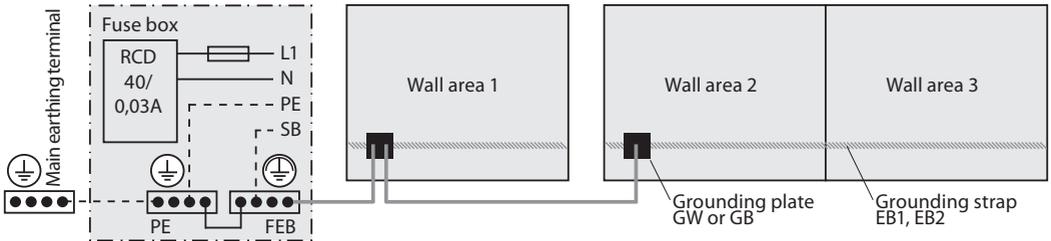


Installation of a functional equipotential bonding to a fuse box



Important safety guidelines

Large shielding measures with shielding materials are no electrical equipment but „new conductive parts“ according to IEC 826-03-03 or IEC 195-06-11 and thereby a new method of DIN VDE 0100-100:2009-06. By connecting the material(s) to the potential equalization they are inherent part of the electrical system. Generally accepted rules of technology have to be respected.

The state of the technology differentiates between protective equipotential bonding and functional equipotential bonding (FEB). The protective equipotential bonding (green/yellow cable) is a protective measure and ensures that, in the event of a fault, sufficient fault current flows to operate the disconnection device (e.g. line circuit breaker). **The functional equipotential bonding (transparent cable) has the function to „reduce the emission of low-frequency electrical fields“, i.e. prevents from leaking electrical field.**

- 1 Grounding/earthing measures are only permitted in TN-S, TT and IT networks. Grounding measures must never be executed in network forms with combined PEN-wiring!**
- 2 A leakage/fault circuit breaker with ≤ 30 mA must be installed!**
- 3 DIN EN 62305-3 (VDE 185-305-3:2006-10) applies to buildings with outer lightning protection system.**

Proper grounding sequence

- 1** The FEB-balancing circuit has to be connected **directly to the FEB-busbar with a 4 mm² cable** in the electrical circuit distributor (fuse box).
- 2** In exceptional cases, the FEB-balancing circuit can be connected with a **2.5 mm² cable** to a „suitable protective earth conductor or balancing line“ in existing installations.
- 3** Grounding with our **grounding plug GP** by screwing in the power socket. Grounding is to be completed by a licenced electrician!
- 4** Less recommended are our grounding rods GR50, GR100. It is nevertheless possible to use them in network forms with combined PEN-wiring. Please be sure to follow all local laws and standards.

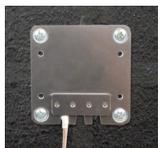
Our grounding system

Many of our grounding components can be connected to each other with our grounding cables GC. The 4 mm gold plugs are fixed very firm and **contact safe** in the tight 3.8 mm connectors. Many grounding plates includes covering caps, that serve as **protection against an accidental unplug of the cables.**

Grounding plates Wall GW / GB

Grounding plates for shielding paints, nettings and fleeces for interior use. Per series of connected areas there is one GW / GB required.

- 1** Mounting at an easily accessible point, close to the final ground connection.
- 2 Drill 6 mm holes.** Make sure you do not drill cables!
- 3. 1 For shielding paints:** Stick **grounding strap EB2** as shown under „Grounding straps“. **Paint the area with the shielding paints** as recommended in the corresponding technical data sheet. After drying, apply a second coat under and around the plate. **Let it dry.**
- 3. 2 For nettings, fleeces:** Stick **grounding strap EB** as shown under „Grounding straps“. **Adhere the materials on the area with some overlap** as recommended in the corresponding technical data sheets. Our dispersion glue DKL90 is electrically conductive, why there is a low electrical resistance after drying, which is necessary for proper grounding. This also applies to various wallpaper paste, but there is no guarantee on that! **Let it dry.**
- 4 Insert dowels and screw down the plate tightly.**
- 5** Make sure, that the grounding plate is not overpainted! **Overpaint the area with commercial wall paints**, wallpapers or use fine plaster as recommended in the corresponding technical data sheets.
- 6** Insert the plugs. Clip on the covering cap, that serve as protection against an accidental unplug of the cable.



Grounding plate Exterior GE

Grounding plate for shielding paints for exterior use. Per series of connected areas there are two GE required.

- 1** Mounting at an easily accessible point, close to the final ground connection.
- 2** The **underground has to be smoothed** on 20 x 20 cm with a fine filler (fine mortar) that is suitable for your facade. It is important that the plate has an absolute plane underground for a good contact to the shielding paint. **Let the fine filler dry.**
- 3** **Drill 6 mm holes.** Make sure you don't drill cables! **Insert dowels.**
- 4** **Paint the area with the shielding paint,** as recommended in the corresponding technical data sheet. After drying, apply a second coat under and around the plate. **Let it dry.**
- 5** **Bolt down the cable lug with the grounding cable** tightly on the plate. Don't forget this, it's not possible subsequently!
- 6** **Screw down the plate tightly. Seal the edges of the cover cap** with the included waterproof glue. Clip on the cover cap.
- 7** **Paint the area with water-repellent facade paints,** as recommended in the corresponding technical data sheet.
- 8** The grounding of facades has to be included in the potential equalization of the building to which the lightning protection systems are connected to as well.



Grounding plate Tube GT

Grounding plate for earthed installations (e.g. heating tubes).

- 1** Put the plate on an unisolated position of the (heating) pipe and screw it down with the both worm drive clamps.
- 2** Insert the plugs. Clip on the covering cap, that serve as protection against an accidental unplugging of the cable.



Grounding plate Magnet GM

Grounding plate for canopies, fabrics, fleeces, nettings, etc..

- 1** Pull apart the both plates.
- 2** Put the plate with the visible magnet from behind on the material.
- 3** Let the front plate snap-on. For two-layered fabrics (Silver-Twin, Steel-Twin), the front plate with the sockets must contact the conductive side, this is the darker golden side at Silver-Twin and the gray side at Steel-Twin.
- 4** Insert the plugs.



Grounding plate Screw GS

Grounding plate for canopies, fabrics, fleeces, nettings, etc..

- 1** Unscrew the both plates and disassemble them.
- 2** Take a textile cutter or a knife (risk of injury!) and pierce a small hole of 4 mm in the material.
- 3** Insert the plate with the screw from behind through the hole.
- 4** Put on the front plate and screw it down.
- 5** Insert the plugs.



Grounding plate Velcro GV

Grounding plate with silvered Velcro fastener for all sewed products with a counterpart.

- 1** Just push the Velcro fastener strongly on the counterpart.
- 2** Insert the plugs.



Grounding plug GP

Grounding plug for CEE-7/4* and CEE-7/7** power sockets, see list below.

- 1** Open and remove the screw of the socket cover.
- 2** Only a licensed electrician is allowed to put / screw this grounding plug in a power outlet, see „Important safety guidelines“!
- 3** To fix this plug permanently in the power socket, it can be screwed together with the socket cover using the enclosed screw.
- 4** Insert the plugs. Clip on the covering cap, that serve as protection against an accidental unplugging of the cable.



Grounding plug GX

Grounding plug for portable products (canopies, earthing-products, etc.). It is not allowed to ground stationary shielding products (paints, nettings, fleeces, wallpapers, etc.) with this plug.



1 Danger to life by wrong grounding! Installation only from a licensed electrician in grounded 3-prong networks with an earth leakage circuit breaker less than 30 mA.

2 Put the plug in a socket-outlet.

3 You can connect up to 4 cables GC to the sockets. The plugs fits very stiff in the sockets!

Grounding cables GC

Grounding cables for connecting our grounding components: GW (wall), GB (baseboard), GE (exterior), GT (tube), GM (magnet), GS (screw), GP (electrical outlet), GR (rod), GV (Velcro), ...



Grounding rod GR-40

Stainless steel grounding rod for portable products (canopies, earthing-products, etc.). It is not allowed to ground stationary shielding products (paints, nettings, fleeces, wallpapers, etc.) with this plug.



1 Remove the rectangular cap from the rod tip and dispose it. Beat the rod in the ground with a hammer, **certainly not hit the connection box!**

2 **Connect the cable GC.** The plug is inserted in the socket with a slight tilt and fits very stiff.

3 Put on the round cap, impose the heat shrink tube over the cap. **Shrink** the heat shrink tube **with a hot-air gun** (400°C).

4 Ensure in dry areas, that the rod always sticks in wet earth.

Grounding rod GR-50 / GR-100

Grounding rods to connect other grounding components. GR-50 for mobile applications, GR-100 for permanent mounting.



1 Remove the gray cap. **Hammer the rod into the earth** with suitable heavy tools.

2 **Connect the cable.** Either you use a ready-made cable (e.g. GC1000), or you use an own cable 6-16 mm² with a cable lug. Attention: Dont forget anything, the heat shrink tube glues all together permanently!

3 Replace the gray cap. **Shrink** the heat shrink tube **with a hot-air gun** (400°C).

Stainless steel tape ELB

Grounding tape for stainless steel gauzes, under plaster or in drywall constructions.



1 The groundable materials have to be screwed, stapled or glued with 5 cm overlap.

2 To electrically connect the limited width of the materials, the steel tape has to be screwed across all paths as often as possible, especially at the overlapping positions. **In case of processing under plaster you should not plaster over the tape before you have screwed it!**

3 Screw on your own grounding cable with a suitable M6-screw, screw-nut and cable clamp M6 directly to the steel tape.

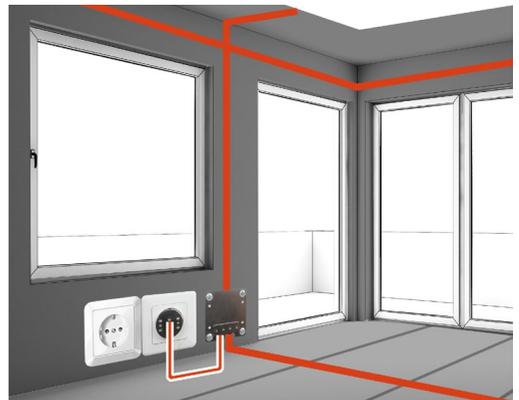
Grounding straps EB1 / EB2 / EB3

Self-adhesive grounding straps for shielding paints, fleeces and nettings in the interior.



1 The **glue on EB1 / EB3 is electrically conductive. Therefore the EB1 / EB3 can be stucked under and on the materials. Application under and on nettings, fleeces** to connect the limited width of material. With an adhesive force of 3 N/cm, it sticks relatively poor on difficult under-grounds (e.g. plasterboards). Use a primer first!

2 The **glue on EB2 is electrically non-conductive. Therefore the EB2 can be stucked only under the materials. Application under shielding paints** to bridge cracks in the underground. With an adhesive force of 10 N/cm it sticks very well even on difficult undergrounds.



3 The grounding straps must be pressed down tightly to adapt perfectly to the underground. Mounting: **Cross all areas once and connect them with each other, starting from GW / GB.** The strap can be stucked under the baseboard if there are no doors.

Grounding set MCL

Grounding set for magnetic shielding film MCL61. Sufficient for 5-10 sheets.

1 Glue MCL61 with the underground.

2 Drill 6 mm holes. Make sure you do not drill cables in the proximity of power outlets and switches!

3 Insert dowels. The teeth of the chopper disk must show down.

4 Screw down the cable lug on the chopper disk very hard, so that the **teeth penetrates the polyester film.**



* Countries with CEE-7/4 sockets

„German system“:

Afghanistan, Algeria, Andorra, Austria, Bosnia-Herzegovina, Bulgaria, Croatia, Estonia, Finland, Germany, Greece, Hungary, Iceland, Indonesia, Italy, Korea, Latvia, Lithuania, Luxembourg, Macedonia, Moldova, Montenegro, Netherlands, Norway, Portugal, Romania, Russia, Serbia, Slovenia, South Korea, Spain, Sweden, Syria, Turkey, Ukraine.



** Countries with CEE-7/7 sockets

„French system“:

Belgium, Czech Republic, France, Monaco, Morocco, Poland, Slovakia, Tunisia.

