

Table 6-5

Summary of network configurations and protection measures for low-voltage installations

System ¹⁾	Advantages	Disadvantages	Main application
TN system	Fast disconnection of fault or short circuit. Least danger for people and property.	High cost of wiring and cable due to protective conductors. Any fault interrupts operations.	Power plants, public power supply and networks.
TT system	Less wiring and cable required. Zones with different touch voltages permitted. Can be combined with TN networks.	Complex operational earthing ($\leq 2 \Omega$). Equipotential bonding necessary for each building.	Livestock farming.
IT system	Less expensive in respect of wiring and cables. Higher availability: 1st fault is only signalled, 2nd fault is disconnected. Maximum safety. Can be combined with other networks.	Equipment must be insulated throughout for the voltage between the outside conductors. Equipotential bonding necessary.	Hospitals Industry.
Total insulation		Equipment doubly insulated, economical only for small consumers. With heat-generating loads, insulation constitutes fire hazard.	Residential, small-scale switchboards and equipment
Safety extra-low voltage Functional extra-low voltage	No dangerous touch voltages.	Limited power with cost-effective equipment use. Special requirements for circuitry.	Small apparatus.

¹⁾For definitions and block diagram of the systems, see Section 5.1.2