Instructions on Protecting Cables

Instructions on protecting buried telecommunications cables belonging to Telekom Deutschland GmbH when work is being carried out by third parties

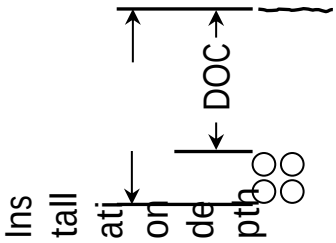


Produced and issued by Telekom Deutschland GmbH

Telecommunications cables as part of Telekom Deutschland GmbH's telecommunications network include all under- or above-ground telecommunications cable installations, including any related control and cross-connection points, masts and supports, cable shafts and cable duct pipelines and other technical installations required for the purpose of providing public telecommunications services (Article 3 (64) TKG [German Telecommunications Act]).
Underground telecommunications cables can easily be damaged when work is being carried out either on or under the ground in their vicinity. If they are damaged, the important telecommunications service provided by Telekom Deutschland GmbH for the public will be severely affected. Damage to telecommunications cables is punishable under Article 317 of the StGB. (German Criminal Code), including if it is the result of negligence. Furthermore, the person responsible for causing the damage will have to compensate Telekom Deutschland GmbH accordingly. It is therefore in the interest of everyone who carries out such work to exercise extreme care and, in particular, to comply strictly with the following rules in order to prevent the occurrence of any damage.

1. There is always the danger that telecommunications cables belonging to Telekom Deutschland GmbH will be damaged when any type of work is being carried out on or under the ground. This applies in particular to digging, paving and surfacing work, boring, excavating, the erecting of masts and poles, pile-driving, drilling and spiking.

2. Telecommunications cables belonging to Telekom Deutschland GmbH are not just found on or along public traffic routes; they also run through private property (such as, for example, fields, meadows, woods and house plots). Telecommunications cables are normally installed on a trench bottom (installation depth) at 40 cm to 100 cm.
With new cabling techniques such as trenching or other cabling processes (see page 8), telecommunications cables are also laid at depths starting at 7 cm.



However, positions in depth for telecommunications cables may vary due to crossings with other systems, subsequent changes to the surface cover as part of roadworks/streetworks and the like or other reasons.
Cables may run through conduits; they may be covered with a protective layer of clay or building stones or something similar; they may be marked with route warning tape made of plastic or by electronic markers; or they may be laid loosely in the ground. Conduits, cover and route warning tape made of plastic do not, however, protect telecommunications cables against mechanical damage. They are merely intended to draw the attention of anyone carrying out excavation work that there are telecommunications cables nearby (that is to say, they simply serve as a warning).

If telecommunications cables [1] belonging to Telekom Deutschland GmbH are damaged, the life of anyone coming into contact with them may be put at risk.

If, however, telecommunications cables belonging to Telekom Deutschland GmbH have an insulating outer cover and are undamaged, they pose no risk along their route.

Ground electrodes and unearthed cables (cables with a metallic outer cover) can be particularly dangerous during thunderstorms. Under DIN VDE (Association of German Electrical Engineers) 0105 Part 100, Section 6.1.3 Weather Conditions, work on such installations must be suspended during a thunderstorm.

Optical fibre cables are marked with a  symbol on their outer cover. Anyone looking into the optical fibre may suffer damage to their eyes. Whenever telecommunications cables are damaged, the following rule must be followed:
All workers must leave the danger area where the cable is damaged. Telekom Deutschland GmbH must be informed without delay by the fastest possible means so that the damage can be eliminated.

3. Before beginning work of the type designated in Section 1 on or in the ground, it must therefore be determined – on the internet at the address https://trassenauskunftkabel.telekom.de – whether and where telecommunications cables of Telekom Deutschland GmbH which could potentially be damaged by the work are located near the work site.

The design of the telecommunications cables is partially free of metal and provided with electronic markers. These markers (frequencies of the passive oscillating circuits according to 3M industrial standard 101.4 kHz) are also shown in the layout plan as and can be safely located with appropriate commercial detectors.

4. If there are telecommunications cables belonging to Telekom Deutschland GmbH and the planning documents are obviously incorrect or incomplete, illegible or misleading, or if the plan excerpt does not contain any information at all, neither a plan background nor visible routes, the responsible branch office must be informed in writing well in advance that the work is going to be carried out. In urgent cases, the information must be provided by telephone (+49 (0)800 3301000). If necessary, a representative can then be sent to the site so that further details about the position of the cables or installations can be provided.

5. Newly laid telecommunications routes are measured digitally (represented in blue). For this reason, the routes are represented differently in the planning information and are issued in two separate plans and one combined plan (for clarity).

Digitally measured routes and route points do not contain dimensions. Due to the strict separation of digitally measured routes from manually dimensioned routes, there may also be gaps in the associated plan excerpt.
These plans are not incorrect. The exact location can be determined manually using the true-to-scale representation.

All issued planning information must always be taken into account!

[1] The following are used, among others:
- Telecommunications cables (copper and fibre-optic cables)
- Telecommunications cables with remote power feed
- Cables (power cables) that supply remote equipment with power

6. If telecommunications cables belonging to Telekom Deutschland GmbH are unintentionally exposed and/or damaged, the branch office concerned must be informed without delay by the fastest possible means.
If a direct contact is not known, damage can also be reported via the “Trassen Defender” app (available in the Google Playstore and Apple Store), online at https://trassenauskunftkabel.telekom.de „Kabelschaden melden“ or under +49 (0)800/3301000.

Exposed telecommunications cables must be made safe and they must be protected from damage and theft. The excavation work being carried out at a site where there are exposed cables must be suspended until a representative of Deutsche Telekom arrives.

7. When work is being carried out in the vicinity of buried telecommunications cables, pointed or sharp tools (such as drills, pickaxes, spades and crowbars) may only be used if steps are taken to ensure that they can only penetrate the ground to a depth of no more than ten centimetres above the telecommunications cable in question. Blunt implements, such as shovels, must be used for any further work. They must be used with care, and they must be kept as close to the horizontal as possible. Pointed implements (such as spikes and stakes) may only be driven into the ground above telecommunications cables if they have a permanent fixed plate or crossbar to prevent a too deep penetration and thus safely rule out damage to the telecommunications cables. The position may vary, and groups of cable conduits may be wider than expected. For this reason, the same rules must be applied fifty centimetres to the right and left of the telecommunications cable. When mechanical building equipment is being used in the vicinity of telecommunications cables, care must be taken to ensure that it is kept at a safe distance from the telecommunications cables so that they cannot be damaged. Special care must be taken if the position or the depth is not known. If necessary, a cross-section must be carefully cut out so that the route of the telecommunications cables can be determined.

8. In trenches where cables have been exposed, the earth must first of all be replaced to no more than the height of the cable support and it must then be firmly tamped down. When this is being done, care must be taken to ensure that the cable support is smooth and free of stones. The cables must then be covered with ten centimetres of loose earth that is free of stones, and this must also be tamped down. The tamping must be done very carefully, and wooden tampers must be used to begin with. If the earth that has been excavated is not suitable for filling in the trench, sand must be used in-stead. Cables can be easily damaged if stony ground immediately above them is tamped down.

9. When water ducts around which telecommunications cables are laid are being cleaned, the equipment must be used with care so as to ensure that the telecommunications cables are not damaged.

10. Any person or firm carrying out excavation work must take all necessary care. In particular, temporary staff drafted in to help with the work must be fully instructed and briefed in order to avert the risk of damage to telecommunications cables that is always present during excavation work. Only in this way will they be able to avoid having to pay compensation for damage.

11. The fact that a representative of Telekom Deutschland GmbH is present at the excavation site will not affect the responsibility of those carrying out the excavation for any damage they have caused to telecommunications cables belonging to Telekom Deutschland GmbH. The representative of Telekom Deutschland GmbH will have no authority to issue instructions to the employees of the firm carrying out the excavation work.

12. Please note that subsequent building work may change the depth at which the telecommunications cables are laid! Large deviations in the position of the cables must be expected in the area of connecting sleeves, duct interruptions and cable groups!
Special attention has to be paid to the area of cable entries from multi-function casing, cable branching devices and other distribution units.

13. Deviations in the location from the plan excerpt may occur. Persons carrying out construction must take into account any changes to reference points or building lines made in the interim. Measurements provided in as-completed plans are current as of the time of installation.

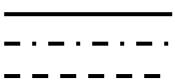
14. Deviations in the location of measurements outlined in the plan excerpt may occur. Measurements provided in as-completed plans relate to the time of installation. Persons carrying out construction must take into account any changes to reference points or building lines made in the interim.

15. The additional plan excerpt for digitally measured routes and route objects does not contain dimensions. They can be determined manually by the person carrying out construction based on the reference points in the background map. The distances determined in this way are true to scale for the digitally measured routes and route objects. Incorrect usage of the measurements lies outside the responsibility of Telekom Deutschland GmbH.
The combined printout contains both manually measured routes (in black) and digitally measured routes (in blue). This printout is used solely to provide a full overview of all existing routes. There are no true-to-scale drawings! The exact route location can only be found in the separate plans (analog/digital).

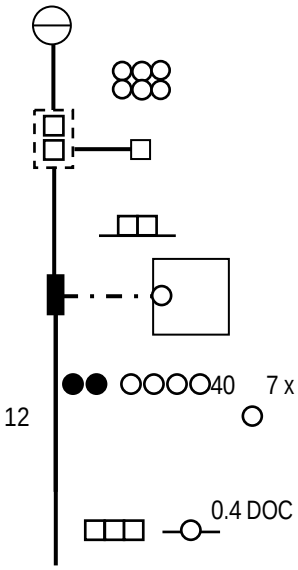
Symbols and abbreviations used in the Telekom Deutschland GmbH ground plans

Produced and issued by Telekom Deutschland GmbH	Date: 01/03/2024

The following symbols can be coloured both black and blue.
Blue indicates a digitally measured object
(specifically in this case, show the word “blue” in blue).



Cable conduit routes with minimum one conduit
Cable routes; all cables buried
Overhead lines



Operational building

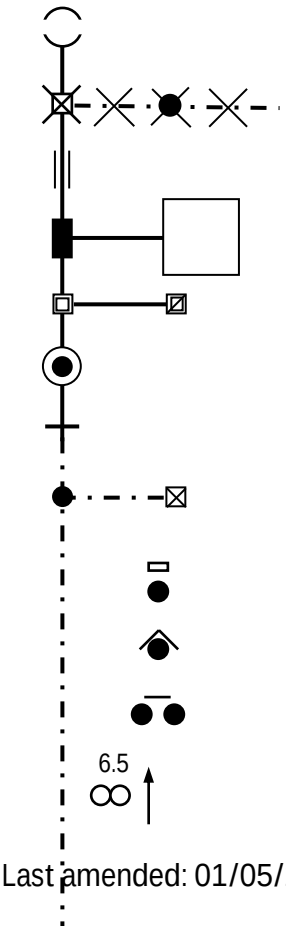
Group of cable conduits made of 2 x 3 cable duct conduits (external diameter of the cable ducts: 110 mm)
Cable shaft with 2 manholes
Cable shaft with 1 manhole

Cable duct made of purpose-made cable duct tiles, with 2 air vents

Junction box with buried cable to the APL line termination point in the building

Cross-section of the telecommunications installation along a route:
In this case: 2 buried cables and 4 plastic conduits (external diameter: 40 mm) and a 7 x 12 SNRV

In this case: 3 purpose-made concrete tiles and 1 double steel half pipe with a depth of cover of 0.4 m



Breakpoint in the conduit

Part of a disused cable shaft remaining in the ground, with buried cable not in operation and disused junction

Breakpoint in the conduit bridged with half conduits or screw-clamp fittings

Junction box/underfloor container with empty cable duct leading to the house

Cable shaft, closed/cable shaft, closed and electrically protected

Cable fanouts/glass fibre power distributors/feeding points, 230 V AC

End of conduit, start of buried cabling

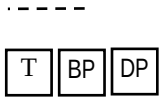
T-joint with buried cable to the telephone cabin, booth, hood, pillar or telestation

Telekom cable laid straight in the ground; covered
- with building tiles or cover plates (may also have a double cover)

- with cable cover hood

- two cables with yellow route warning tape

2 cable conduits made of plastic, steel, galvanized steel or concrete;
6.5 m in length from the broken line in the direction of the arrow



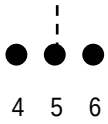
Cable tag (made of plastic) or marking stone (made of concrete)



Cable tag with electronic marker



Electronic marker without cable marker (buried)



A broken line marking the axis used as a reference for all measurements showing the distance to
the group of cables (cables no. 4 to 6).



Warning of danger from remote feed if the limit given in VDE 800, Part 3 is exceeded and local feed with 230 V (AC)/400 V (DC)
Hazard due to
operating voltage



Short-term influence by thunderstorms



Short-term influence from electrical energy systems < 3 seconds



Long-term influence from electrical energy systems ≥ 3 seconds



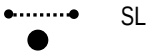
Operating voltage and short-term influence by thunderstorms



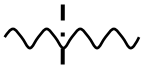
Operating voltage and short-term influence by electrical energy systems < 3 seconds



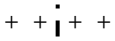
Operating voltage, long-term influence and possibly short-term influence



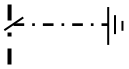
Screen conductor over buried cable



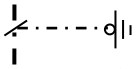
- Non-Telekom power cable/Non-Telekom telephone cable (+text)



- Pipeline for liquids or gases (gas, water, oil or district heating)



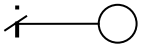
Ground electrode made of copper rope/galvanized steel wire used as surface ground electrode



Surface ground electrode with terminating deep ground electrode (earthing rod)



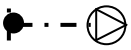
Device to protect against corrosion/potential measuring or balance point in terminal distributor pillar



Buried cable measuring point



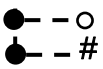
Trough sleeve connected by branch cable with intermediate regenerator in direct proximity to a sleeve/an amplifier housing



Sleeve with a trough sleeve connected by branch cable with intermediate regenerator at a distance of > 2 m to a sleeve



Pole, start of the overhead line



Terminal point of the APL line network copper
Glass fibre terminal point (GF TP)



Vorkriegstrasse (“pre-war street”) Buried cables or outer pipes laid in this section of route were laid before 1946 or the date the cabling was laid is unknown.

Instructions for reading the planning information

Plan excerpt for routes measured using analog means

Only measurements outlined in plans (not drawings!) provide an indication of the location of depicted telecommunications cables (please note: The drawings are not to true to scale!). Measurements on cable conduit groups refer to the centre of the cable duct cover. All dimensions are shown in metres.

Plan excerpt for routes measured using digital means

Digitally measured routes (shown in blue) are issued as a separate plan excerpt with ALKIS data as a background map.
In this plan excerpt, the drawings are true to scale. The exact location of the route can be determined manually by the person carrying out construction.

Combined plan excerpt

If the combined printout is used, it contains the routes measured using digital (blue) and analog (black) means. This representation is used solely as an overall representation of the routes. The representation is not true to scale, and dimensions and scale calculations cannot be used to determine the correct route location.

General information

Note: Generally speaking, telecommunications cables are always laid continuously between two termination points, even if an interruption is represented in the individual plans!

Any gaps in the route which may arise in the issued plan excerpts can be completed using the combined printout or the analog plan excerpt.

Telecommunications cables are shown as being unifilar in the layout plan. The actual scope of the system is specified in the cross-section plan.
Planning information must be obtained in an appropriate scale. All details contained within this planning information (dimensions, route cross-sections, etc.) must be clearly recognisable and legible.

Places where power cables and pipelines intersect or join have only been shown if they were found during work on the telecommunications cables or if they become known later on in some other way.

Surface characteristics and their abbreviations can be found in DIN 18 702 “Symbols for survey sketches, large-scale maps, and plans”.

If no information on the type of installation and the laying depth or depth of cover is stored on the route sections, the instructions shall apply in accordance with Section 2.
If the information deviates from Section 2, the route sections shall have a marking consisting of 1 to 3 indications:

- Type of installation
- Installation depth or depth of cover
- Hazard due to tension or influence

Example: VP 0.8 ⚡

Cable ploughed in with laying plough
Installation depth: 0.8 m
Hazard due to operating voltage

Example: TR4 DOC 0.3

Pipe/SNRV installed by trenching depth of cover: 0.3 m

Example: TR4 0.4 DOC 0.1

Pipe/SNRV installed by trenching
Installation depth: 0.4 m
Depth of cover: 0.1 m

The marking of the installation type and the installation depth on the routes will be successively changed from a manual to an automated representation. For this reason, two different representations can be found in the planning information:

Marking of the type of installation

Abbreviation	Type of installation	Old abbreviation
MT	Trench/underground cable route with shallow depth Route with unknown location	MT1
TR1	Conduit/SNRV installed by trenching; installation depth: 7–12 cm	
TR2	Conduit/SNRV installed by trenching (saw process); installation depth: 20–30 cm	MT2
TR3	Conduit/SNRV installed by trenching (milling process); installation depth: 20–30 cm	MT3
TR4	Conduit/SNRV installed by trenching; installation depth: 30–50 cm	MT4
VP	Cable buried with pipe-and-cable-laying plough	VP
VP	Conduit buried with pipe-and-cable-laying plough	VP
BV	Conduit installed by soil displacement	BV
SCH	Shooting route	
SB	Conduit installed using directional boring	SB
BS	Drilling route	
BR	Conduit guided to or in a bridge	BR
TN	Cable in a walk-in tunnel	TN
DÜ	Pipe in a culvert	DÜ
MVAK	Cable which is laid in a sewer	MVAK

MVFK	Cable which is laid in a fresh water canal	MVFK
PRIV	Conduit laid by the customer	PRIV

The new automated representation is in the “Abbreviation” column, and the previous one in the “Old abbreviation” column.