

CE-EMC-Installation Hitachi L100 Inverter

This instruction describes the electromagnetically compatible setup of your drive system.

1. As an enduser, you must ensure that the HF impedance between frequency inverter, filter and ground is as small as possible.

- Please ensure that the connections are metallic and cover the largest possible areas (zinc-plated mounting plates).

2. Conductor loops act like antennas, especially when they encompass large areas. Consequently:

- Avoid unnecessary conductor loops.
- Avoid parallel arrangement of „clean“ and interference-prone conductors.

3. Lay the motor cable and all analog and digital control lines shielded.

- You should allow the effective shield area of these lines to remain as large as possible; i.e. do not move the shield further away than absolutely necessary.
- In case of compact systems, if for example the frequency inverter is communicating with the steering unit in the same control cabinet, connected at the same PE-potential, the screen of control lines should be put with PE on both sides. In case of branch systems, if for example the communicating steering unit is not in the same control cabinet and there is a distance between the systems, we recommend to put on the screen of control lines only on the side of the frequency inverter. If it is possible, directly in the cable entry section of the steering unit. The screen of motor cables always must be put with PE on both sides.
- The large area contact between shield and PE-potential can be achieved by using a metal PG screw connection or a metallic mounting clip.
- Use only copper mesh cable (CY) with 85% coverage.
- The shielding should not be interrupted at any point in the cable. If the use of reactors, contactors, terminals or safety switches in the motor output is necessary, the unshielded section should be kept as small as possible.
- Some motors have a rubber gasket between terminal box and motor housing. Very often, the terminal boxes, and particularly the threads for the metal PG screw connections, are painted. Make sure that there is always a good metallic connection between the shielding of the motor cable, the metal PG screw connection, the terminal box and the motor housing, and carefully remove this paint if necessary.

4. Very frequently, interference is coupled in through installation cables. You can minimize this influence:

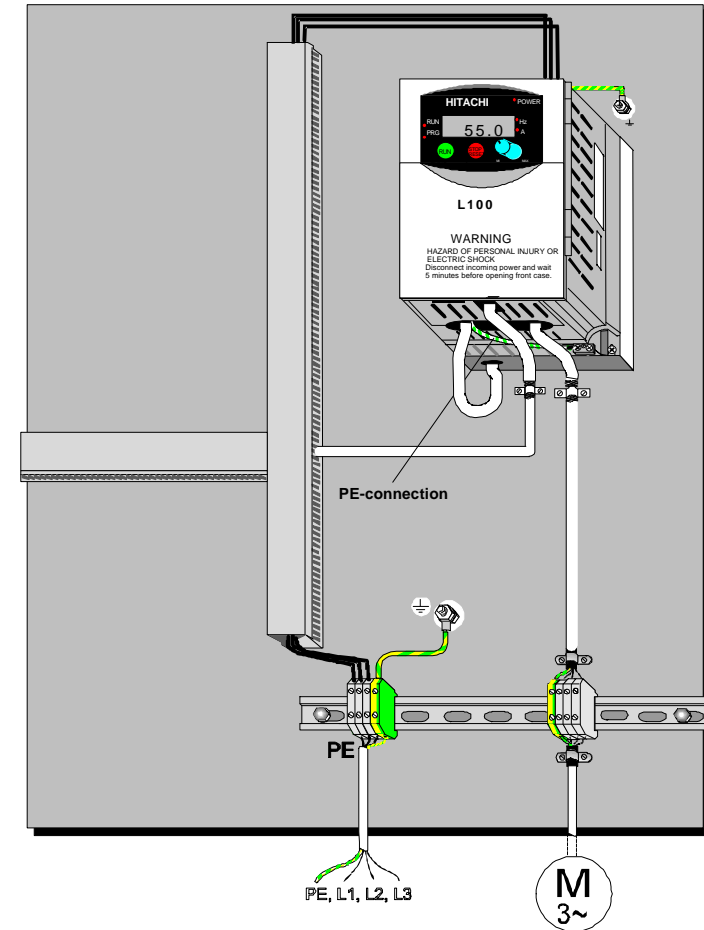
- Lay interfering cables separately, at a minimum distance of 0.25 m to cables susceptible to interference.

A particularly critical point is laying cables parallel over larger distances. If two cables intersect, the interference is smallest if they intersect at an angle of 90°. Cables susceptible to interference should therefore only intersect motor cables, intermediate circuit cables, or the wiring of a rheostat at right angles and never be laid parallel to them over larger distances.

5. The distance between an interference source and an interference sink (interference-threatened device) essentially determines the effects of the emitted interference on the interference sink.

- You should use only interference-free devices and maintain a minimum distance of 0.25 m from the drive.

Drawing 1: Hitachi frequency inverter with footprint-filter



6. Safety measures

- Ensure that the protective conductor terminal (PE) of the filter is properly connected to the protective conductor terminal of the frequency inverter. An **HF ground connection** via metal contact between the housings of the filter and the frequency inverter or solely via cable shield, **is not permitted as protective conductor connection**. The **filter must be solidly and permanently connected with the ground potential** so as to preclude the danger of electric shock upon touching the filter if a fault occurs. You can achieve this by:
 - connecting it with a grounding conductor of at least 10 mm²;
 - connecting a second grounding conductor, connected with a separate grounding terminal, parallel to the protective conductor. (The cross section of each single protective conductor terminal must be designed for the required nominal load.)