The Danish Fixpoint Registry – Valdemar. Instructions for use

The following describes the Valdemar web application, its structure and use.

If you are a new user, we recommend that you read these instructions thoroughly to get a good impression of how it works.

We will do our utmost to continually upgrade these instructions and ensure that Valdemar remains a useful, user-friendly tool. We therefore welcome feedback from users. Anything missing? Is this clear?

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For most of the choices, a short mouse-over text will be shown.
1. **Introduction**

In Valdemar, you can search for fixpoints in different ways and with different criteria, i.e. you can put together a theme of your own. The app essentially displays fixpoints in two different display modes. Either as a list or as a theme superimposed on various basic maps. In both display modes, you can opt to view all the available fixpoint data for each point. The fixpoint data is a document that provides a simple overview of a complex body of data about a fixpoint’s 1D, 2D and 3D coordinates, quality, type, condition, location, purpose and epoch in combination with a full map and dimensional sketch. The individual fixpoints do not necessarily contain all the data.

The primary purpose of fixpoints in this case is to link surveying and marking with the benchmark.

Valdemar is designed in accordance with international standards and adapted for distribution via Datafordeleren (Data Distributor, a digital infrastructure to distribute basic data). In purely technical terms, the application draws on a number of open-source elements in combination with basic data services. Valdemar is an RWD application that adapts to any size of screen. The only client specifications are a browser and internet access.

The fixpoint coordinate systems are described (in Danish) at sdfe.dk and Geodatainfo.dk.

2. **Select region** (default DK) Also reset map

The Danish National Grid System covers the Danish Realm. The app provides fixpoint information for Denmark, the Faroe Islands and Greenland. Point density and degree of detail are greatest in Denmark. The available selection of search criteria and systems varies in each of the three regions. Abbreviations correspond to the official national codes.

3. **Select search method** (default Fixpoint number)

**Fixpoint number:**

Here you can search by country number, which is the main number for fixpoints. The country number comprises a district, parish and serial number. If a fixpoint has an alternative number, it is also possible to search for this.

Example of fixpoint numbers for the same point: 117-06-00007 VEJL G.I.2210

You can also search for several points at once.

Example entry: 5-01-9002, 5-01-9003, 5-01-9004.

**Municipality number:**

Here you can search for a municipality number or name. This function has autocomplete, i.e. the system provides suggestions as you type.

**Shire:**

Enter shire number. Your search will be limited to one specific shire.

Example entry of district number: 111

**Parish:**

Enter shire and parish number. Your search is limited to one or more parishes.
Example entry: 111-11, 111-2, 111-6

Address:
Here you can search for fixpoints using a postal address. This function has autocomplete, i.e. the system provides suggestions as you type. The system essentially creates a bbox of 500 x 500 m. If you then want a larger bbox, create this by combining with the map extend search method.

Map extend:
Search for fixpoints within the current map section. Zoom in on the map to adjust map section size.

4. Fixpoint type (default Plane fixpoint)

Plane fixpoint:
Here you get every point that has a processed plane coordinate (a point may also be found at a Height fixpoint). Processed coordinates are either calculated or transformed and found in the database.

Height fixpoint:
Here you get every point that has a processed datum (a point may also be found at a Plane fixpoint). Processed coordinates are either calculated or transformed and found in the database.

Plane fixpoint and height fixpoint:
Here you get a subset, i.e. every point that has both a processed plane coordinate and a processed datum. Processed coordinates are either calculated or transformed and found in the database.

In the past, the historical fixpoint database was subdivided into plane and height fixpoints. These were the terrestrial measuring methods used before GPS became the normal measuring method used. With regard to the search criteria that are associated as attributes linked to individual fixpoints, this subdivision persists in the application.

5. Coordinate/Height system

Coordinate systems
Coordinate systems are shown with EPSG code and coordinate tag. The resulting coordinates are either processed or transformed "on the fly". Processed coordinates are either calculated or transformed and found in the database. In "on the fly" transformation, the database's transformation functionality and therefore PROJ4 are used to transform an attribute in the database.

All coordinates, except the historical system s34/45, combine ellipsoid height and datum in the result, if both are available.

GCR(EPSG 4346) is produced by means of transforming the plane coordinate as an attribute in the database + ellipsoid height.
Fixpoints that do not have a processed coordinate (this applies to many height fixpoints) will always have a position coordinate. Characteristic of position coordinates is that they do not have decimals. They are used exclusively to define a position on the map.

**Height systems**

Height systems are shown with height system tags.

When you use the region DK option, you can select the historical height system, DNN. The DNN codes are:
- Jutland – GM91
- Funen and Zealand – GI44 or KN44
- Bornholm – MSL

The application automatically selects the correct DNN code depending on the location of the points searched for.

The app automatically shows ellipsoid height (if any) although only for a plane fixpoint.

6. **Additional search criteria**

To adapt your search further, select additional search criteria and scopes.

6.1 **Options DK:**

- MV fixpoint Plane fixpoints established and surveyed for cadastre-related purposes.
- Other fixpoint DSB points, technical and exploratory points, etc.
- Auxiliary fixpoint Points used in the field which are not permanently marked.
- Lost fixpoint Point which is no longer physically marked in the field.
- Natural point Spires, chimneys, TV masts or other significant landmarks.

6.2 **Scope:**

- DK
  - GPS-compatible Can be used for GPS measurement. Field assessment.
  - DK10KMNET Subsection of REFDK. Approx. 10 km grid.
  - REFDK Primary plane fixpoint grid in DK. Approx. 40 km grid.
  - 3D Point measured using GPS. Therefore it has a "true" 3D coordinate.
GL
- REFGR Primary plane fixpoint grid in Greenland. 278 points.
- 3D Point measured using GPS. Therefore it has a "true" 3D coordinate.

FO
- FO10KMNET Primary plane fixpoint grid on the Faeroe Islands. 33 points.
- 3D Point measured using GPS. Therefore it has a "true" 3D coordinate.

6.3 Scope (DK only)(default all):

Quality P
Quality class for plane fixpoints. 0 – 3 Class 0 is best. Individual fixpoints are classified based on the following attributes:

Type code: Classified by benchmark type, surveying and calculation method.
MV status: Primary fixpoint classification based on purpose/use.
Standard error: Standard error for the coordinate from calculation of observations to it.

Quality H
Classification is under way.

7. Next screen
Here you can select either to view your results as a list or as markings on a background map

View list
Your selection of fixpoints as a list. At the top, number of points and system selected. You can download the list to a CVS file and by clicking the icons P or H, the fixpoint description opens.

View map
The fixpoints are shown with the following symbol 📍. Click on the icon to view a brief description of the fixpoint. Click 🌐 or 🌚 in the brief description to get the fixpoint description. Note: the point’s various numbers are displayed.
8. **Other functions**

**Background map** (Default skaermkort)
In region DK you can select either topo_skaermkort or orto_foraar from Kortforsyningen (map delivery service). In region FO select either topographic or orto. Region GL there is no choice yet, only topographic map.

**Geolocation**
To centre the map on the client's position, either the client's GPS device or IP address is used.

**Label** (Default off)
Choose to label the fixpoints with their numbers on the map. Select between the colour black or red, to improve visibility on the background map. Label can only be shown at max. 100 fixpoints in the current map section.

**Navigation on map**
From a PC, you can zoom in and out using the +/- buttons in the application. You can also use a computer mouse to double-click and scroll. On mobile touch screen devices, use standard finger gestures. The +/- buttons can also be used.

**Language**
Select Danish or English. Effective in info and mouse-over function.
Contact us

If you have any comments regarding the application or need help to use it, please do not hesitate to contact us. Email directly to the official mailbox of SDFE/Kontoret for Geografiske Referencer (Danish data supply and efficiency agency/Geographical Reference Office) GRF@SDFE.dk