SOUTH AFRICAN NATIONAL STANDARD

SANS 10142-1:2020 Edition 3

The wiring of premises

Part 1: Low-voltage installations

4 Compliance

4.2 Notices, labels and rating plates

Any notices, labels or rating plates that are required in terms of this part of SANS 10142 shall be durable and not removable except by determined and deliberate action. The inscriptions shall be legible and indelible. Details on the topics given in column 2 of table 4.2 can be found in the relevant subclauses in column 1 and the warning labels shall comply with SANS 1186-1.

Table 4.2 — Notices, labels and rating plates

Sub-clause	Topic
5.2.5	Marking of equipment
5.3.8(f)	Position of concealed distribution board
6.6.1.1	Switch-disconnectors for distribution boards and sub-distribution boards
6.6.1.12	Identification of ring circuits
6.6.1.19	Identification of incoming and outgoing circuits of distribution boards
6.6.1.20	Warning labels on distribution boards
6.6.1.20(e)	Position of readily accessible earthing terminal for other services
6.3.3.1	Identification of conductors
6.3.3.2	The means of identification for an A.C. circuit
6.3.3.3	The means of identification for a D.C. circuit
6.6.6.2(e)	Alterations or changes to a distribution board
6.7.4(c)	Series-connected (cascaded) systems
6.7.5.6	Standard socket-outlets not on 30 mA earth leakage or with a rated tripping current higher than 30 mA
6.7.5.6	Socket-outlets powered from a safety supply or on dimmer control
6.8.2.2	Circuit controlled by circuit-breaker
6.8.2.3(b)	Load and line markings on circuit-breakers used as switches
6.9.1.1	Main switch-disconnectors in the case of multi supplies
6.9.3.2	Disconnecting devices with remote control
6.9.3.3,NOTE2	Disconnecting devices other than switch-disconnectors
6.10.4	Maximum permissible current rating of fuse-protected circuits
6.11.5	Earthing terminal for other services
6.11.6	Labels to distribution boards where the earthing terminal for other services is provided

Sub-clause	Topic
6.14.1.7(a)	More than one phase or circuit in an enclosure
6.14.1.8	More than one circuit brought into an enclosure
6.15.1.2(a)	Voltage rating on socket-outlets if not standard voltage
6.15.3(c)(5)	Maximum rating of back-up short-circuit protective device
6.15.8	Socket-outlets on ring circuits
6.16.1.2(b)	Position of disconnecting device for remotely installed appliance
7.4.2	Supply from which equipment is supplied
7.6.3.1	Socket-outlets in caravan parks, mobile homes and marina sites
7.8.3.1	Each distribution circuit that supplies a temporary structure
7.9.4.5	Identification of a protective device not immediately evident
7.10.1.6(b)	Socket-outlets supplied by a dimmer
7.11.5	Manual control of the emergency lighting supply
7.12.2.1	Main switch where an alternative supply is installed
7.13.1	High-voltage equipment
7.13.3.2	High-voltage signs
7.13.7.1(a)	Enclosure of a step-up transformer for HV apparatus
7.13.10.5(g),(h)	Fireman's switch
7.13.11.2(b)	Terminations of conductors for HV circuits
7.16.4.3	Indication of neutral earthed distribution system
7.16.4.4	Prohibition of the removal of the combined neutral-earth connection inside distribution board

End of chapter

5 Fundamental requirements

5.2 Safety

5.2.5 Marking of equipment
All equipment and circuits shall be labelled as required by this part of SANS 10142. (See also 4.2).

5.3 Basic provisions

5.3.8 Positioning and accessibility of electrical equipment
f) where the distribution board is concealed by a cupboard or other covering, the notice for live electrical apparatus referred to in annex O shall be in a conspicuous place indicating the position of the distribution board.

End of chapter

6 Installation requirements

6.3 Installation of conductors and cables

6.3.3 Identification

6.3.3.1 A conductor shall be identifiable at its terminations unless its purpose is obvious.

6.3.3.2 The means of identification for an **A.C. circuit** may be by colours or by numbers, as follows:

a) where colours are used

1) a neutral conductor shall be identified by black only,

2) an earth continuity conductor shall be identified by the bi-colour green/yellow only, or by being bare. Green/yellow insulated conductors shall NOT be used as live conductors under any circumstances,

3) a phase conductor shall be identified by a colour other than green/yellow, green or black, and

NOTE Welding cable manufactured to SANS 1576 should not be used in circuits above 100 V.

4) the colours may be applied at the ends of the conductor (of a multicore cable) by means of durable colour marking (e.g. insulating sleeves or by electrical insulating tape wound more than once around the conductor), and

b) where numbers are used, “0” shall indicate the neutral conductor.

NOTE *Where the purpose or the function of a conductor is apparent, marking is not required.*

6.3.3.3 The means of identification for a **D.C. circuit** may be by colours or by symbols, as follows:

c) All equipotential bonding, earth continuity and protective earthing conductors shall be identified by the bi-colour green/yellow only, or by being bare.

d) Where colours are used

5) the polarity of the positive conductor shall be identified by red only,

6) the polarity of the negative conductor shall be identified by black or blue, and

7) the colours may be applied at the ends of a conductor by means of durable colour marking (e.g. insulating sleeves or by electrical insulating tape wound more than once around the conductor).

e) Where symbols are used

1) the polarity of the positive conductor shall be identified by the + symbol,

2) the polarity of the negative conductor shall be identified by the − symbol, and

3) the symbols shall be applied at the ends of the conductor. The symbols may be applied by means of printed adhesive tape or cable markers.

f) In an earthed d.c. installation, either the positive or the negative conductor may be earthed. The earthing system used in the installation shall be indicated by means of a notice placed at the d.c. supply.

g) Where an installation contains both a.c. and d.c. circuits and colour is used to identify the polarity of the d.c. conductors, polarity symbols described in (c) above shall be added at both ends of the d.c. conductors to distinguish them from the a.c. conductors.

6.6 Distribution boards

6.6.1 General

6.6.1.1 Each distribution board shall be controlled by a switch-disconnector (see 6.9.4). The switch-disconnector shall:
b) in the case of the main or first distribution board of an installation, be labelled as “main switch”,
c) in the case of a sub-distribution board, be labelled as “sub-main switch” “or main switch” if the board is labelled “sub-board …”,
d) in the case where an alternative supply is installed (emergency supply, uninterruptible power systems (UPS), etc.), be labelled as required in 7.12.2.1, and
e) have a danger notice on or near it. The danger notice shall give instructions that the switch-disconnector be switched off in the event of inadvertent contact or leakage.

6.6.1.12 Both ends of the live conductors and of the neutral conductors of a ring circuit shall be crimped together. Ring circuits shall clearly and permanently be identified by either a notice or a tag.

6.6.1.19 Unless obvious, permanent labelling shall identify all incoming and outgoing circuits of the distribution board.

6.6.1.20 The following warning labels shall be fitted to all distribution boards:
a) an indication of where the distribution board is fed from, except for single distribution board installations. (Where the supply is derived from sources other than the main supply, for example, generators or UPS, see 7.12.5);
b) if the short-circuit rating exceeds 3 kA, the minimum fault current rating of switchgear that can be used;
c) in the case of series-connected (cascaded) systems, the warning label required by 6.7.4(c);
d) the current rating of the busbars shall be indicated where it exceeds 100 A;

6.6.1.20 (e) if the earthing terminal is installed, a label that indicates the position where the readily accessible earthing terminal for the bonding of other services is provided (see 6.11.5).

6.6.6 Alterations/extensions to distribution boards with a short-circuit rating above 10 kA

6.6.6.2 (e) any changed properties due to alteration or extension of the distribution board shall be marked indelibly on a supplementary nameplate;

WARNING
Do not replace any component in the system with a component that is not of identical type and rating except when recommended by the manufacturer of the existing component, or the manufacturer of the distribution board, or a person competent to express an opinion on such replacement.

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6.7 Protection

6.7.4 Series-connected (cascaded) systems

NOTE A series-connected (cascaded) system is a protection system that allows for the installation of circuit-breakers which cannot necessarily be rated to handle the full prospective short-circuit current at their points of installation, provided that they are backed up by another fully rated circuit-breaker in a predetermined and tested coordination. In a series-connected (cascaded) system, the following rules shall apply:

c) a warning label shall be fitted to every distribution board, switchboard, panelboard and the like where series-connected (cascaded) systems are used. The label shall include the following wording:

WARNING
This is a series-connected (cascaded) system. Except when recommended by the circuit-breaker manufacturer, do not replace any circuit-breaker in the system with a circuit-breaker that is not of identical type and rating.

6.7.5 Earth leakage protection

6.7.5.6 A warning label shall be fitted to every socket-outlet circuit where
a) the rated earth leakage tripping current (rated residual current) IΔn is higher than 30 mA, or
b) the socket-outlet circuit is powered from a safety supply, or
c) the socket-outlet circuit is on dimmer control, indicating such tripping current, safety supply or dimmer control.

6.8 Circuit-breakers

6.8.2.2 Except for a circuit-breaker that is mounted next to the appliance or socket-outlet that it controls, each circuit-breaker shall be labelled to show which circuit or appliance it controls.

6.8.2.3 Circuit-breakers, disconnectors and switch-disconnectors shall not be mounted upside down. Horizontal mounting is allowed unless specifically prohibited by the manufacturer.

Any deviation from the convention of connecting line to the top and load to the bottom of switchgear is not recommended. Reverse connection is allowed only if:

(b) “load” and “line” are so marked that they are clearly visible during maintenance

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6.9 Disconnecting devices

6.9.1 General

6.9.1.1 Each installation shall have one disconnecting device to disconnect the entire installation, except in the case of multi supplies or more than one transformer supplying the installation where each supply shall have its own disconnecting device. There shall be a notice fixed next to each such disconnecting device indicating that the installation has more than one main switch-disconnector.

6.9.3 Disconnecting devices for equipment

6.9.3.2 All supply circuits to equipment and interconnected devices (such as appliances with remote control or alarm) shall be capable of being disconnected. Where more than one disconnecting device is used, each device shall have a notice fixed next to it, giving the location and function of the other disconnecting device.

6.9.3.3 The disconnecting device shall be a switch-disconnector that disconnects all the phase conductors, however

NOTE 2 Unless the device is a switch-disconnector, it shall be marked.

6.10 Fuses

6.10.4 Fuse-protected circuits shall be marked with the maximum permissible current rating.

6.11 Consumer's earth terminal

6.11.5 A readily accessible earthing terminal may be provided for the bonding of other services such as a telephone, an audio or a video system, and the like, to a building. Where installed, such an earthing terminal shall be bonded to the consumer's earth terminal by a conductor of at least 6 mm² copper or equivalent, and shall be identified by the earth symbol

6.11.6 Labels shall be fitted to all distribution boards where the readily accessible earthing terminal for the bonding of other services is provided (see 6.6.1.21).

6.14 Lighting

6.14.1 Lighting circuits

6.14.1.7 If more than one phase in a lighting circuit is brought into one enclosure for switching purposes,
a) labels (see 4.2) stating that the voltage between phase conductors could exceed 250 V shall be fixed in a visible position inside the enclosure (not on the cover plate);

6.14.1.8 If more than one circuit is brought into an enclosure, a warning label shall be fixed inside the enclosure.

6.15 Socket-outlets

6.15.1 Construction

6.15.1.2 Voltage

Socket-outlets that supply voltages other than the standard voltage as defined in SANS 1019 shall
a) have the voltage marked on them in a position that is visible after installation.

6.15.3 Single-phase circuits that only supply socket-outlets rated at 16 A

Single-phase circuits that only supply socket-outlets rated at not more than 16 A
(c) shall, if the circuit protection is rated at more than 20 A, use only protected socket-outlets, with, as far as is practicable, discrimination between the protective devices for the circuit and the protective devices associated with the socket-outlets. The protective device of a protected socket-outlet shall,

(5) if it needs the protection of a back-up short-circuit device, be marked with the required or maximum rating of the back-up device.

6.15.8 Socket-outlet in ring circuits

Each socket-outlet connected in a ring circuit shall be marked as such.

6.16 Fixed appliances

6.16.1.2 The power supply to every fixed appliance, except luminaires, shall be supplied through
b) a socket-outlet that is directly accessible at all times that any person is exposed to such appliance while the supply is on. In the case of a remotely installed appliance, the position of the disconnecting device shall be indicated by means of a notice in close proximity to or on the appliance.

End of chapter

7 Special installations or locations

7.4 Construction and demolition site installations

7.4.2 Supply

Equipment shall be identified with the particular supply from which it is energized, and shall contain only components connected to one and the same installation, except for control or signalling circuits and input from standby supplies.

7.6 Caravan parks, mobile homes and marinas

7.6.3 Socket-outlets

7.6.3.1 Each socket-outlet or group of socket-outlets shall have a notice fixed next to it stating the following:
a) the supply voltage;
b) whether the supply is a.c. or d.c.; and
c) the maximum rated load, in amperes.

7.8 Temporary installations

7.8.3 Isolation

7.8.3.1 Every separate temporary structure (indoor or outdoor) such as a vehicle, a stand, or a unit, intended to be occupied by one specific user and each distribution circuit that supplies such installation shall be provided with its own readily accessible and properly identifiable means of isolation.

7.9 Extra low voltage lighting installations

7.9.4 Position of components

7.9.4.5 If the identification of a protective device for a circuit is not immediately evident, a sign or diagram (label) close to the protective device shall identify t he circuit and its purpose.

7.10 Stage and theatre equipment

7.10.1 General equipment and wiring

7.10.1.6 Socket-outlet circuits supplied from a dimmer in any theatre, cinema or similar place of assembly do not need earth leakage protection, provided that
b) the socket-outlets are marked to indicate that they are on dimmer control.

7.11 Safety and emergency lighting

7.11.5 Where the emergency supply is provided from a central power system, an emergency lighting supply circuit shall have a clearly identified manual control for use if the automatic control fails to operate. All controls of emergency lighting shall be inaccessible to the general public.

7.12 Alternative supplies

7.12.2 Requirements for alternative sources of supply

7.12.2.1 Where any form of alternative supply (emergency supply, UPS, other static inverters, or wind turbine inverter generators), is connected to an electrical installation, a notice to this effect shall be displayed at the main switch of the installation, and where such supply

a) supplies power only to certain circuits in a distribution board, a power-on indicator (visible or audible) shall be provided on each such distribution board as well as a notice indicating that the standby power main switch shall also be switched off in an emergency,

b) only supplies a part of the electrical installation, the notice shall also be displayed on each distribution board in that part of the installation (see 6.6.1.1(d)).

7.13 High-voltage (HV) apparatus

7.13.1 Rating plates

Each transformer, reactor, voltage regulator, induction coil, capacitor, rectifier and convertor shall have a rating plate securely fixed to it. The rating plate shall give the rated power and the rated voltages.

7.13.3 High-voltage signs

7.13.3.2 A notice that shows that a sign uses high voltages shall be fixed

a) next to the high-voltage sign, and

b) in full view.

7.13.7 Transformers

7.13.7.1 Step-up transformers

If a step-up transformer is used to raise the voltage of the supply (for example, for high-voltage signs but excluding voltages stepped up in a power installation),

a) the transformer shall be in a suitably labelled enclosure;

7.13.10 Fireman's switch

7.13.10.5 A fireman's switch shall

c) have the closed and open positions marked with lettering that can be clearly seen by a person (who has normal eyesight) standing on the ground,

g) in the case of an exterior sign, be next to the sign (but, if the switch controls more than one sign, the switch shall be next to one of the signs and there shall be a notice under each of the other signs to show where the fireman's switch can be found. Another arrangement may be used if acceptable to the fire officer), and

h) if there is more than one switch in a building or structure, be marked to indicate which sign(s) (or part of the building) it controls.

7.13.11 Conductors for high-voltage circuits

7.13.11.2 Cables for circuits that operate at voltages exceeding 1 000 V shall
b) be identifiable at their terminations

7.16 Distribution systems as part of an electrical installation

(Secondary supply network or distribution system)

NOTE 1 This clause applies only to the distribution systems of electrical installations that form part of an installation where electricity is distributed by a landlord, body corporate or home owners' association in the case of housing complexes, and a landlord or centre management in the case of industrial or commercial premises, or similar.

7.16.4 Neutral earthing

7.16.4.3 Wherever the neutral is connected to the earth, a warning notice shall be fitted to the outside of each distribution kiosk in the distribution system, indicating “Neutral earthed inside”.

7.16.4.4 A clear notice shall be fitted at the combined neutral-earth connection inside each distribution kiosk in the distribution system, that prohibits the removal of this connection while the supply is alive, or might become alive.

End of chapter