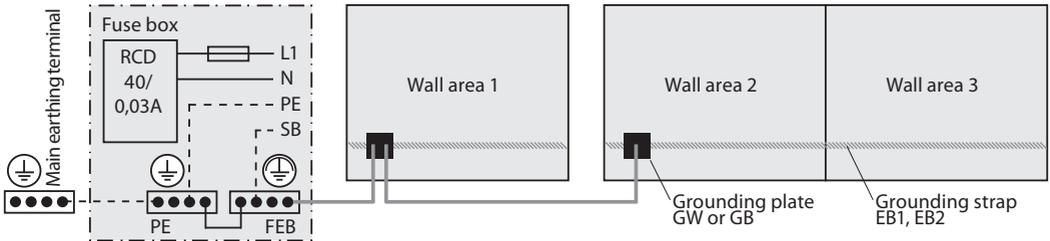


### Installation of a functional equipotential bonding to a fuse box



### 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  $\leq 30$  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 mm<sup>2</sup> cable** in the electrical circuit distributor (fuse box).
- 2** In exceptional cases, the FEB-balancing circuit can be connected with a **2.5 mm<sup>2</sup> 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, its 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 unplug 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..

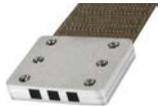
- 1 Unscrew the both plates and disassemble them.
- 2 Take a textile cutter or a knife (risk of injury!) and pierce a small hole of 4 mm in the material.
- 3 Insert the plate with the screw from behind through the hole.
- 4 Put on the front plate and screw it down.
- 5 Insert the plugs.



## 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 unplug 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 mm<sup>2</sup> 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.



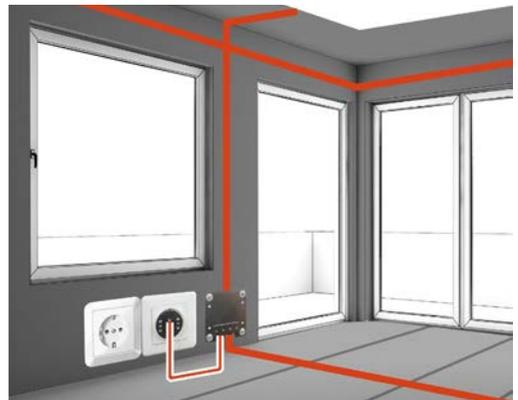
- 1 The groundable materials have to be screwed, stapled or glued with 5 cm overlap.
- 2 To electrically connect the limited width of the materials, the steel tape has to be screwed across all paths as often as possible, especially at the overlapping positions. **In case of processing under plaster you 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 sticked 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 undergrounds (e.g. plasterboards). Use a primer first!
- 2 The **glue on EB2 is electrically non-conductive. Therefore the EB2 can be sticked 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 sticked 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.

