514 6614
1611 1711 1811 1911 1A11 1B11 1C11	xx12	6413 6513 6613
1610 1710 1810 1910 1A10 1B10 1C10	xx11	6412 6512 6612
160F 170F 180F 190F 1A0F 1B0F 1C0F	xx10	6411 6511 6611
160E 170E 180E 190E 1A0E 1B0E 1C0E	xx0F	6410 6510 6610
160D 170D 180D 190D 1A0D 1B0D 1C0D	xx0E	640F 650F 660F
160C 170C 180C 190C 1A0C 1B0C 1C0C	xx0D	640E 650E 660E
160B 170B 180B 190B 1A0B 1B0B 1C0B	xx0C	640D 650D 660D
160A 170A 180A 190A 1A0A 1B0A 1C0A	xx0B	640C 650C 660C
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1608 1708 1808 1908 1A08 1B08 1C08	xx09	640A 650A 660A
1607 1707 1807 1907 1A07 1B07 1C07	xx08	6409 6509 6609
1606 1706 1806 1906 1A06 1B06 1C06	xx07	6408 6508 6608
1605 1705 1805 1905 1A05 1B05 1C05	xx06	6407 6507 6607
1604 1704 1804 1904 1A04 1B04 1C04	xx05	6406 6506 6606
1603 1703 1803 1903 1A03 1B03 1C03	xx04	6405 6505 6605
1602 1702 1802 1902 1A02 1B02 1C02	xx03	6404 6504 6604
1601 1701 1801 1901 1A01 1B01 1C01	xx02	6403 6503 6603
1600 1700 1800 1900 1A00 1B00 1C00	xx01	6402 6502 6602
1600 1700 1800 1900 1A00 1B00 1C00	xx00	6401 6501 6601
	2A 2B 2C 2D 2E 2F 30	6400 6500 6600