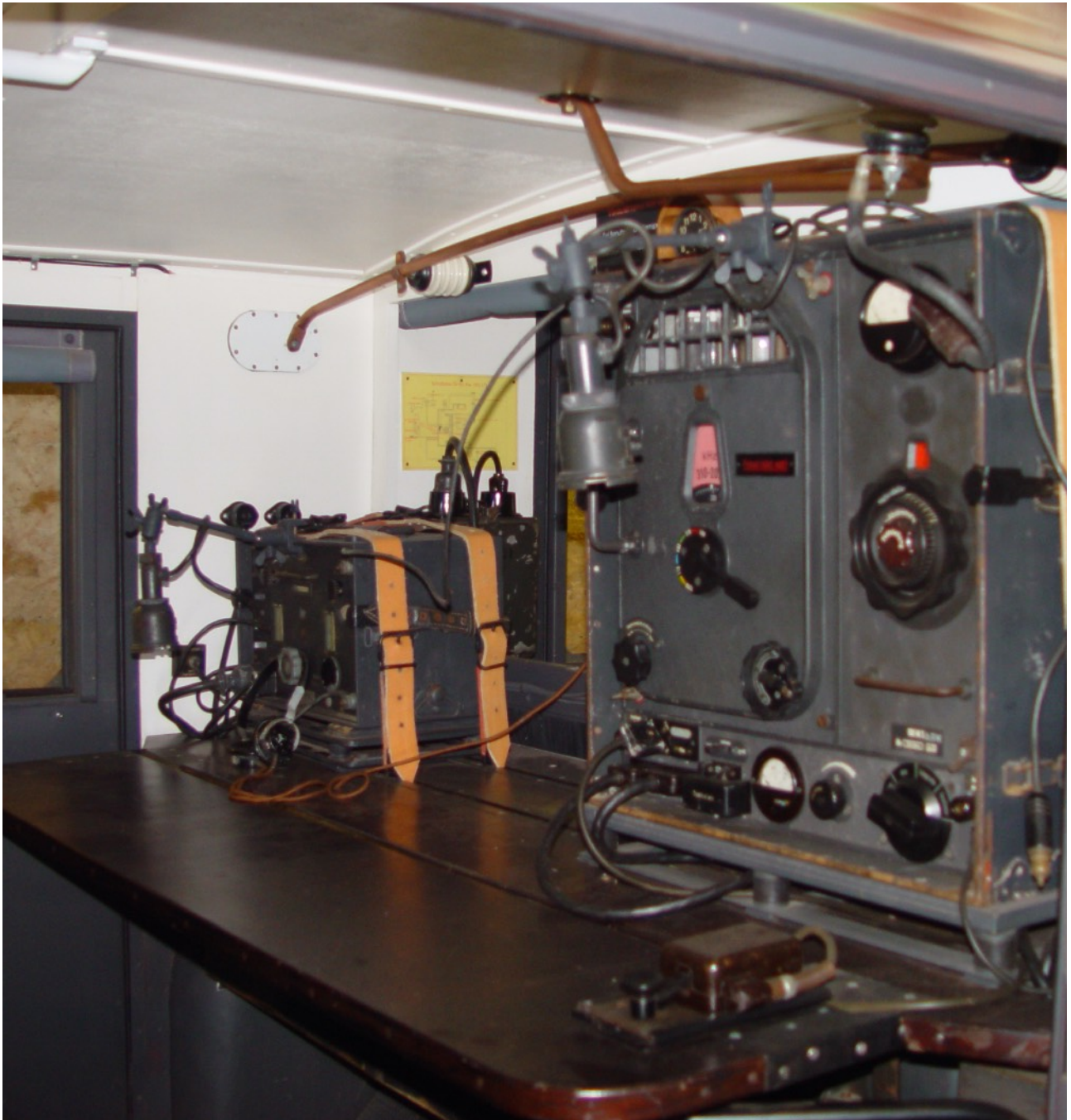# Lamps and lighting sets used by the German communication troops in WW2

Caption

Introduction

The communication troops in WW2 had to maintain connnections day and night. The troops would have been trained to use their equipment blindly.

Whereas the operation of the radios could largely be performed in the dark, doing the associated paperwork would have been another matter. Operating in morse code would require text to be written down, en- or decryption of messages and reading and writing messages in clear text. Larger stations were obliged to keep logbooks for all radio traffic. So radio stations positioned inside vehicles, dugouts, tents or buildings had to be provided with sources of light.

The portable radio teams using the Tornister Funkgeräten (Torn.Fu's) probably only needed a flashlight to do most operations but for the larger installations more suitable lighting systems were needed. Many photographs exist, mainly where communication posts have been set up in existing buildings, where standard civilian type electric lights are used. For use in the field, the communications troops were issued with a number of specific lighting systems, both fuel based and electrical. This document aims to describe these lighting systems and their application.

Pertrix flashlight, typical of the many types used by the German armed forces in WW2. The "Tornister Funktrupps" would have used these to assist their night time operations.

Tg2 electrical light for the Torn.E.b

The Tg2 is a small 2 Volt clamp on light fitting that can be clamped onto the rim of the box of the Torn.E.b receiver. It has a rubber cable with two cable hooks which can be connected to a 2B38 radio battery.

The cable is long enough to reach the battery in the attached "Zubehör" box of the Torn.E.b. When tried on other portable radios like the Torn.Fu.d2 or Torn.Fu.b1 the cable is too short so it is likely that the Tg.2 was designed specifically for the Torn.E.b.

The lamp consists of a metal clamp and a rod connected to the lamp with two articulated joints. The metal shade is screws onto the bakelite lamp holder, the lamp is switched on and off by rotating the knurled section of the holder. The shade is painted white on the inside, dark grey on the outside and is marked Tg2 in white. All surviving Tg2 found to date are 1941 dated. It is not entirely clear what "Tg" stands for, unless it was just the first and last letters of "Tornisterbeleuchtung"; the 2 stands for the Voltage used.

No documentation describing the Tg2 has been found so it is not clear if it was just loosely stored in the Torn.E.b "Zubehör" box or if it came in its own storage container. It appears to be a stand alone item that was not issued as part of a larger set.

The Tg2 lamp for the Torn.E.b radio. Note the two cable hooks fitted to the end of the cable to connect the lamp to a 2B38 battery

The Tg2 fitted to a Torn.E.b receiver. The cable is just the right length to reach the 2B38 battery in the "Zubehör" box

The white painted interior reflects the light of the 2V bulb

Two articulated joints and a clamp allow the lamp to be postioned in front of the receiver

Zbg.N12 radio car and tent lighting set

The "Zeltbeleuchtung Nachrichten 12" was a three-lamp radio lighting set operating on 12V. Each lamp has a Bosch 12V plug which connects to the Bosch 12V sockets in the vehicle. No cabling or connection equipment was provided for use outside a vehicle, so a separate "Schalt Anschluß (Fu) b" and battery would be required to use it in tents. The complete Zbg.N12 set consists of:

1 box "Zgb.N.12"
3 lamps "Zbg.N.12" each with a white glass filters and 15W 12V lightbulb
3 lamp brackets (Fu) a
4 Blue glass filters
3 spare light bulbs

The light shade of the lamp is designed to shine a diffused light downward on the working area in front of the radio but a "window" is sometimes cut out of the side of the lamp shade to light up the faceplate of the radio. Several versions of the lamp can be found either with or without cutout window, or with an adjustable slide for the window. Early versions were painted in greenish "field grey" while wartime examples are painted dark grey. The glass filters are held in place with a spring clip so that the white filter can be exchanged for a blue one if low light conditions are required. the lampshade is maker marked "ErGi", the year of manufacture and Wa.A. stamp.

The lamp screws onto the bracket which like the Tg2 has two articulated joints and a clamp to fasten the bracket to the box of the radio.

The Zgb.N12 was issued with the Kfz.17 radio vehicle. Two of the lamps were used to connect on the transmitter and receiver, while the third lamp could be clamped to a bracket on the right front door over a foldable table used for en- or decryption. The vehicle is equipped with 12V Bosch sockets in the dashboard and on the sidewalls of the radio compartment.

The Zbg.N12 lights used in a Kfz.17 radio car. The lamps mainly illuminate the table top in front of the radios to assist the reading and writing of messages forms etc.

Zbg.N12 box

The complete Zbg.N12 with lamps stored in the box

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Lamps and lighting sets used by the German communication troops in WW2

Three different shade types: (l) early type without "window", (m) type with sliding "window" and (r) type with open "window"

Early type with stamped markings and later type with stencilled markings

Lamp brackets (Fu) a

Complete set of lamps for the Zbg.N12

Schaltanschluß(Fu)b which could be used to power the lights outside a vehicle, note the two Bosch sockets at the bottom

Fu 82 "Zeltbeleuchtungsgerät" tent lighting set

Using similar components, the Fu 82 is a larger set compared to the Zbg.N.12. It has four lamps and apart from two lamp brackets (Fu)a contains a set of four large swing arm brackets for the lamps. These swing arms have attachments so that they can be clamped around the tent poles. Four special extension cables fitted with Bosch 12V plugs and sockets allow the lamps to be distributed around the tent. The lamps can either be supplied directly from a 12V battery, or from a special 220V mains transformer

the complete Fu 82 "Zeltbeleuchtungsgerät" consists of:
1 carboard container for glass filters
1 cardboard container for fuses
Lamps:
4 Zbg.N.12 lamps, each with:
1 white filter glass
1 12V, 15W bulb
4 2V, 15W bulbs (spares)
4 Swing arms (Zbg. N)
2 Lamp brackets (Zbg. N)
Filters (Spares):
5 Blue filters for Zbg. N12 lamp
1 White filter for Zbg.N 12 lamp
Fuses (Spares):
6 40 A fuses
6 15 A fuses
1 Transformer (Zbg.N), 220/120-12 V, 100 VA with:
1 15A fuse
6 Extension cables, 1,5m long with with Bosch plug and 2 Bosch sockets
Battery in transport box (Zbg.N):
1 12 B 60 battery with contact clamps
1 Transport case (Zbg.N) with:
1 40 A fuse

The lack of references in vehicle manuals and the swing arm clamps that can only be fitted to tent poles makes it likely that the Fu82 was mainly issued with tent equipment, in particular the "grosse Nachrichtenzelt" (large communications tent).

Complete FU82 "Zeltbeleuchtung" set

Contents of the FU82 "Zeltbeleuchtungs" set, showing lamps, transformer, extension cables, lamp brackets and swing arms

Detail of the Bosch plug and socket

Swing arm clamps, suitable to fit to tent poles

The Zbg.N.12 lights could either be powered from the Zbg.N mains transformer…

… or the lights could be powered from a Zbg.N battery box.

Lamps and lighting sets used by the German communication troops in WW2

Fu82 case markings

The Fu82 and Zbg.N battery box have the same width and height so that they can be fitted in a single storage compartment

"Einheits Laternen" lighting sets.

The "Einheits Laterne", as the name suggests, was the German army standard multi purpose lantern and were used by different services. The communications troops used a few specific lantern sets, two of which will be highlighted here, the lantern set carried in the Fu71 "Vorrat" box and the Fu51 "Laternen" set for radio vehicles.

The "Einheits Laterne" existed a pre-war brass version, bakelite and late war steel versions. It had accessories so it could be use candles, trench lights or carbide for fuel. They were not designed to specifically fit to radio equipment but could be placed or hung near the equipment to light up the work area. A series of blinds and filters could be used to control the light output.

Bakelite type "Einheitslaterne"

Fu71 "Vorrat

The Fu71 "Vorrat" box was used by mountain troops to carry spares and accessories for the Torn.Fu.d2 radio station. Amongs other accessories, the Fu71 contained one "Einheitslaterne", one carbide storage box and an accessories box for the "Einheitslaterne". The accessories box contains adaptors for the use of candles and trench light, candles, filters and blinds and spare burners and gaskets for the acetylene generator.

The FU71 case contained spares for the Torn.Fu.d2 radio equipment as well as a "Einheitslaternen" set

The "Laterne" set carried in the Fu71 consisted of a lantarn, a carbide container and a spares box

The spares box contains candle conversion with candles, spare glasses, blinds and filters and spare carbinde burners and gaskets

Fu 51 "Laternen"

The Fu51 "Laternen" box contains more of the same equipment. It holds two complete lanterns with a larger store of candles, trench lights and two carbide containers. It contains a larger accessories box with filters and spares etc. for two lanterns.

The Fu51 box was issued with the Kfz.17, Kfz.61 and Kfz.71 radio vehicles.

Fu51 box with two "Einheitslaternen", carbide containers, candles and bunker lights and spare parts box

Fu51 with lantern removed showing the stowage of the hook and candle burner

Spares box in the Fu51 with candle tubes, spare burners, gaskets and grease containers. In the Fu51 held an electric torch, a spare 4.5 V flashlight battery and bulb

"Midgard" radio vehicle lamp

Larger radio vehicles such as the Kfz.61, Kfz.72 and Kfz.305 were fitted with larger swing arm lamps. These lamps were a special 12 Volt version of the industrial types made by the Midgard firm. Although the lamps appear similar to their industrial types, the lamp stem, body and shade are a unique design for the 12 V vehicle version. The lamp has a triangular base plate that slides and locks into a similarly shaped bracket fitted to the wall of the vehicle, this way the lamp can be moved to different positions in the vehicle as required. The lamp uses a 12V Bosch plug to connect to the vehicles 12 Volt supply. The larger radio vehicles typically have a special 12V transformer unit that is connected to a 220V ac supply (either from the grid or from a generator) so that the lights can be supplied for longer periods without draining the vehicle's battery.

Midgard 12V radio vehicle lamps with mounting brackets. Pre-war manufacture (right) and wartime manufacture (left)

Typical fitting of the Midgard radio lamp over the radio equipment in a radio vehicle

Midgard logo on the lamp bracket

Bosch sockets and plug as fitted in vehicles

The "triangular" mounting plate and socket. The mounting plate slides into the socket and is secured with the crew knob.

Unterkunfts-Beleuchtung (Transportierbar)

For provision of more permanent area lighting of tents, dugouts or damaged buildings, a "Unterkunfts-Beleuchtung" (accommodation lighting) set was available. The set could be equipped with either 12V or 220 Volt lightbulbs. Six lamp fittings, extension cords, fuse box and fixing materials war supplied in a transportable box. A number of adapter cables allowed the electrical network to be plugged into a battery, a standard mains plug socket or be screwed into an existing lamp socket. The lamp sockets are designed to be hung, so supports had to be found on the wall or ceiling. If this was not available, the set provides steel cable and wall hooks so that support cables can be fitted to the accommodation. Its plugs and sockets are of a special coaxial design, rated for both 220V low current or 12V high current use. These plugs are sometimes confused for antenna plugs but they seem to be specific for this lighting set.

The complete Unterkunfts-Beleuchtung set consists of:
1 adaptor plug for Edison sockets
1 supply cable, 1 meter long with standard mains plug
1 supply cable, 1 meter long with battery plug
1 distribution box with connection sockets and fuse holder
6 distribution cables with cable and socket, 2 x 8 meter long, 2 x 4 meter long 2 x 2 meter long
6 lamp socket cables 2 meter long
15 12 Volt 5 Watt bulbs
3 12 Volt 10 Watt bulbs
6 lamp shades
50 meter suspension wire
25 meter friction tape
50 steel hooks
50 wire hooks
20 wire loop hooks
6 fuses
6 wire shortening clips
1 small hammer
1 combination pliers
1 gimlet drilll 4mm
1 screwdriver 4 mm
1 screwdriver 6 mm
1 cable knife
1 stone drill
1 key for plugs and sockets

The Unterkunft-Beleuchtung (Transportierbar) was not specific to the communication troops but was probably used by any troops requiring well lit accommodations such as HQ's, field hospitals etc. It was probably carried in the supply train of the division and could be called forward as and when required.

Unterkunftsbeleuchtung transport case

Complete Unterkunftsbeleuchtung set

Light fittings, cable splitters and extension cables

The light fittings are hung from special support brackets holding the cable splitters and cables

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Different connectors are supplied to plug into a wall socket, battery or an existing light fitting

A fuse box is provided for use with a battery

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The six lamp sockets are stored in the bottom of the box

A set of drawers contains spare bulbs and fixing materials with cable splitters stored on top