

Sample Electrical Installation Specification

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1 General

1.1 This specification covers low-voltage final circuits in residential and small commercial buildings supplied at 230 V single phase.

1.2 Schematics shall be submitted in DXF format. Devices and loads shall be drawn as blocks carrying the attributes TAG, RATING_A, SIZE_SQMM, LENGTH_M, LOAD_W and SENS_MA as applicable.

1.3 Terms: a final circuit is the circuit from a miniature circuit breaker (MCB) to the loads it supplies. A lighting circuit supplies luminaires; a socket circuit supplies socket outlets.

2 Drawing Conventions

2.1 Conductors shall be drawn on layer WIRES and the distribution busbar on layer BUSBAR.

2.2 Every device shall carry a unique tag. Final circuits shall be numbered C1, C2, C3 and so on from left to right.

2.3 The title block shall state the board reference, the supply voltage and the drawing revision.

3 Protective Devices

3.1 The rating of a circuit breaker shall not exceed the current-carrying capacity of the cable it protects. Capacities: 1.5 sq mm cable 16 A; 2.5 sq mm cable 25 A; 4 sq mm cable 32 A; 6 sq mm cable 40 A; 10 sq mm cable 50 A.

3.2 Lighting circuits shall be protected by breakers rated not more than 10 A.

3.3 The main switch of a distribution board shall be rated not less than 63 A.

3.4 Type B breakers shall be used for lighting and socket circuits. Type C breakers shall be used for motor and compressor loads.

4 Circuit Loading

4.1 The connected load of a final circuit shall not exceed 80 percent of the breaker rating multiplied by 230 V.

4.2 A lighting circuit shall supply not more than 10 luminaires.

4.3 A socket circuit shall supply not more than 8 socket outlets.

4.4 Air conditioners and water heaters shall each be supplied by a dedicated circuit serving no other load.

5 Earth Leakage Protection

5.1 Every circuit supplying socket outlets shall be protected by a residual current device (RCD) with a rated residual operating current not exceeding 30 mA.

5.2 RCDs shall be tested by the occupier using the test button every three months.

5.3 Water heater circuits should be RCD protected where the heater is in a bathroom.

6 Cables

6.1 Cables shall have copper conductors with PVC insulation rated for 70 degrees Celsius.

6.2 To limit voltage drop, cable run lengths shall not exceed: 1.5 sq mm 25 m; 2.5 sq mm 35 m; 4 sq mm 45 m; 6 sq mm 55 m; 10 sq mm 70 m.

6.3 The minimum cable size is 1.5 sq mm for lighting circuits and 2.5 sq mm for socket circuits.

7 Earthing and Bonding

7.1 Each installation shall have a main earthing terminal connected to the supply earth.

7.2 Metal water and gas pipes shall be bonded to the main earthing terminal within 600 mm of their point of entry.

8 Testing and Handover

8.1 Insulation resistance between live conductors and earth shall be not less than 1 megohm.

8.2 On completion the installer shall hand over a test certificate and a labelled circuit schedule fixed inside the distribution board door.