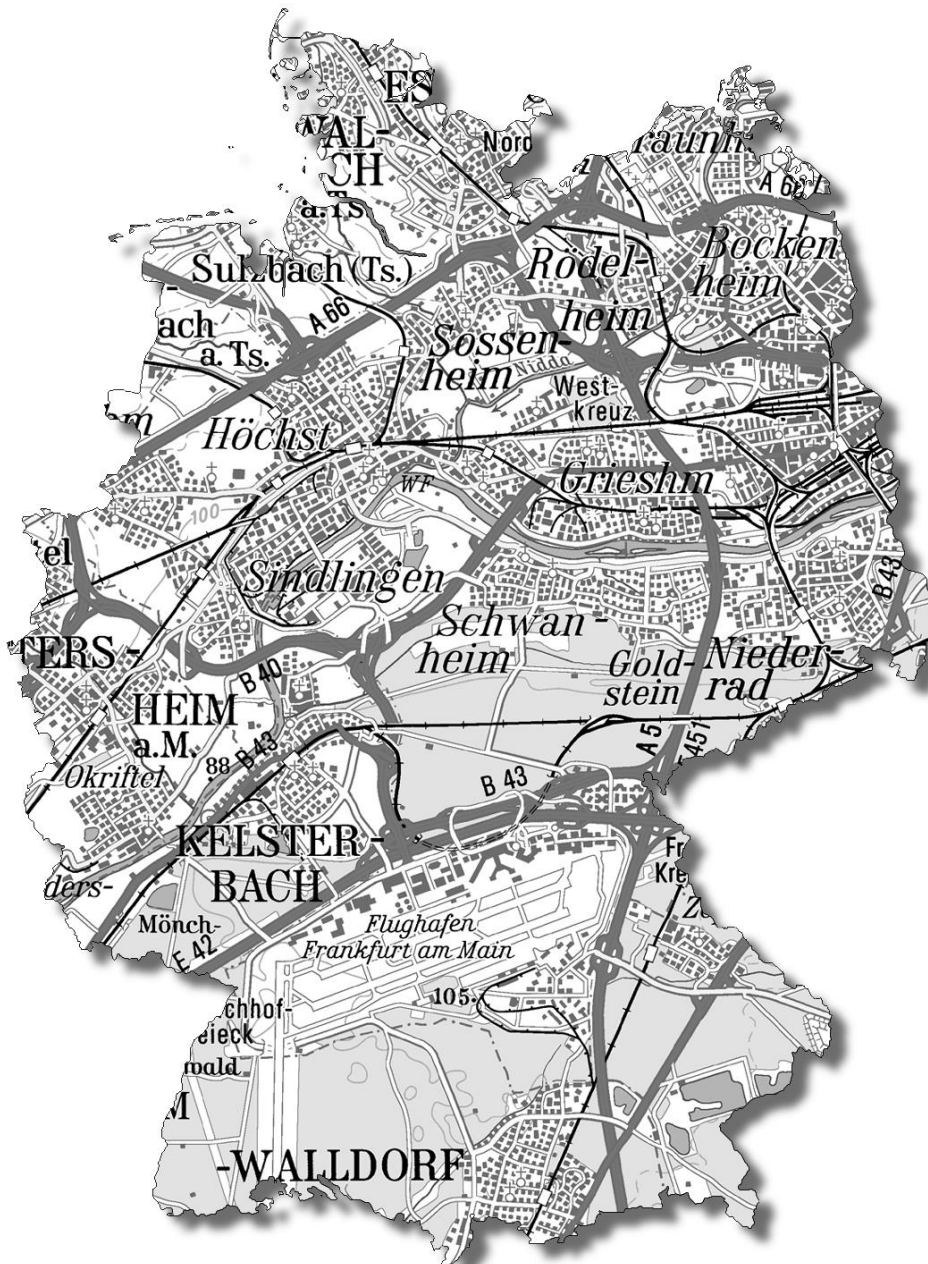




Digital Topographic Map 1 : 200 000, Preliminary Edition

DTK200-V



Documentation as of 02.07.2013

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1 Index of data sets

Product	: DTK200-V
Contents	: Georeferenced raster data of the „Topographischen Übersichtskarte 1 : 200 000“ (TÜK200) as 1 combined layer with the colour-coded map image and as up to 7 single layers , which are classified according to the map colours. (Map image without terrain representation by shadow relief)
Region	: Federal Republic of Germany
Spatial relationships	: In the sheet line system of the map TÜK200: - 58 single sheets In the BKG tiling systems of the different georeferencings: - ca 100 seamless tiles 80 km x 80 km
Georeferencing	: - Gauss-Krüger projection in the 2nd, 3rd, 4th or 5th meridian strip Bessel ellipsoid, Potsdam datum (origin of Rauenberg), Height system NN - UTM projection in zone 32 or 33 Ellipsoid WGS84 (here identical with GRS80), datum WGS84 (here identical with ETRS89) Height system NN - Lambert's conformal conical projection with two equidistant reference parallels 48°40' and 53°40' of northern latitude Ellipsoid WGS84 (here identical with GRS80), datum WGS84 (here identical with ETRS89) Reference centre: 10°30' eastern longitude, 51°00' northern latitude Height system NN
Up-to-dateness	: see metainformation system („Information on data“) under www.geodatenzentrum.de
Source	: - General Topographic Map 1:200 000 (Map image without terrain representation by shadow relief)
Production method	: - Scanning and digital updating of the raster data - Georeferencing and seamless data editing
Resolution	: 100, 160, and 320 pixels/cm i.e. 254, 406,4, and 812,8 dpi
Data formats	: TIFF LZW, colour depth 8 bit, RGB palette TIFF CCITT GROUP4, colour depth 1 bit (black-and-white)
Data carriers	: - at no charge as download and viewing service - with costs in ordering system (CD, DVD, FTP)

2 Description of data contents

2.1 General

The Digital Topographic Map 1 : 200 000, preliminary edition (DTK200-V), includes the raster data of the „Topographische Übersichtskarte 1 : 200 000“ (TÜK200) without terrain representation by shadow relief (hill shading).

The raster data are subdivided into several layers according to their cartographic content. The DTK200-V has 1 combined layer and 7 single layers.

The **combined layer** is a combination of the single layers and offers the complete colour map image of the TÜK200.

Colours and structure of the **single layers** for the DTK200-V are basically corresponding to the colours of the TÜK200. Further practical thematic attribution of individual map elements were made in some layers. The user has therefore the advantage of an area-wide availability for each layer.

The single layers of all Digital Topographic Maps distributed by BKG have an identical structure, except for some scale-dependent special characteristics.

More differentiating information is possible due in the resolution 160 and 320 pixel/cm to the 2 – 6 colour channels which are part of the single layers and to each are attributed certain cartographic elements. (see 2.2).

In the resolution 100 pixel/cm there is not this assignment of cartographic elements to defined color channels. In the interest of a graphic quality as good as possible this resolution is generated from the higher resolution by using inter-colors (antialiasing), where in the single layer up to 256 colors are applied.

It is possible to offer them as black-and-white raster data. In this case the layers 1, 2, 3, 5, and 7 are further subdivided by channel separation in order to distinguish the different brightness values of the standard print colours (see 2.2), so the number of layers may amount to a total of 15.

When using selected single layers, please note that the layers are ready for map printing and are therefore containing background removals, i.e. the cartographic symbols may have graphical gaps in order to avoid certain overlays with symbols of other layers.

2.2 Content and colour chart of the single layers by 160 and 320 pixel/cm

The following tables give descriptions of the content and the colour chart of each layer. The headline indicates the following:

- **Number of layer**, i.e. *Layer 1*,
- **Colour**, i.e. *black*,

Layer 1

Black

Channel	Content	Description	Particular characteristic
1	Railway traffic	Railways, cable railways etc	
	Shipping traffic	Shipping line: railway ferry traffic, railway/car ferry traffic	
	Air traffic	Airfield	
	Traffic buildings	Station, stop etc	
2	Lettering		
3	Particular terrain point	Spot heights	
5	Industrial development site	Industrial and commercial area	
0	Background		

Colour chart Layer 1

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1 - 3	0 0	0 0	0 0	black
5	212 83	212 83	212 83	grey

This layer will be delivered in the black-and-white format TIFF CCITT Group 4 in the form of the files l1k1.tif (including the channels k1, k2, k3), and l1k5.tif (including the channel k5), separately for each channel.

Layer 2

Situation brown

Channel	Content	Description	Particular characteristic
1	Boundaries	Country, federal Land, Regierungsbezirk, Kreis, nature reserve, military training area	
	Road traffic	Road, path	
	Shipping traffic	Shipping line: car ferry, regular services	
	Air traffic	Airport, taxiway etc	
	Settlements	Inhabited places, sparsely built-up	
	Buildings and other facilities	Church; fortified castle, castle; tower, radio engineering facilities; cave; mine; cross on the summit of a mountain; ski jump; monument; frontier wall and rampart; mineral pile; quarry etc	
	Facilities and buildings at water objects	Lock; water retaining works; lighthouse	
	particular terrain form	Dams, dikes	
	Non-built-up areas within settlements	Stadium; cemetery	
2	Rocks		
3	Sandy areas		
4	Built-up areas (centres)	Densely built-up centre	
5	Built-up areas	densely built-up areas	
0	Background		

Colour chart Layer 2

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1 - 3	102 40	51 20	0 0	situation-brown
4	102 40	51 20	0 0	situation-brown
5	180 70	128 50	102 40	light situation-brown

This layer will be delivered in the black-and-white format TIFF CCITT-Group 4 in the form of the files l2k1.tif (including the channels k1, k2, k3), l2k4.tif (including the channel k4) and l2k5.tif (including the channel k5), separately for each channel.

Layer 3

Blue

Channel	Content	Description	Particular characteristic
1	Inland water areas		
2	Sea areas		
3	Sea areas	Tidal flat	
4	Water	Shore-line of water areas (ocean, lake, pond etc) and important water lines (river, canal), other water lines (brook, ditch); contour within the range of glaciers or firn; arrow of flow direction; indication of water level; lettering, swamp (element ,wet ground')	swamp (element ,vegetation'): see L5K2
0	Background		

Colour chart Layer 3

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	102 40	186 73	255 100	lake-blue
2	204 80	255 100	255 100	sea-blue
3	242 95	214 84	170 67	tidal flat-brown
4	0 0	0 0	255 100	brook-blue

This layer will be delivered in the black-and-white format TIFF CCITT Group 4 in the form of the files l3k1.tif (including the channel k1), l3k2.tif (including the channel k2), l3k3.tif (including the channel k3) and l3k4.tif (including the channel k4) separately for each channel.

Layer 4

Relief brown

Channel	Content	Description	Particular characteristic
1	Terrain and special terrain forms	Contour, contour number; natural steep face etc	rocks: see L2K2 sands: see L2K3
0	Background		

Colour chart Layer 4

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	178 70	102 40	0 0	relief-brown

Layer 5

Green

Channel	Content	Description	Particular characteristic
1	Vegetation areas	Wood, forest, park cemetery	
2	Vegetation	Heath; vineyard; hops; peat cutting; swamp (element 'vegetation')	Swamp (element 'wet ground'): see L3K4
3	Boundaries	National park	
4	Lettering	National park	
0	Background		

Colour chart Layer 5

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	204 80	255 100	204 80	forest-green
2 - 4	0 0	229 90	0 0	tree-green

This layer will be delivered in the black-and-white format TIFF CCITT-Group 4 in the form of the files l5k1.tif (including the channel k1), l5k2.tif (including the channels k2, k3 and k4), separately for each channel.

Layer 6

Red

Channel	Content	Description	Particular characteristic
1	Boundary band	National border (Federal Republic of Germany)	
0	Background		

Colour chart Layer 6

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1	255 100	89 35	89 25	red

Layer 7

Red and yellow

Channel	Content	Description	Particular characteristic
1	Traffic class	Road mask long-distance traffic	
2	Traffic class	Road mask regional traffic	
4	Traffic class	Road mask long-distance traffic within boundary band	
5	Traffic class	Road mask regional traffic within boundary band	
0	Background		

Colour chart Layer 7

Channel	Red	Green	Blue	Colour
0	255 100	255 100	255 100	white
1 + 4	255 100	89 35	89 35	red
2 + 5	255 100	242 95	89 35	yellow

This layer will be delivered in the black-and-white format TIFF CCITT-Group 4 in the form of the files l7k1.tif (including the channels k1 and k4) and l7k2.tif (including the channels k2 and k5), separately for each channel.

2.3 Content and colour chart of the combined layer by 160 and 320 pixel/cm

The combined layer (L0) has the following colour chart and is created as indicated by combination of the black/white layers (L<i>L</i>) in order of the priority:

Channel	Red	Green	Blue	Colours	L<i>L</i>/channel	Priority	Principal contents
0	255 100	255 100	255 100	white	L<i>K0		Background
1	0 0	0 0	255 100	brook-blue	L3K4	1	Water
2	255 100	89 35	89 35	red	L7K1	2	Road mask long-distance traffic
3	102 40	51 20	0 0	situation- brown	L2K1	3	Boundaries, Road traffic, car ferry traffic, airport, populated places, buildings and other facilities
					L2K2,3	11	Rocks, sands
4	255 100	89 35	89 35	red	L6K1	4	Boundary band national border
5	102 40	186 73	255 100	lake-blue	L3K1	5	Inland water areas
6	255 100	242 95	89 35	yellow	L7K2	6	Road mask regional traffic
7	0 0	229 90	0 0	tree-green	L5K2 L5K3 L5K4	7	Vegetation, national park boundary, national park lettering
8	0 0	0 0	0 0	black	L1K1	8	Railways, cableways, shipping lines, airfield, ...
					L1K2	8	Lettering
					L1K3	8	Spot heights
9	178 70	102 40	0 0	relief-brown	L4K1	9	Contours
10	204 80	255 100	204 80	forest- green	L5K1	10	Vegetation areas (Wood, Forest, Park)

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Chan nel	Red	Green	Blue	Colours	L<i>/cha nnel	Priority	Principal contents
11	0 0	0 0	0 0	black			
12	212 83	212 83	212 83	grey	L1K5	12	Industrial and commercial area
13	204 80	255 100	255 100	sea-blue	L3K2	13	Sea area
14	242 95	214 84	170 67	tidal flat- brown	L3K3	14	Tidal flat
15	102 40	51 20	0 0	buildings- brown	L2K4	15	Population area (centre)
16	180 70	128 50	102 40	light build- ings-brown	L2K5	16	Populationd area

3 Data volume

The data volume of the entire data set amounts for the individual data formats to:

Specification	Data volume in MB	
	TIFF LZW	TIFF CCITT-Group4
Combined layer resolution 320 pixels/cm	1.200	-
Single layer resolution 320 pixels/cm	up to max. 570 (l2) total 2.200	up to max. 220 (l2) total 520
Combined layer resolution 160 pixels/cm	410	-
Single layer resolution 160 pixels/cm	up to max. 190 (l2) total 660	up to max 95 (l2) total 240

4 Sheet limits and BKG tiling systems

The 58 single sheets are offered in the sheet line system of the General Topographic Map 1 : 200 000 (TÜK200), i.e. one raster data file is produced for each layer of this map sheet.

Large seamless data amounts are supplied as tiling systems defined for a long term. Dependent from georeferencing, the data are grouped into square georeferenced partial areas. This is favouring the manipulation and the future updating of the raster data (by changing individual tiles) through the user.

Sheet and tile indexes are available at www.geodatenzentrum.de.

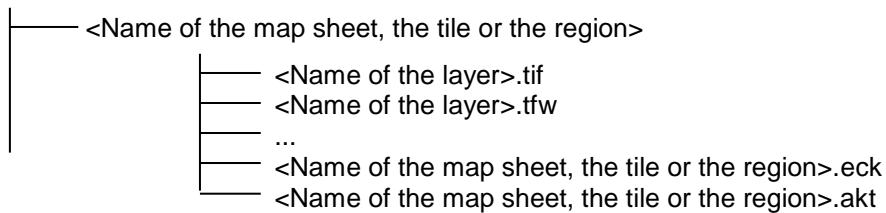
The DTK200-V is available as tiles of 80 km x 80 km. The tiles are numbered by lines and by columns, beginning top left with 00_00. Thus, e.g. the tile s3_06_08 is covering the 7th line and 9th column of the tiling system in the 3rd meridian strip of the Gauss-Krüger projection.

5 Description of data formats

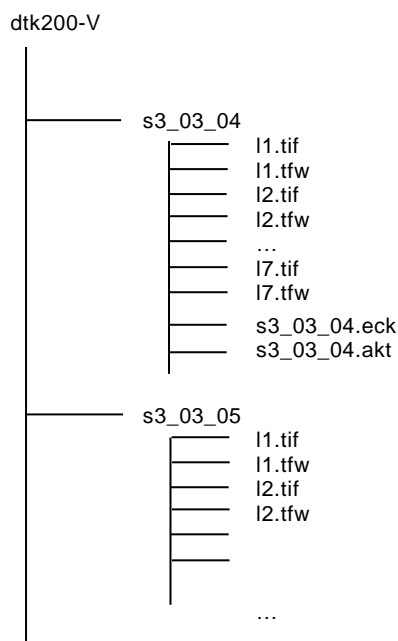
5.1 TIFF

The data will be delivered on the selected data carrier and will have the following directory structure:

<Name of the product >



Example:



The following *georeferencing information* is available for each raster index:

- ASCII file with the extension „.eck” with the corners of the TIFF file in pixels and the corresponding world co-ordinates, line structure:

X_Pixel Y_Pixel X_Welt Y_Welt

in the order of the corners: 2 3
 1 4

Pixel co-ordinate system: origin (0,0) in the pixel centre of the left lower pixel, positive x axis directed to the right, positive y axis directed upwards.

- corresponding Worldfile (file extension „.tfw”).

Colour coded data (the combined layer and the single layers as standard) will preferably be delivered as *packed LZW*. The TIFF format uses an integrated RGB palette. Colour depth is normally 8 bit.

Black-and-white coded data (single layers on special request) will be supplied as *CCITT GROUP4* package. The layers 1 to 3, 5, 7 will further be subdivided by channel separation in order to detect the different intensity values of the standard print colours (see 2.2).

6 Software

6.1 General note

The Digital Topographic Data are supplied in the unified data structures described above supporting also large data amounts. For typical manipulations of this data structure and for those manipulations which may sometimes be necessary the GeoDatenZentrum will supply to the users the software described below.

You will find the programs on each first data carrier delivered for your order, and also in the web under www.geodatenzentrum.de → *Software* for the operating systems UNIX (as Bourne Shell) and Windows (as EXE).

6.2 Flat storage of DTK

For small data amounts and for certain applications a “flat storage” of all data in only one directory may be suitable instead of a data storage in several directories.

The program *Flache_Ablage* is copying Digital Topographic Maps (DTK) from the subdirectories described in 6.1 into a common target directory. To store the files unambiguously into the target directory, the name of each relevant subdirectory is preceding them, e.g.: cc2334/I0.tif → cc2334_I0.tif.

You will find more information for the use of this program on our website and when starting the program.

6.3 Renaming of DTK

The program *Umbenennung* serves for renaming the individual layers of Digital Topographic Maps (DTK) within the subdirectories described above having the name of the sheet or tile. In the directory the colour coded combined layer is named I0 and the colour coded single layers are named I1, I2, While this uniform naming has some advantages for automated processing, it may in other cases be desired that the name of the layer should also include the name of the sheet or tile. The program is renaming all the layers by including in the first position the name of the directory, e.g. I0.tif → c1234_I0.tif.

You will find more information for the use of this program on our website and when starting the program.

7 Test data

Test data are available for download under www.geodatenzentrum.de → test data. Their contents and structures are processed in the same way like the data to be supplied and they are therefore very good suited for concrete test use.

8 Terms of use and acknowledgement of source

According to the Geodata Access Act (Geodatenzugangsgesetz) this data set is available at no charge via geodata services for download and online use for commercial and non-commercial use.

The use of geodata and geodata services is subject to the Verordnung zur Festlegung der Nutzungsbestimmungen für die Bereitstellung von Geodaten des Bundes (GeoNutzV, Regulation on the determination of terms of use for the provision of federal geodata) of 19 March 2013 (Federal Law Gazette 2013, Part I, No 14).

In particular, each user has to place the source remark to all geodata, metadata and geodata services visibly and optically connected. Changes, processings, new designs or other variations have to be provided with a change note in the source remark.

Source remark and change note have to be formulated as follows. When displayed on a web site, the source remark has to be linked with the URL "<http://www.bkg.bund.de>".

© GeoBasis-DE / BKG <year of last data supply>

© GeoBasis-DE / BKG <year of last data supply> (data changed)

Example:

© GeoBasis-DE / BKG 2013

9 Data supply

The data set is supplied free of charge in the most common specifications and as web service under

www.geodatenzentrum.de → *Open Data*

The data set can be ordered in further georeferencings in the Geodata Shop of the Service Centre against reimbursement of the costs. It can be provided on data carrier or via FTP:

www.geodatenzentrum.de → *Online Shop* → *Geodata Shop*

The extra costs for this are charged for by the BKG.

Orders may also be addressed to:

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Karl-Rothe-Straße 10-14
D-04105 Leipzig

Tel.: +49(0)341 5634 333

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Please find further information and more service at www.geodatenzentrum.de.