KINGDOM OF BELGIUM

FEDERAL PUBLIC SERVICE ECONOMY, SMEs, SMALL BUSINESSES AND ENERGY

Royal Decree amending certain parts of Books 1 and 2, introduced by the Royal Decree of 8 September 2019 establishing Book 1 on low voltage and very low voltage equipment, Book 2 on high voltage equipment and Book 3 on installations for the transmission and distribution of electrical energy

PHILIPPE, King of the Belgians,
To all those present and to come,
Greetings.

Having regard to the Law of 10 March 1925 on electrical energy distribution, Article 21(1);

Having regard to the Law of 4 August 1996 on the well-being of workers in the performance of their work, Article 4(1), subparagraph 1, as amended by the Law of 7 April 1999 and Article 5(3);

Having regard to the Royal Decree of 8 September 2019 establishing Book 1 on Low Voltage and Very Low Voltage Equipment, Book 2 on High Voltage Equipment and Book 3 on Installations for the Transmission and Distribution of Electrical Energy;

Having regard to the opinion of the Finance Inspector, given on 17 July 2024;

Having regard to the opinion of the Standing Committee on Electricity, given on 7 January 2025, pursuant to Article 22(5) of the Law of 10 March 1925 on the distribution of electricity, as amended by the Law of 8 May 2014;

Having regard to the opinion of the High Council for Prevention and Protection at Work, issued on 21 February 2025, pursuant to Article 95, 1st subparagraph, of the Act of 4 August 1996 on the well-being of workers in the performance of their work;

Having regard to the communication to the European Commission of xx xx xxxx, pursuant to Article 5(1), of the Directive (EU) 2015/1535 of the European Parliament and of the Council of 9 September 2015 laying down a procedure for the provision of information in the field of technical regulations and of rules on Information Society services;

Having regard to the opinion xx xx xxxx of the Council of State, given on xx xx xxxx pursuant to Article 84(1) subparagraph 1(2), of the laws on the Council of State, coordinated on 12 January 1973;

On the proposal of the Employment Minister and the Energy Minister,

WE HAVE DECREED AND DECREE HEREWITH:

Article 1. In Annex 1, Book 1, Part 1, Chapter 1.5., subparagraph 3 of the Royal Decree of 8 September 2019 establishing Book 1 on Low Voltage and Very Low Voltage Equipment, Book 2 on High Voltage Equipment and Book 3 on Installations for the Transmission and Distribution of Electric Power, the following amendments are made:

1° in the French text, the words ‘power source’ are replaced by the words ‘source of energy’;

2° in the Dutch text, the word ‘stroombronnen’ is replaced by the word ‘energiebronnen’.

Article 2. In Book 1, part 2 of Annex 1, of the same Decree, as amended by the Royal Decrees of 10 July 2022, 5 March 2023 and 3 October 2024, the following

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amendments are made:

1° figures 2.6. to 2.9. are renumbered to 2.16. to 2.19.;

2° figures 2.11. to 2.23. are renumbered to 2.21. to 2.33.

Article 3. In Annex 1, Book 1, Part 2, Chapter 2.2., Section 2.2.1., of the same Decree , sub-section 2.2.1.2. is replaced by the following:

‘Sub-section 2.2.1.2. Safety of equipment

a. Background information

In this book, only grounded diagrams are taken into account that contribute to the protection against electric shock by indirect contact by automatic disconnection of the power supply.

The grounded diagrams are each characterised by a code consisting of at least two letters and possibly three or four letters:

- The first letter provides the situation of the network in relation to earth:
  - T: direct connection to the earth at least at one point;
  - I: either all live parts are insulated from earth or a point is connected to earth via a sufficiently high impedance;
- the second letter indicates the location of the exposed conductive parts of the equipment in relation to the earth:
  - T: masses connected to a ground which is distinct and electrically independent of the possible grounding of the network;
  - N: masses connected with a point of an active conductor of the grounded network (conductor N, M, L, L_+ or L_-);
- potential third or fourth letters, separated from the first two letters by a hyphen and possibly with another hyphen between the third and fourth letters themselves, indicate the position of the protective conductor:
  - S: the protective conductor function is performed by a conductor exclusively intended for this

purpose;

- C: the same conductor performs the function of protective conductor as well as active conductor of the network (Conductor N, M, L, L_+ or L_-), such as the PEN, PEM or PEL conductor.

b. Description of the diagrams grounded in alternating current

The following types of earthing systems are taken into consideration in this Book:

- the TN scheme with its three variants (TN-S, TN-C and TN-C-S);
- the TT system;
- the IT system.

When a point in the network is directly or indirectly earthed, the neutral point shall preferably be grounded.

b.1. The TN diagram

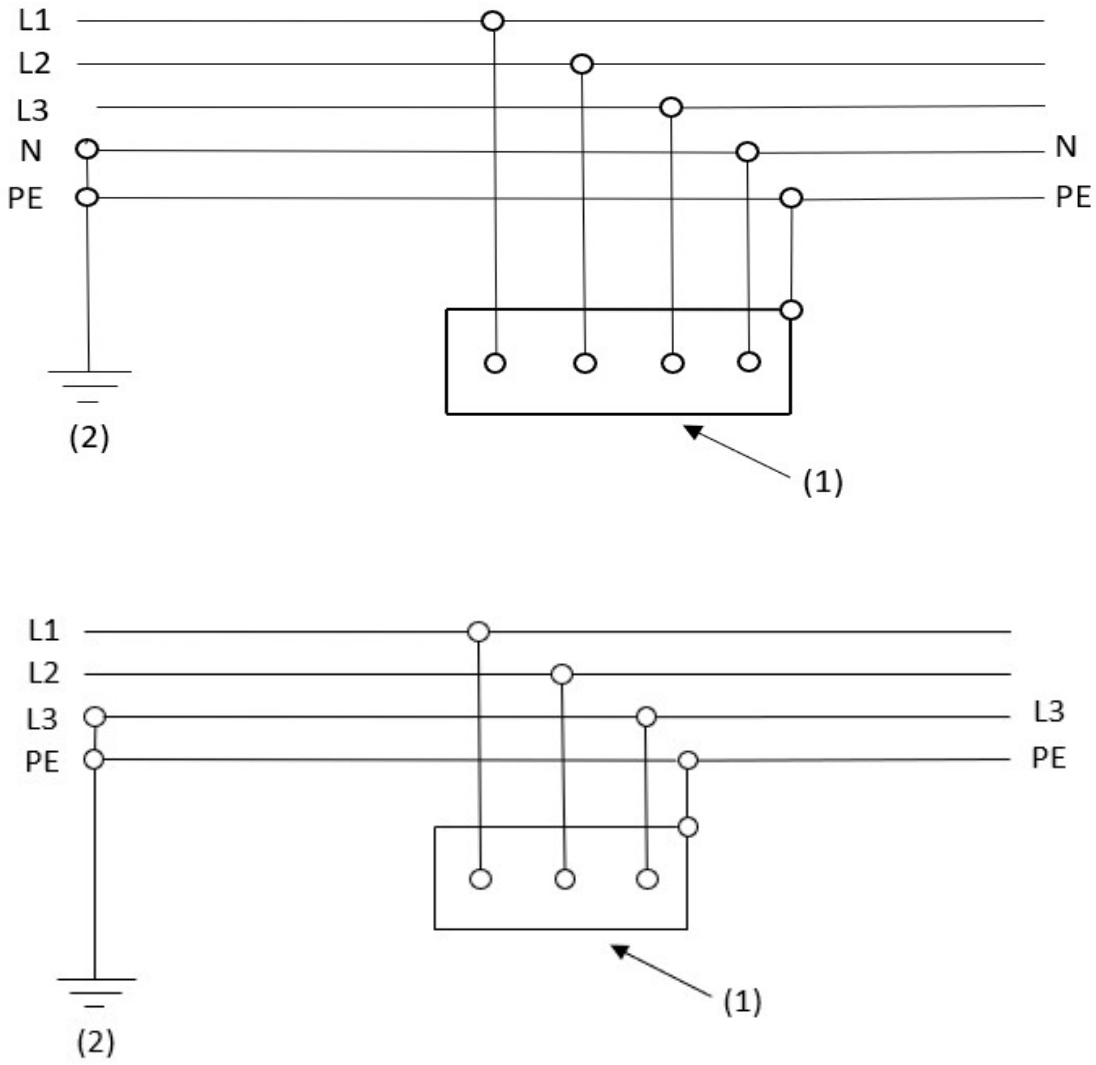
The TN system has at least one network point (N or L) directly connected with earth and the exposed conductive parts of the equipment are connected to this point by protective conductors.

The protective conductor shall be earthed at least at one point.

Three variants of TN systems are taken into consideration, depending on where the active earthed conductor and protective conductor are located, i.e:

- TN-S system in which the earthed active conductor and the protective conductor are separated;

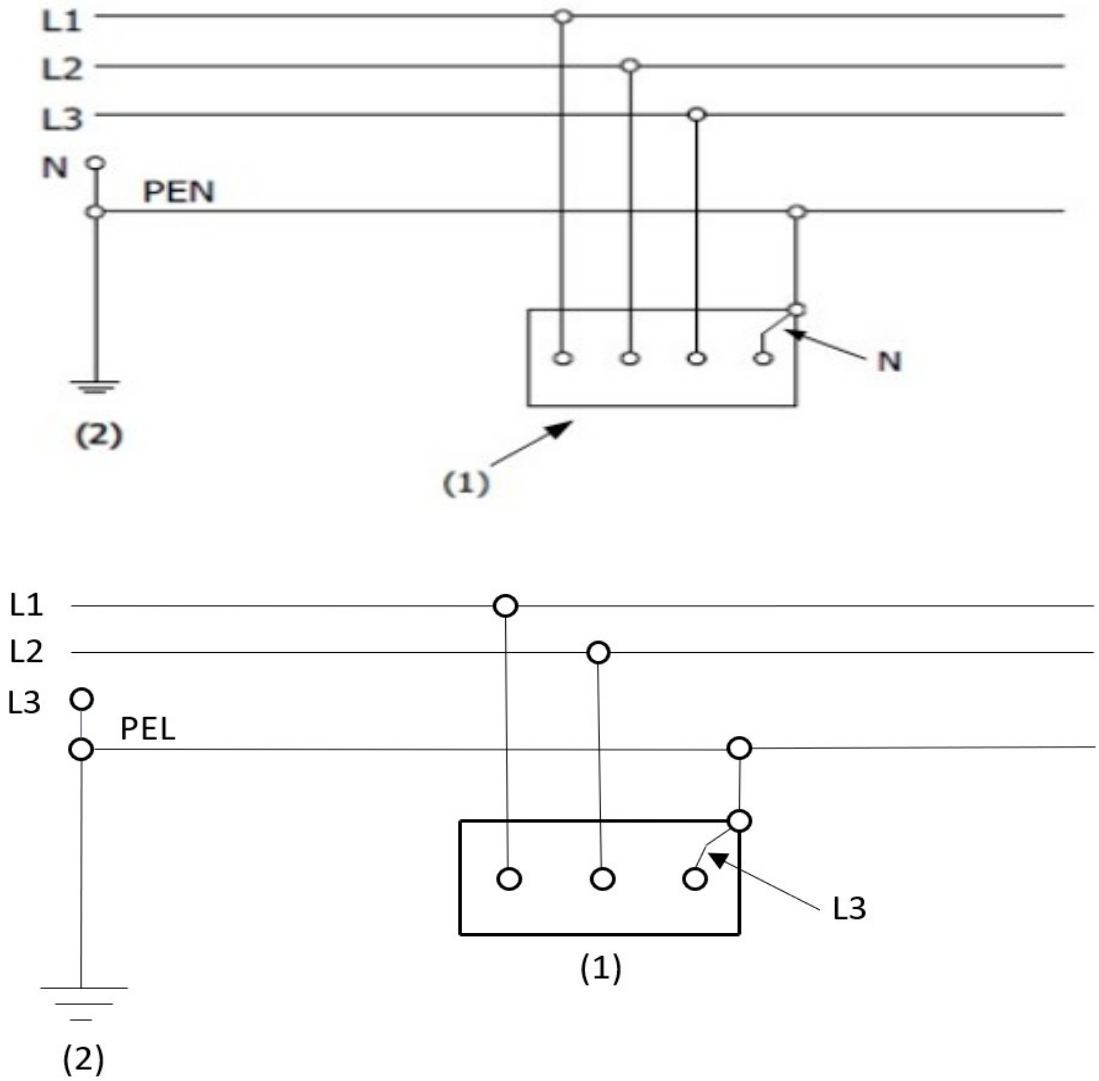
Figure 2.1. TN-S schema



(1) Earth
(2) Earthing of the network

- TN-C system in which the earthed active conductor and the protective conductor are combined into a single conductor;

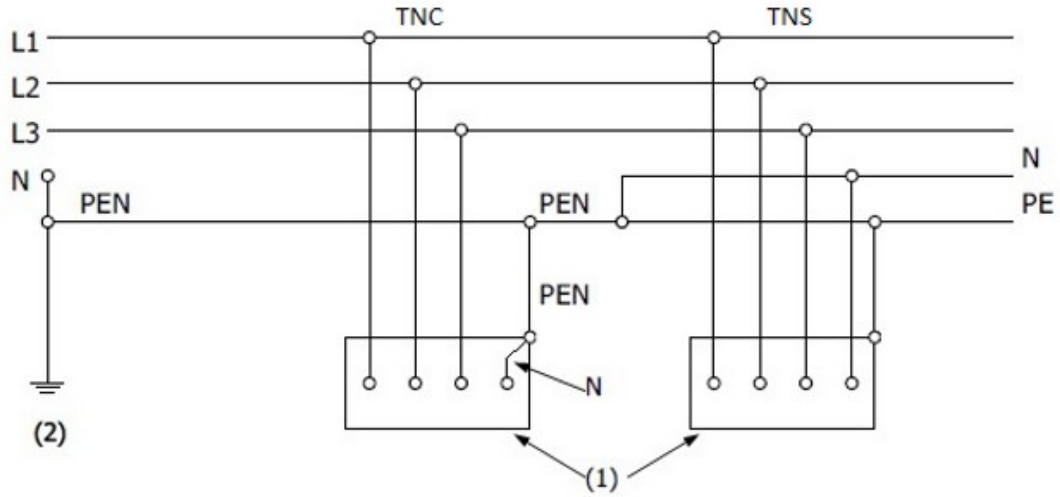
Figure 2.2. TN-C system



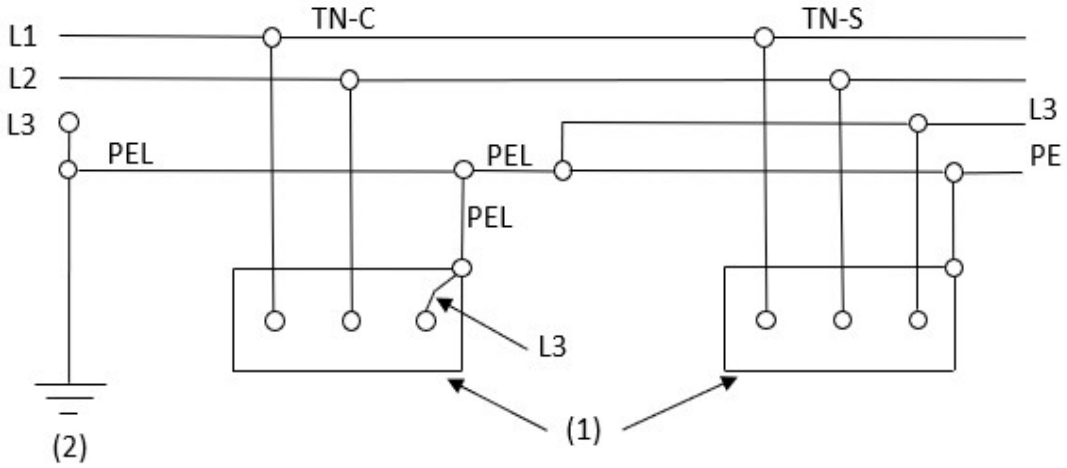
(1) Earth
(2) Earthing of the network

- TN-C-S diagram in which the earthed active conductor and the protective conductor are combined into a single conductor in a part of the equipment.

Figure 2.3. TN-C system



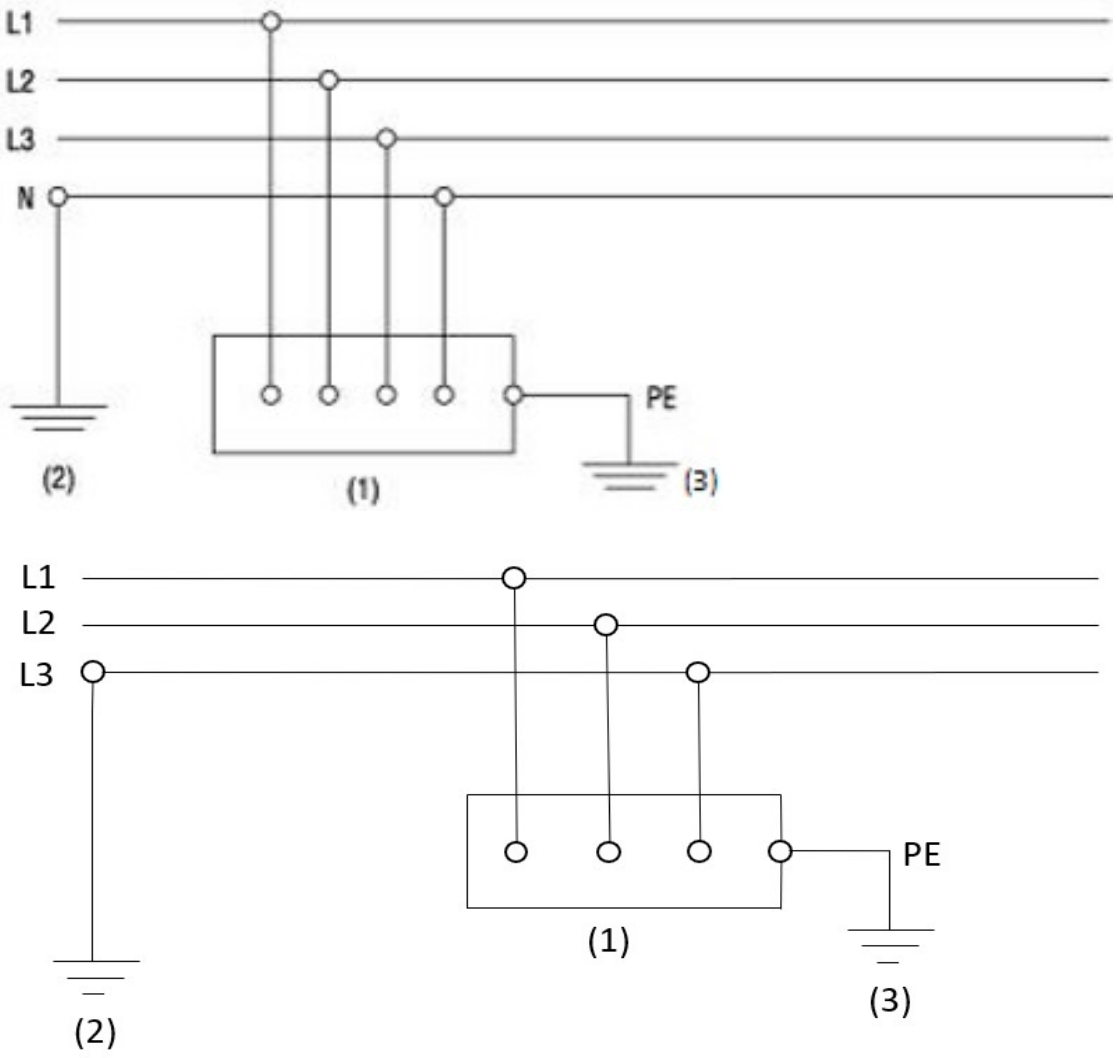
(1) Earthing
(2) Earthing of the network



b.2. TT schema

The TT diagram has at least one point of the grid (N or L) connected directly to the earth, the masses of the equipment being connected either individually, in groups or together to one or more earth sockets which are distinct and electrically independent of that of the grid.

Figure 2.4. TT schema



(1) Earth

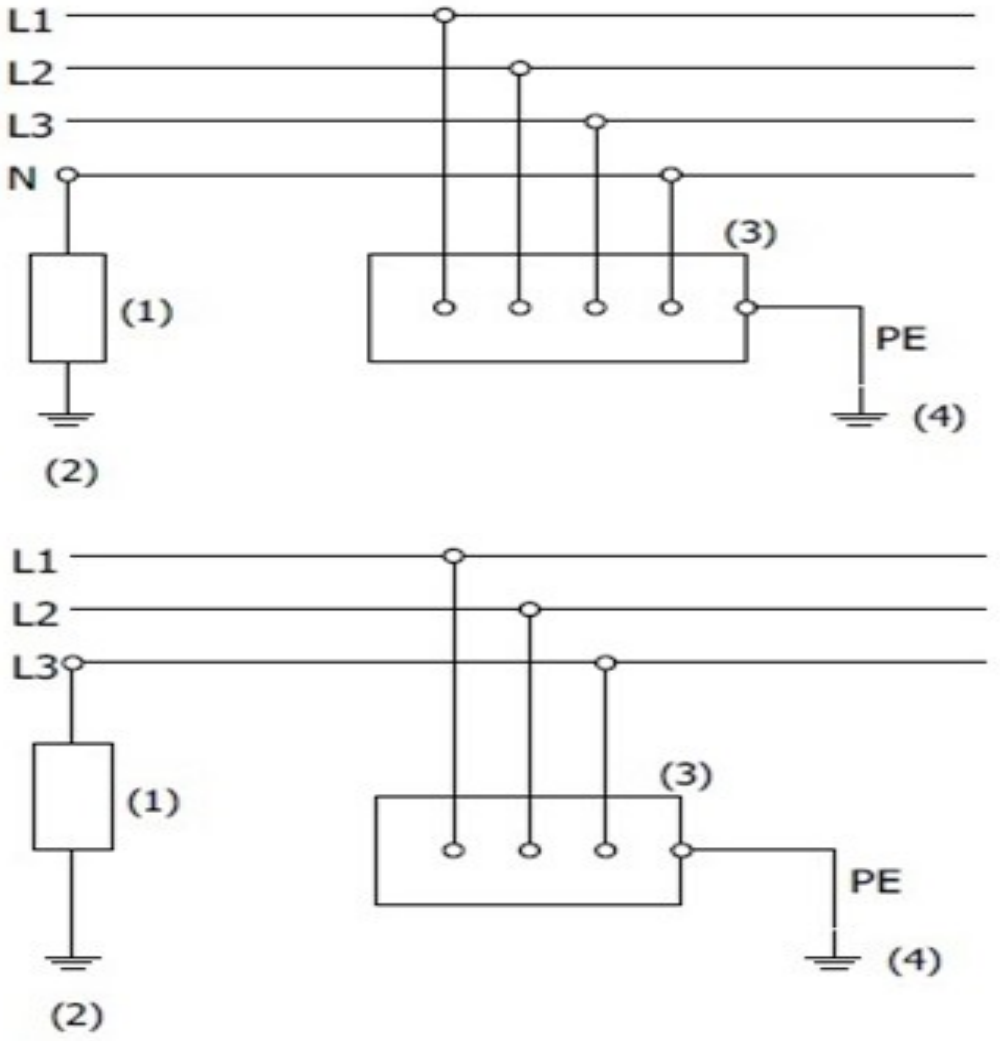
(2) Earthing of the network
(3) Grounding of the mass

b.3. IT schema

The IT schema either has no point in the network (N or L) connected directly to the ground, or has a point in the network (N or

L) connected to the ground through a sufficiently high impedance, the masses of the equipment being grounded either individually, in groups or together. However, simultaneously accessible exposed conductive parts are connected to the same protective conductor.

Figure 2.5. IT schema



(1) Impedance (installed or not)
(2) Earthing of the network
(3) Earth
(4) Grounding of the mass

If an artificial neutral point is used, it may be connected to the earth if the impedance between that artificial neutral point and the earth is sufficiently high.

c. Description of direct current earthed diagrams

c.1. Background information

DC earthing schemes are executed with two or three active conductors.

Figure 2.6. Diagram grounded in direct current with two active conductors

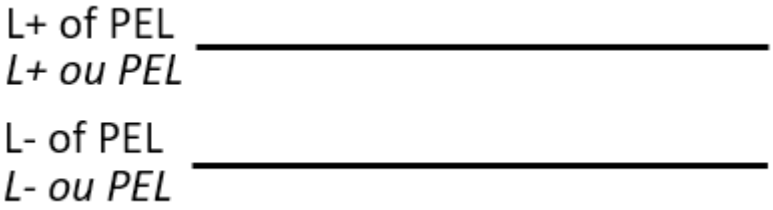


Figure 2.7. Diagram grounded in direct current with three active conductors

When a point in the network is directly or indirectly grounded, the midpoint shall preferably be grounded.

c.2. Description of grounded drawings

The following types of earthing systems are taken into consideration in this Book:
- the TN scheme with its three variants (TN-S, TN-C and TN-C-S);
- the TT system;
- the IT system.

c.2.1. The TN diagram

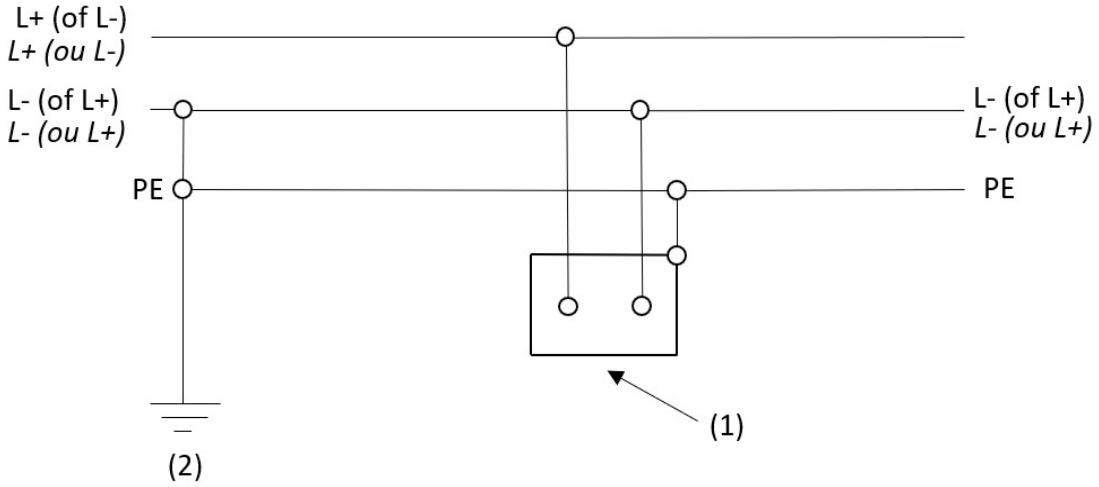
The TN diagram has at least one point in the network (M, L_+ or L_-) connected directly to the ground, the masses of the equipment being connected at this point by protective conductors.
The protective conductor shall be earthed at least at one point.

Three variants of TN systems are taken into

consideration, depending on where the active earthed conductor and protective conductor are located, i.e:

- the TN-S diagram with two active conductors in which the grounded active conductor and the protective conductor are separated;

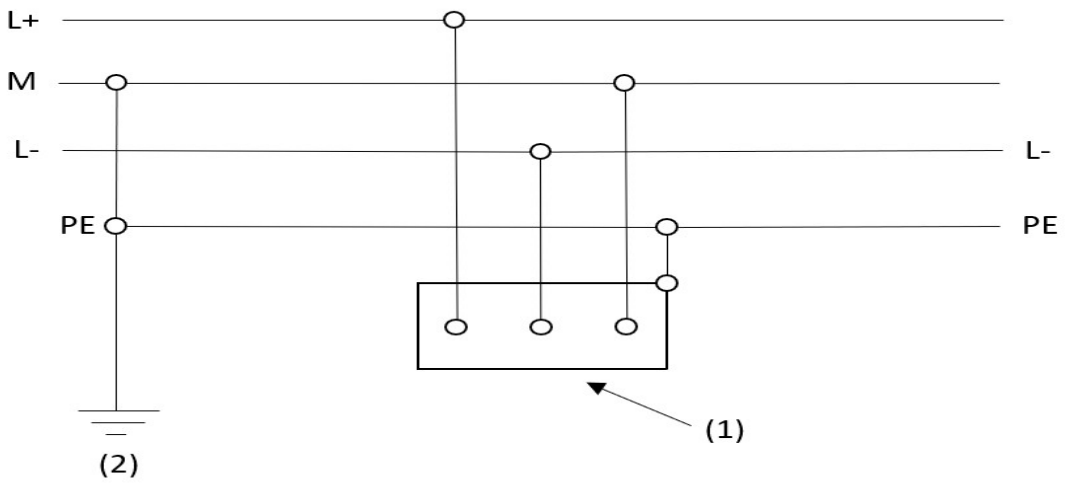
Figure 2.8. TN-S diagram with two active conductors



(1) Earth
(2) Earthing of the network

- the TN-S diagram with three active conductors in which the grounded active conductor and the protective conductor are separated;

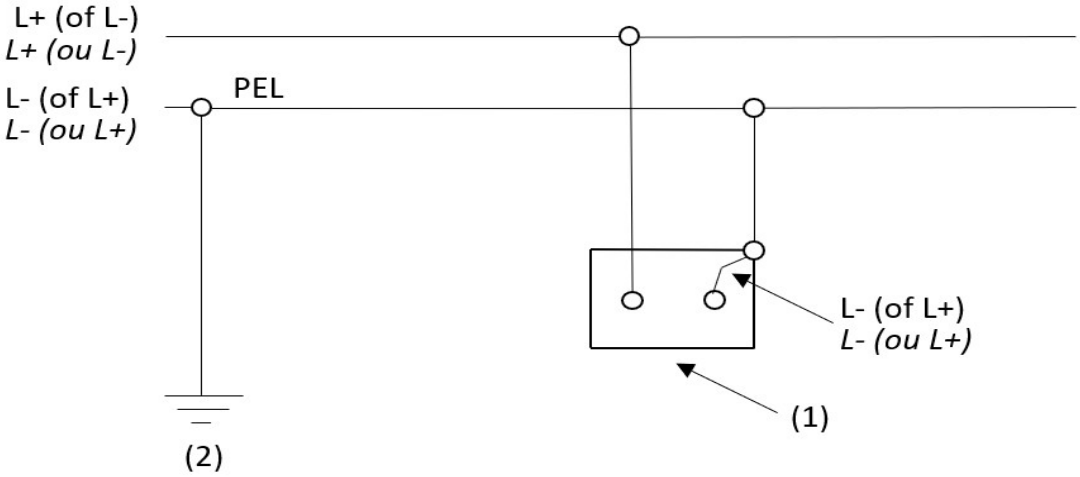
Figure 2.9. TN-S diagram with three active conductors



(1) Earth
(2) Earthing of the network

- the TN-C diagram with two active conductors in which the grounded active conductor and the protective conductor are combined in a single conductor;

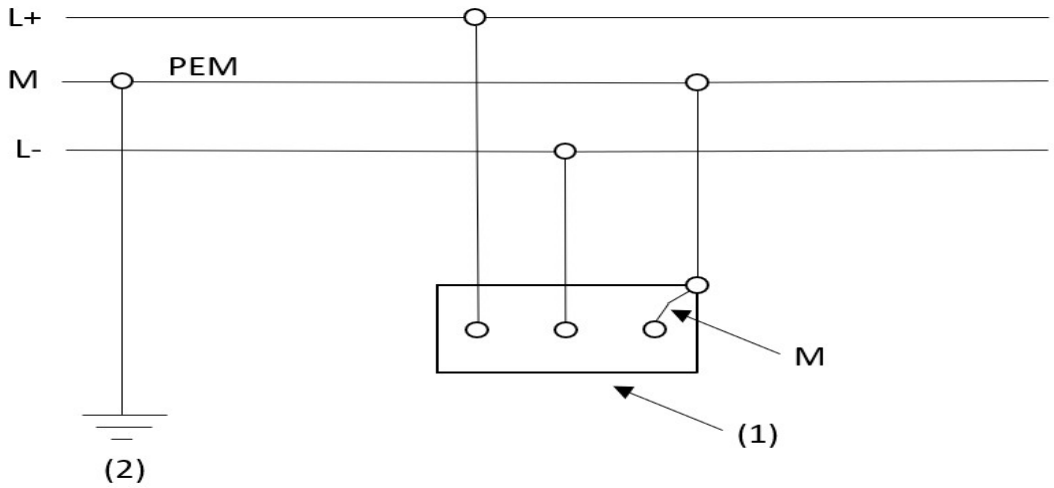
Figure 2.10. TN-C diagram with two active conductors



(1) Earth
(2) Earthing of the network

- the TN-C diagram with three active conductors in which the grounded active conductor and the protective conductor are combined in a single conductor;

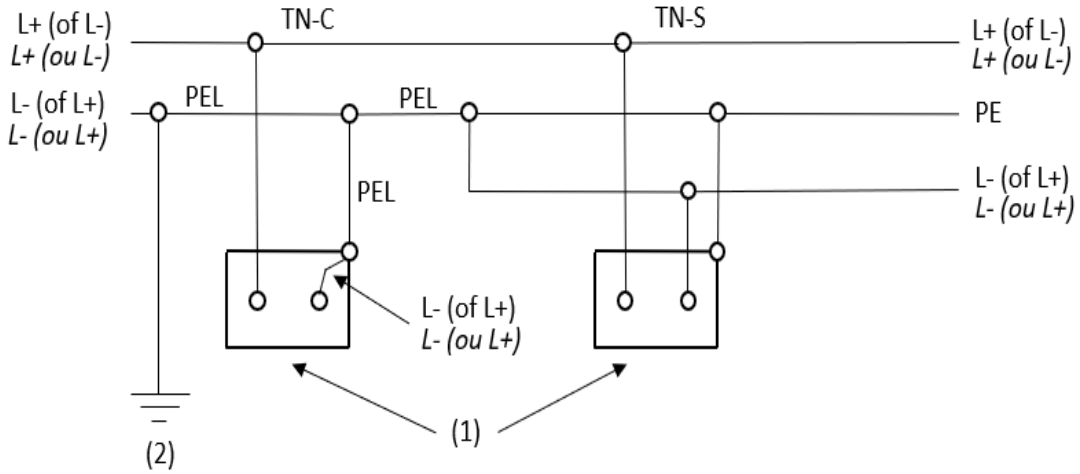
Figure 2.11. TN-C diagram with three active conductors



(1) Earth
(2) Earthing of the network

- TN-C-S diagram with two active conductors in which the active conductor earthed and the protective conductor are combined into a single conductor in a part of the equipment;

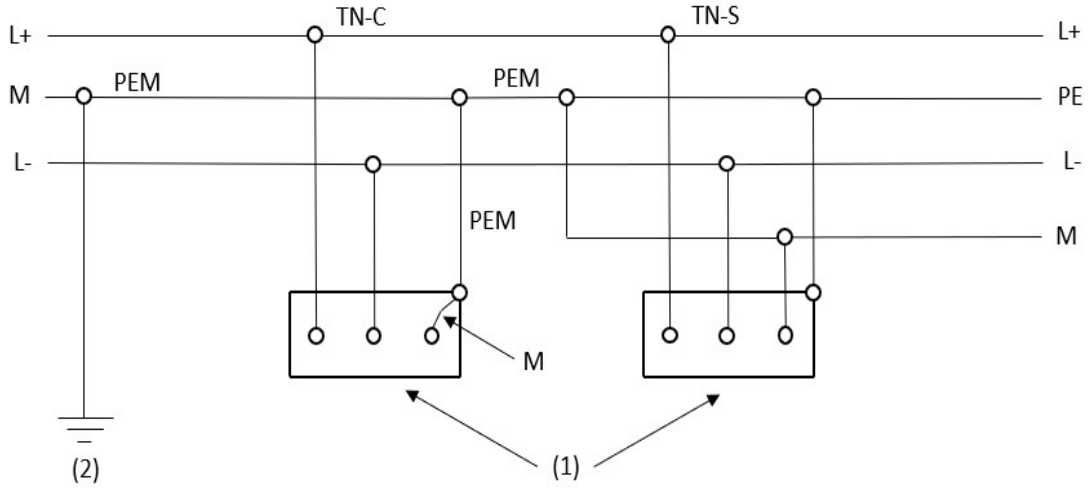
Figure 2.12. TN-C-S diagram with two active conductors



(1) Earth
(2) Earthing of the network

- TN-C-S diagram with three active conductors in which the earthed active conductor and the protective conductor are combined into a single conductor in part of the equipment.

Figure 2.13. TN-C-S diagram with three active conductors

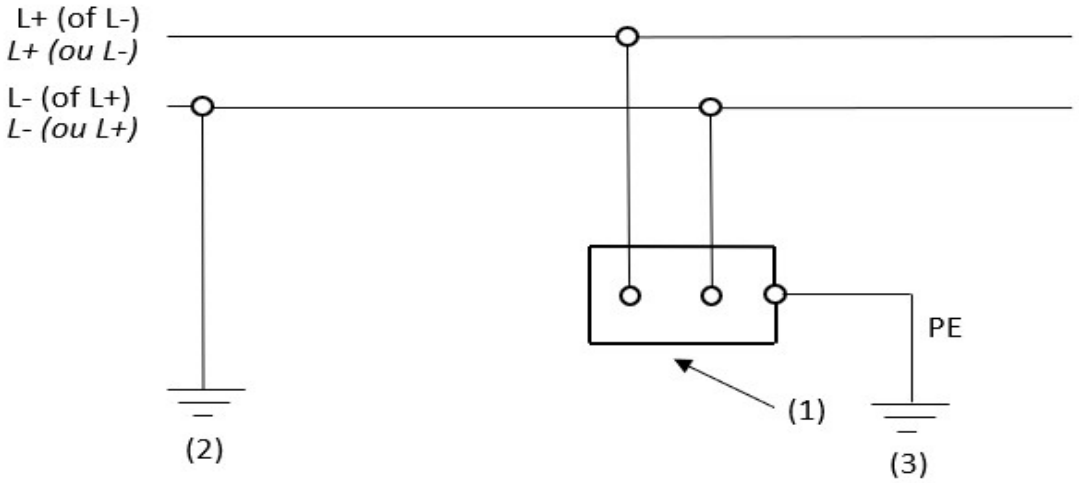


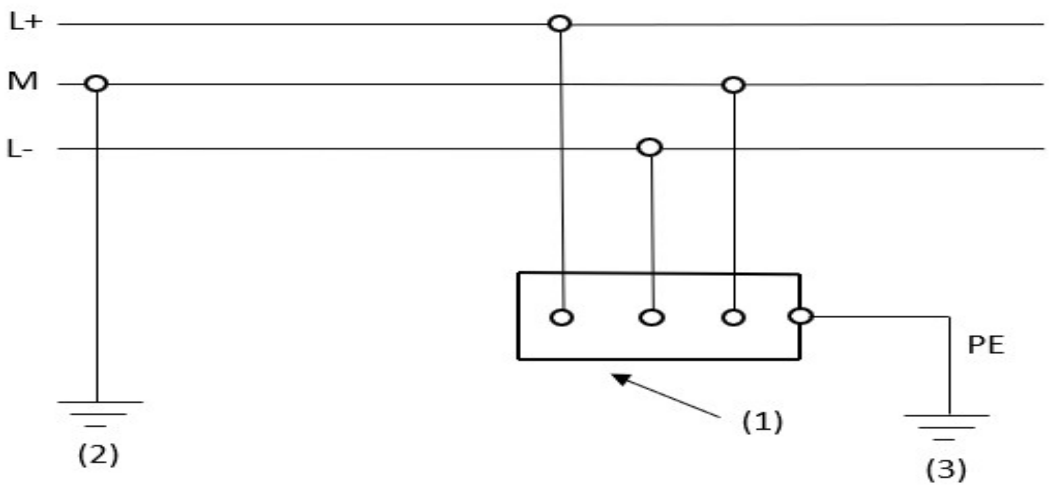
(1) Earth
(2) Earthing of the network

c.2.2. TT schema

The TT diagram has at least one point in the network (M, L_+ or L_-) connected directly to the earth, the masses of the equipment being connected either individually, in groups or together to one or more earth sockets which are distinct and electrically independent of that of the network.

Figure 2.14. TT diagram with two and three active conductors



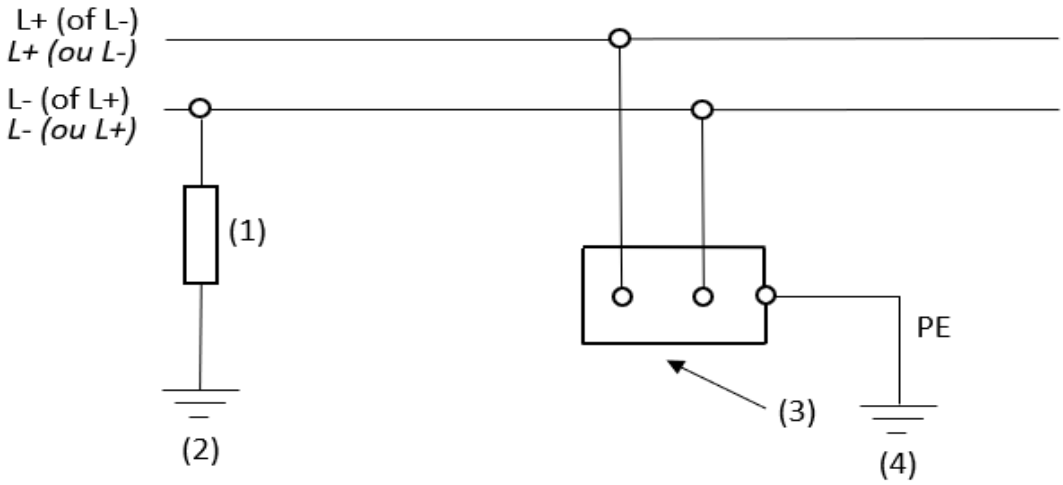


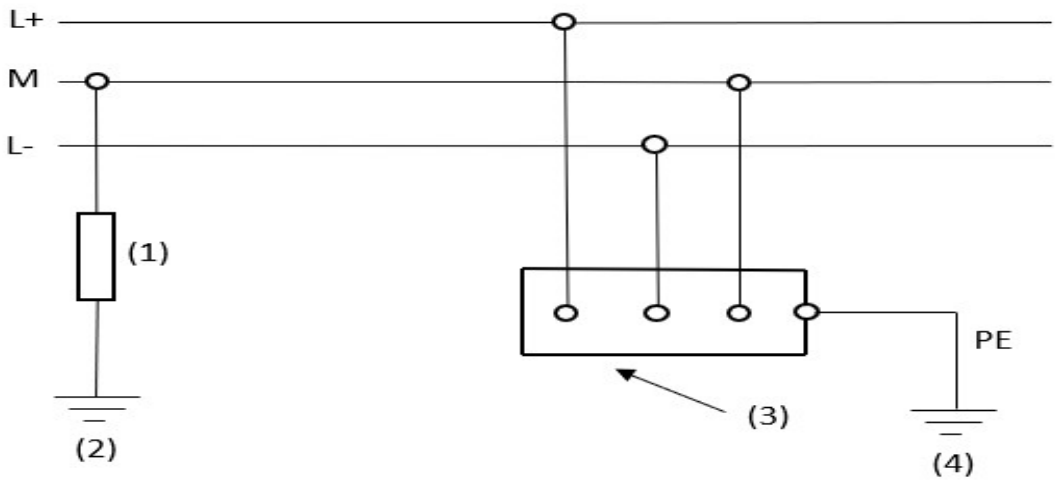
(1) Earth
(2) Earthing of the network
(3) Grounding of the mass

c.2.3. IT schema

The IT diagram either has no point in the network (M, L_+ or L_-) connected directly to the ground, or has a point in the network (M, L_+ or L_-) connected to the ground through a sufficiently high impedance, the masses of the equipment being grounded either individually, in groups or together. However, simultaneously accessible exposed conductive parts are connected to the same protective conductor.

Figure 2.15. IT diagram with two and three active conductors





(1) Impedance (installed or not)
(2) Earthing of the network
(3) Earth
(4) Grounding of the exposed conductive part.

Article 4. In Annex 1, Book 1, Part 2, Chapter 2.4., Section 2.4.1. of the same Decree, as amended by the Royal Decrees of 5 March 2023 and 3 October 2024, the following amendments are made:

1° The definition 'Active conductor' is replaced by the following:

'Live conductor: conductor used to transmit electrical energy. Line conductors and neutral conductors, even if these conductors are used as protective conductors (PEN, PEM or PEL conductors) are covered by this definition. ';

2° The definition 'Neutral conductor' is replaced by the following:

Neutral conductor: N conductor in alternating current or M conductor in direct current. ';

3° The definition 'PEN conductor' is replaced by the following:

'PEN conductor: conductor (PEN) providing alternating current functions for both the N conductor and the grounded protective conductor. ';

4° indent 1 of the definition 'Live parts' is replaced by the following:
'conductors and conductive parts of

electrical equipment likely to be energised in normal service and conductive parts galvanically (electrically) connected to the neutral conductor. Nevertheless, the conductors PEN, PEM and PEL are not, by convention, considered as live parts;";

5° in indent 2 of the definition 'Live parts', the words 'the parts of' are replaced by the words 'parts of';

6° the following definitions are inserted between the definitions 'Active conductor' and 'Neutral conductor':

'Line conductor: active conductor or live part (L) which participates in the distribution of electrical energy with the exception of the neutral conductor.

Conductor L_+: line conductor (L_+) with the highest potential in direct current.

Conductor L_-: line conductor (L_-) with the lowest potential in direct current.

M conductor: conductor (M) connected via direct current to the midpoint and capable of contributing to the distribution of electrical energy.

N conductor: conductor (N) connected by alternating current to the neutral point and capable of contributing to the distribution of electrical energy. ';

7° the following definitions are inserted between the definitions 'Neutral conductor' and 'PEN conductor':

PEL conductor: conductor (PEL) providing alternating current or direct current for both line conductor and grounded protective conductor functions.

PEM conductor: conductor (PEM) providing both M-conductor and grounded protective conductor functions in direct current. ';

8° in the definition 'Touch accessibility volume', the words 'Figures 2.6. to 2.9. 'are replaced by the words 'Figures 2.16 to 2.19. '.

Article 5. In Annex 1, Book 1, Part 2,

Chapter 2.4., Section 2.4.3., of the same Decree, in the definition ‘Classes of electrical equipment’, subparagraph 2, point (c), the following amendments are made:

1° in the French text, the words ‘a flexible cable’ are replaced by the words ‘a flexible electrical line’;

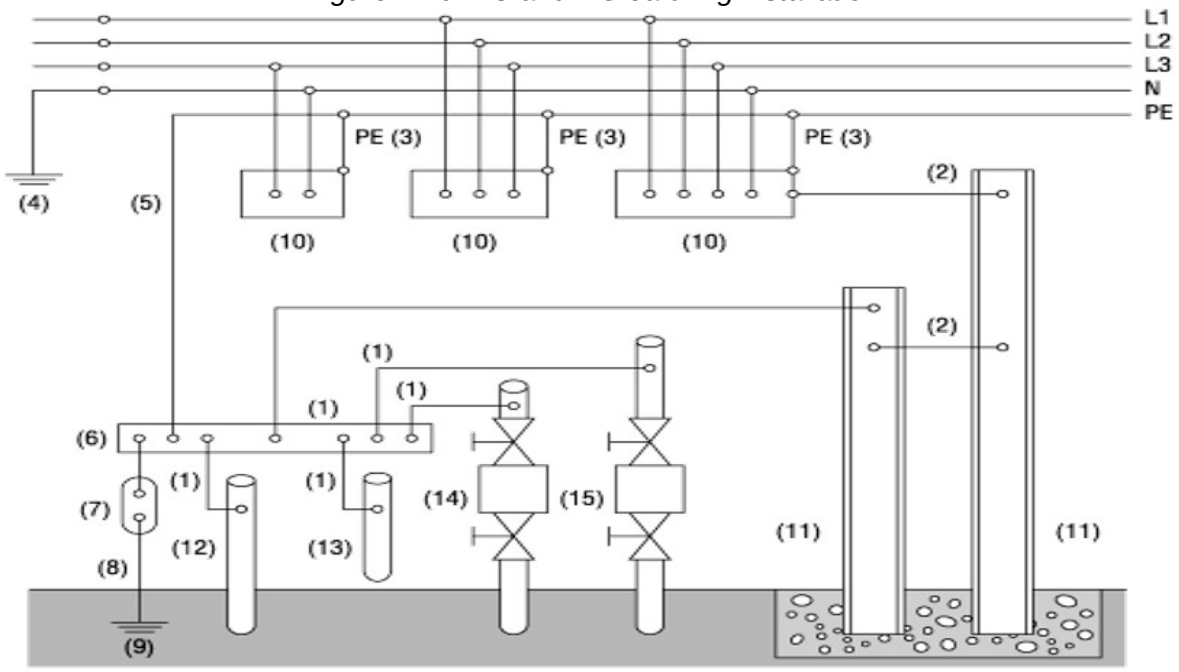
2° in the French text, the words ‘this cable’ are replaced by the words ‘this line’;

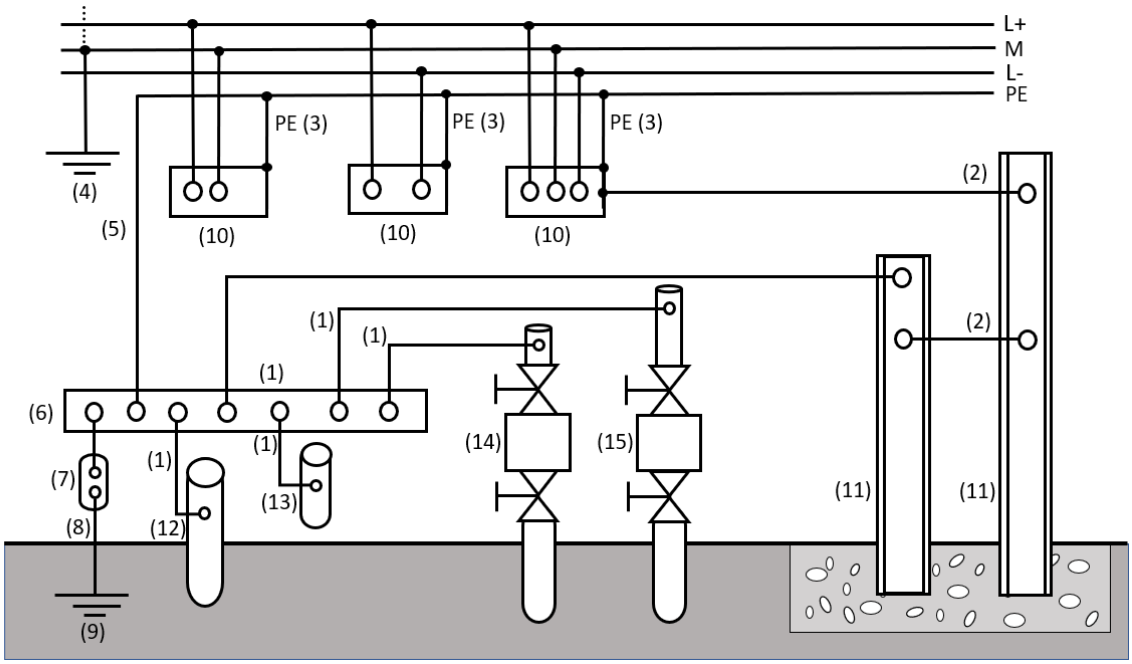
3° in the Dutch text, the words ‘dit snoer’ are replaced by the words ‘deze leiding’.

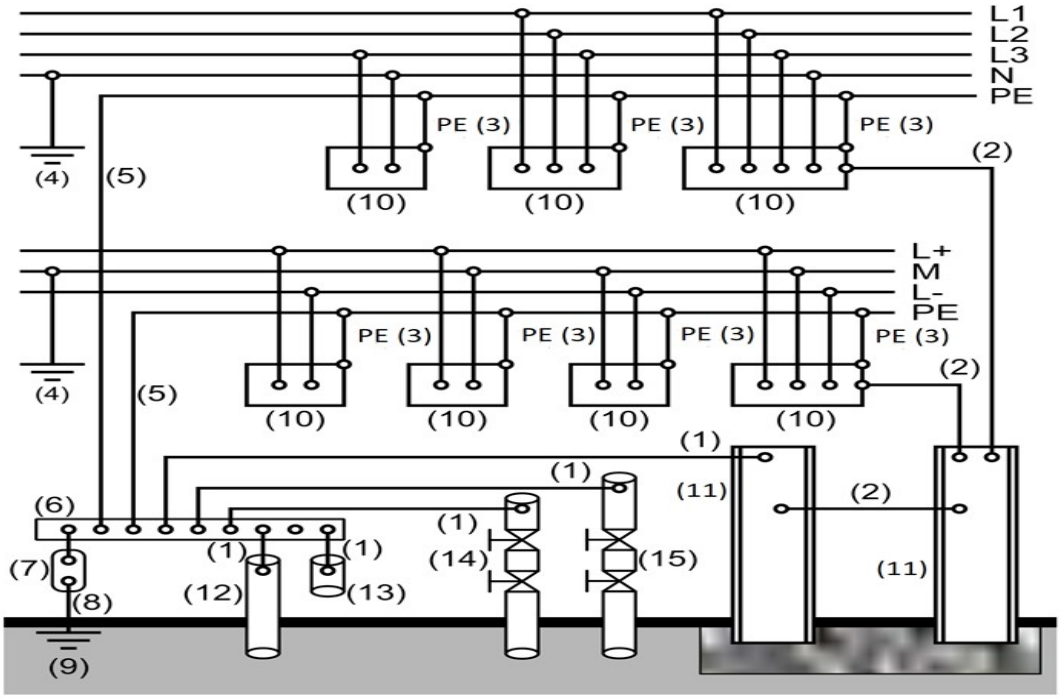
Article 6. In Annex 1, Book 1, Part 2, Chapter 2.5., of the same Decree, as amended by the Royal Decree of 5 March 2023, the following amendments are made:

1° Figure 2.10. is replaced by the following:

'Figure 2.20. AC and DC earthing installation







(1) *Main equipotential bond*
(2) *Additional equipotential bond*
(3) *Protective conductor*
(4) *Earthing of the network*
(5) *Main protective conductor*
(6) *Main earthing terminal*
(7) *Earthing switch*
(8) *Earth conductor*
(9) *Earthing of the exposed conductive parts of the equipment*
(10) *Earth*
(11) *Framework*
(12) *Dumping site*
(13) *Heating*
(14) *Water*
(15) *Gas';*

2° The following definition is inserted between the definitions 'Earth Conductor' and 'Earth Conductor of the Neutral Point and/or Neutral Conductor':

'Earth conductor of midpoint and/or M conductor: conductor relying on direct current connecting the midpoint and/or a point on the M conductor to an earth electrode. ';

3° The definition 'Earth conductor of the neutral point and/or the neutral conductor' is replaced by the following:

'Earth conductor of neutral and/or N

conductor: conductor relying on alternating current connecting the neutral point and/or a point on the N conductor to an earth electrode.

Unless required for this conductor either in alternating current or direct current, the term ‘earth conductor of the neutral point and/or neutral conductor’ refers in this Book to ‘the earth conductor of the neutral point and/or the N conductor and the earth conductor of the midpoint and/or M conductor.’;

4° in the French definition ‘main conductor protection’, the word ‘neutral’ is replaced by the words ‘neutral conductor’.

Article 7. In Annex 1, Book 1, Part 2, Chapter 2.6., Section 2.6.3. of the same Decree, the following amendments are made:

1° The heading of the the section is replaced by the following:

‘Section 2.6.3. Transformers and converters’;

2° the following definitions are inserted after the definition ‘Safety transformer’:

‘Converter: device that converts a voltage U_1 and/or frequency f_1 into a voltage U_2 and/or frequency f_2 (unidirectional) or in the reverse direction (bidirectional).
DC-DC converter (also known as chopper, adapter, etc.): U_1 and U_2 are continuous tensions.

AC-DC converter (also known as rectifier, adapter, etc.): U_1 is an alternating voltage and U_2 is a continuous voltage.

DC-AC converter (also called inverter, reverser): U_1 is a continuous voltage and U_2 is an alternating voltage.

AC-AC converter (also called transformer): U_1 and U_2 are alternating voltages.

Frequency converter or inverter: U_1, f_1 shall be converted into U_2, f_2. ’;

3° in the Dutch definition

‘Scheidingstransformator’, the words ‘moet een graad van bescherming verzekeren’ are replaced by the words ‘verzekert een graad van bescherming’;

4° in the Dutch definition ‘Beschermingstransformator’, the words ‘moet een graad van bescherming verzekeren’ are replaced by the words ‘verzekert een graad van bescherming’;

5° in the definition ‘Safety transformer’, the words ‘very low safety voltage’ are replaced by the word ‘TBTS’.

Article 8. In Annex 1, Book 1, Part 2, Chapter 2.6., Section 2.6.4., of the same Decree, as amended by the Royal Decrees of 10 July 2022 and 5 March 2023, the definition ‘Residual operating differential current’ is replaced by the following:

‘Operating current: value of the residual current that trips a protective device.

Differential-residual current protective devices are classified in four categories according to the sensitivity of the apparatus, namely:

- low sensitivity devices for which the operating differential current is higher than 1,000 mA;
- medium sensitivity devices for which the operating differential current is greater than 30 mA in alternating current or non-smooth direct current and 80 mA in smooth direct current and less than or equal to 1000 mA;

- high sensitivity devices for which the operating differential current is greater than 10 mA in alternating current or non-smooth direct current and 20 mA in smooth direct current and not more than 30 mA in alternating current or non-smooth direct current and 80 mA in smooth direct current;
- very high sensitivity devices for which the differential operating current is not more than 10 mA in alternating current or non-smooth direct current and 20 mA in smooth direct current. ’.

Article 9. In Annex 1, Book 1, Part 2, Chapter 2.7., Section 2.7.1., of the same

Decree, as amended by the Royal Decrees of 5 March 2023 and 3 October 2024, in the French text, the following amendments are made:

1° in the definition ‘Pre-assembled piping’, the words ‘neutral’ are replaced by the words ‘neutral conductor’;

2° in the definition ‘Connector’, the following amendments are made:

a) the words ‘a flexible, non-attached cable’ are replaced by the words ‘a flexible, non-attached electrical flowline’;

b) the words ‘the flexible cable’ are replaced by the words ‘the flexible electrical line’.

Article 10. In Annex 1, Book 1, Part 2, Chapter 2.11., Section 2.11.1., of the same Decree, in the definition ‘Area under voltage’, the words ‘Figures 2.21. to 2.23. are replaced by the words ‘Figures 2.31. to 2.33. ’.

Article 11. In Annex 1, Book 1, Part 3, Chapter 3.1., Section 3.1.1., subparagraph 1, indent 1, of the same Decree, in the French text, the word ‘feeds’ is replaced by the words ‘energy sources’.

Article 12. In Annex 1, Book 1, Part 3, Chapter 3.1., Section 3.1.2., sub-section 3.1.2.1., Point a., Paragraph 8, of the same Decree, replaced by the Royal Decree of 5 March 2023, the words ‘different phases’ are replaced by the words ‘different active conductors’.

Article 13. In Annex 1, Book 1, Part 3, Chapter 3.1., Section 3.1.3., of the same Decree, as amended by the Royal Decree of 5 March 2023, the heading of the section is replaced by the following:

‘Section 3.1.3. Locating and indications’.

Article 14. In Annex 1, Book 1, Part 3, Chapter 3.1., Section 3.1.3., sub-section 3.1.3.3., point b., indent 5 of the same Decree, the words ‘sub-section 4.4.1.4. are replaced by the words ‘sub-section 4.4.1.3. ’.

Article 15. In Annex 1, Book 1, Part 3, Chapter 3.2., of the same Decree, Section 3.2.2., as amended by the Royal Decree of 5 March 2023, is replaced by the following:

‘Section 3.2.2. Equipment schema types

Sub-section 3.2.2.1. Types of alternating current grounded diagrams

The following types of earthing systems are taken into consideration in this Book:
- the TN scheme with its three variants (TN-S, TN-C and TN-C-S);
- the TT system;
- the IT system.

Sub-section 2.2.1.2 (b) describes these alternating current grounded diagrams.

Sub-section 3.2.2.2. Types of diagrams grounded in direct current

The following types of earthing systems are taken into consideration in this Book:
- the TN scheme with its three variants (TN-S, TN-C and TN-C-S);
- the TT system;
- the IT system.

sub-section 2.2.1.2. (c) describes these direct current grounded diagrams. ’.

Article 16. In Annex 1, Book 1, Part 3, Chapter 3.3., Section 3.3.2., paragraph 2, of the same Decree, the words ‘on the power source’ are replaced by the words ‘the power supply to the equipment’.

Article 17. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.2., sub-section 4.2.2.1., of the same Decree, point (g) is replaced by the following:

‘g. Protection against electric shock by direct contact of the active conductor used as protective conductor

Active conductors used as protective conductors as well as the parts connected to them are considered to be protected against electric shock by direct contact if the prescribed conditions for the protection measures against electric shock by indirect contact in Section 4.2.3 are met. ’.

Article 18. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.2., sub-section 4.2.2.3., point c. of the same Decree, the following amendments are made:

1° in the Dutch text, the words ‘hoogspanningsmachines en -toestellen’ are replaced by the word ‘hoogspanningstoestellen’;

2° in the French text, the words ‘of high voltage machines and apparatus’ are replaced by the words ‘high-voltage apparatus’;

3° in the French text, the words ‘Flexible cables with insulation protection may be used’ are replaced by the words ‘Flexible electrical lines with insulation protection may be used’.

Article 19. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.2., sub-section 4.2.2.4., point a.3.1., of the same Decree, the sentence ‘U_N is the nominal voltage between phases of the network or installation, expressed in kV and rounded to the next unit. ’ is replaced by the following:

‘U_N is the nominal voltage between the line conductors of the equipment, expressed in

kV and rounded to the next unit. ’.

Article 20. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.2., sub-section 4.2.2.5., point c., of the same Decree, amended by the Royal Decree of 3 October 2024, in the French text, the word ‘source’ is replaced by the words ‘energy source’.

Article 21. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.3. of the same Decree, sub-section 4.2.3.1. is replaced by the following:

‘Sub-section 4.2.3.1. Principles of the prevention of electric shocks due to indirect contact

Protection against electric shocks due to indirect contact is ensured:

1. by avoiding an insulation fault that would propagate the potential of the live part in contact with the insulation up to the accessible conductive parts:

- by a safe construction of electrical equipment;
- by proper maintenance of the electrical equipment.

2. and by taking additional protection measures as follows, depending on the situation:
- the use of Class II or equivalent safety electrical equipment (Section 2.4.3. and sub-section 4.2.3.3.b.);
- the use of factory-mounted assemblies with total insulation (Section 2.4.2. and sub-section 4.2.3.3.b.);
- by providing additional insulation on the equipment when the installation is built (Section 2.4.2. and sub-section 4.2.3.3.b);
- by providing additional insulation on the equipment when the installation is built (Section 2.4.2. and sub-section 4.2.3.3.b);
- the use of other protective measures without a power cut-off device, limited to individual electrical machines or appliances and consisting of either:
• making contacts of exposed conductive parts non-hazardous by the use of TBTS (sub-section 4.2.2.2.);

- making contacts of exposed conductive parts non-hazardous by applying the safety separation of the circuits (sub-section 4.2.3.3.c.);
- making impossible simultaneous contact with parts likely to be carried to potentials whose difference is dangerous by the creation of a non-grounded local equipotential zone (sub-section 4.2.3.3.d.2.), by the respective separation of foreign conductive masses and elements and masses between them (sub-section 4.2.3.3.d.3.), by the interposition of effective obstacles between foreign conductive masses and elements (sub-section 4.2.3.3.d.4.) and/or by the insulation of other masses and foreign conductive elements (sub-section 4.2.3.3.d.5.).
- the use of protective measures with automatic cut-off device requiring a connection of the masses to a protective conductor. This automatic cut-off device has operating characteristics that respect the safety curve (see Table 2.4. in section 2.4.1.), taking into account the characteristics of the fault loops and the grounded diagrams (see Section 3.2.2. and sub-section 4.2.3.4.).

If various protection measures are provided simultaneously, they must not influence each other or cancel each other out.

Where the equipment is powered by energy sources in parallel, for example the public distribution network and an autonomous energy source, protection against indirect contact electric shock shall be ensured both where the equipment is powered by the various sources in parallel and where the equipment is powered by only one of those energy sources. The proper operation of protective devices cannot be compromised by direct inputs from static converters or filters. ’.

Article 22. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.3., sub-section 4.2.3.3, of the same Decree, as amended by the Royal Decree of 5 March 2023, the following amendments are made:

1° The heading of the sub-section is replaced by the following:

‘Sub-section 4.2.3.3. Passive protection against electrical shock by indirect contact without automatic disconnection of the power supply’;

2° point c.2. is replaced by the following:

‘c.2. Supply of electrical equipment

The circuit is supplied with:
- either via an intermediary circuit separation transformer. This transformer is of Class II or meets the additional insulation protection measure in accordance with Section 2.4.2.;
- or by a source of energy providing an equivalent degree of safety.

The nominal voltage of the circuits shall not be higher than the low voltage of the first category.

The circuit thus supplied shall have no common points with any other circuit or points connected to the earth. ’;

3° in the Dutch text of point c.3., the words ‘moet zodanig zijn’ are replaced by ‘is zodanig’;

4° in the Dutch text of point c.4., paragraph 2, the words ‘moeten hun massa’s onderling verbonden worden’ are replaced by the words ‘worden hun massa’s onderling verbonden’;

5° in the same provision, the words ‘protective conductor not connected to the earth’ are replaced by the words ‘protective or equipotential bonding conductor not connected to the earth’;

6° point c.5. is replaced by the following:

‘c.5. Equipotentiality of the masses

Where the circuit supplies several socket-outlets, these shall have a protective contact. These contacts of the different bases are, in order to achieve the equipotentiality of the masses, connected to each other and possibly to the mass of

the energy source, without being grounded.

In flexible electricity lines, the protective conductor used as an equipotential bonding conductor is under the same duct as the live conductors. ';

7° the Dutch text of Point c.6. is replaced by the following:

'c.6. Electricity lines

If using the conductors in the same electricity line for the circuit and other types of circuits cannot be avoided, multi-conductor cables should be used without any metallic cladding or insulated conductors in insulating material installation systems. These cables and conductors comply with best practice, with the provisions of sub-section 5.2.1.3 and have rated voltage at least equal to the highest voltage involved, each circuit being protected against overcurrents;

8° point c.7. is replaced by the following:

'c.7. Protective device in the event of two dead shorts

When the same source supplies several electrical machines and appliances, a protective device cuts off supply within a time at least equal to that set for the safety curve defined in Table 2.4 in Section 2.4.1 in the case of two dead shorts affecting two exposed conductive parts supplied by two conductors with different potential. '.

Article 23. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.3., to that Order, sub-section 4.2.3.4., as amended by the Royal Decrees of 10 July 2022 and 5 March 2023, is replaced by the following:

'Sub-section 4.2.3.4. Active protection against electrical shock by indirect contact with automatic power supply disconnection

a. Principles

a.1. Background information

Protective measures with automatic disconnection of power supply require the

connection of the masses to a protective conductor and the use of protective devices whose operating characteristics respect the safety curve defined in Table 2.4. in section 2.4.1.

If the automatic disconnection in non-domestic fixtures cannot be achieved within the times prescribed by the safety curve by the protective devices, the following additional measure shall be applied:

- passive measures from sub-section 4.2.3.3., or
- the realisation of a potential equalisation zone by the use of supplementary equipotential bonding. This supplementary equipotential bonding is dimensioned in such a way that, in the event of a mass or earth fault, the protective device (residual differential current protective device or overcurrent protective device) activates within the time determined by the safety curve referred to in Table 2.4. of section 2.4.1.

Checking equipment may be used to give a signal in the event of a mass or earth fault. These devices are not considered to be devices for protection against indirect contact electric shock.

a.2. Protective devices and/or checking equipment

The following protective devices and/or checking equipment shall be used:

- overcurrent protective devices;
- choice of residual current protective devices;
- fault voltage protective devices;
- permanent isolation monitors;
- differential-residual current isolation controllers;
- checking equipment equipped with technology ensuring a level of safety at least equivalent to that of the controllers referred to in indents 4 and 5.

a.3. Duty of the protective conductor

It is prohibited to use, as the only means of protection against electric shock by indirect contact, residual differential current protective devices without the use of a

protective conductor, even if the residual differential current protective device is of high or very high sensitivity.

If a protective device sensitive to fault voltage is used, it is installed in such a way that operation is ensured at the dangerous fault voltages. The protective conductor is only connected to exposed conductive parts on electrical machines or appliances whose supply must be interrupted by the protective device. The auxiliary earth electrode is electrically independent from all other earthed metallic elements, such as structural metal components, metal flowlines and metallic cable sheaths. The latter condition shall be considered to be fulfilled if the auxiliary earth socket is installed at a distance of at least 15 m from other earth sockets, in the absence of underground metal structures capable of reducing the electrical resistance of the land over that distance.

a.4. Obligation of a main equipotential bond

In each building (in both domestic and non-domestic installations), a main equipotential bond is mandatory. It shall be carried out in accordance with the requirements of sub-section 5.4.4.1. and shall take into account the requirements of sub-section 4.2.3.2.

b. Protection measures in equipment according to a TN system

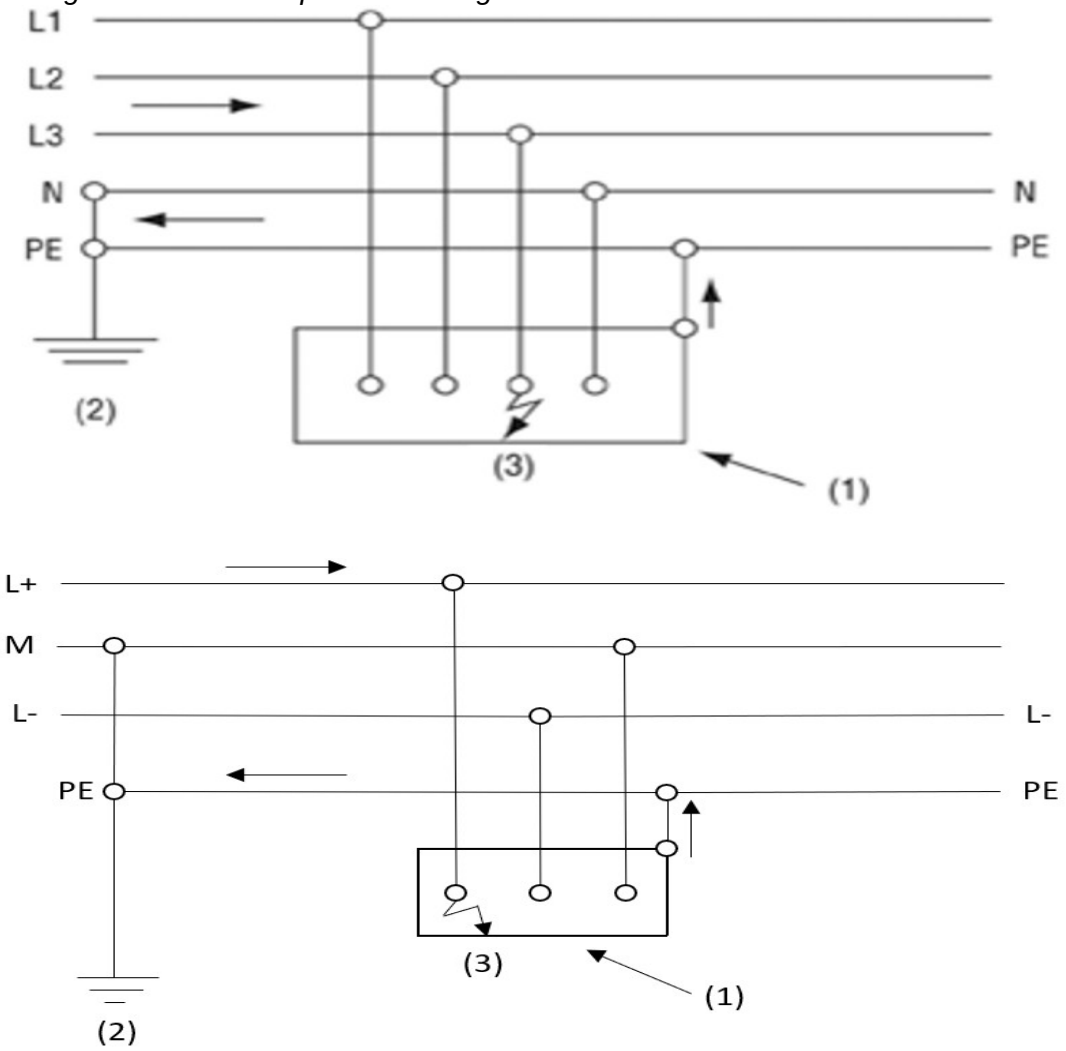
b.1. Fault loop

Any fault free from encumbrances between a line conductor and the mass of electrical equipment produces a shunt between that line conductor and the protective conductor.

At least one of the following protective devices is used:

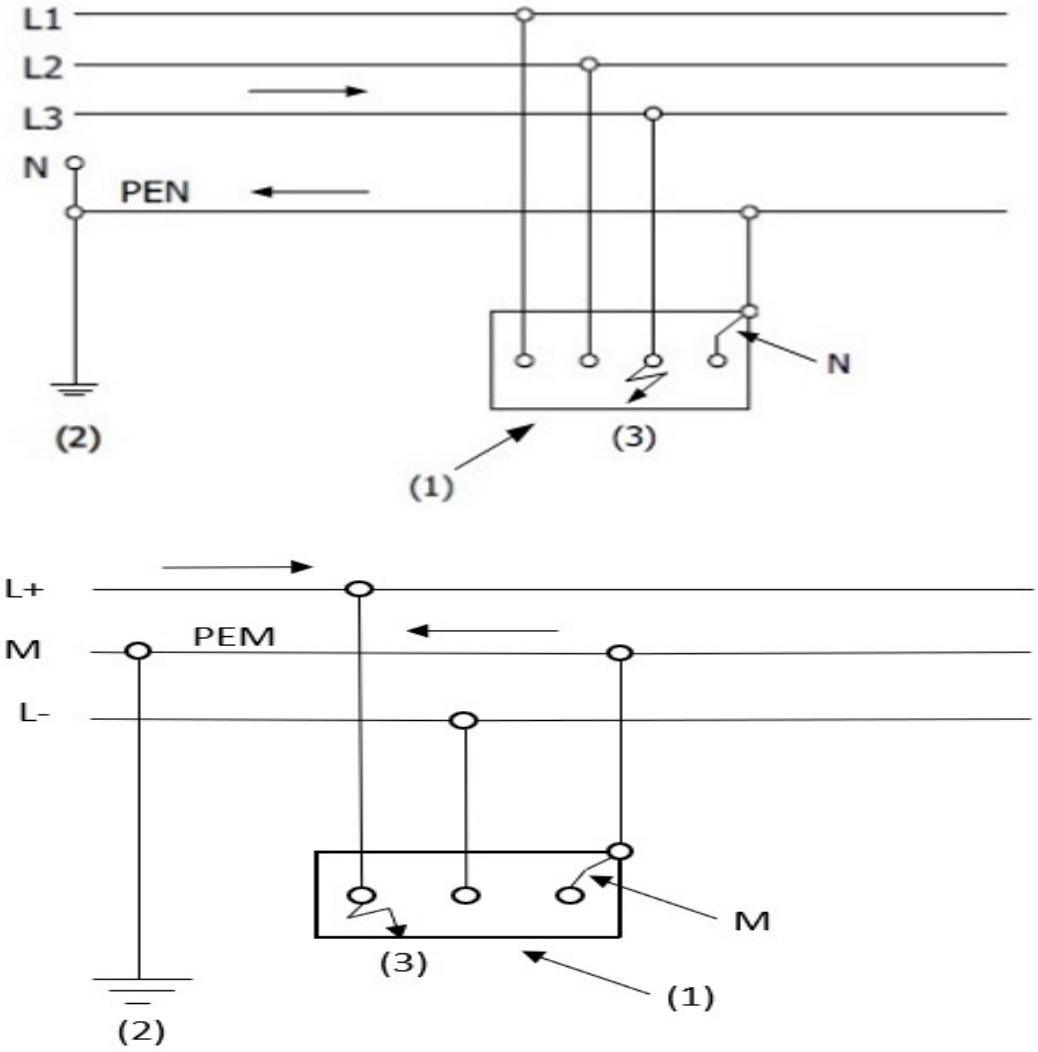
- overcurrent protective devices;
- choice of residual current protective devices;
- fault voltage protective devices.

Figure 4.3. Fault loop in alternating current and direct current TN-S scheme



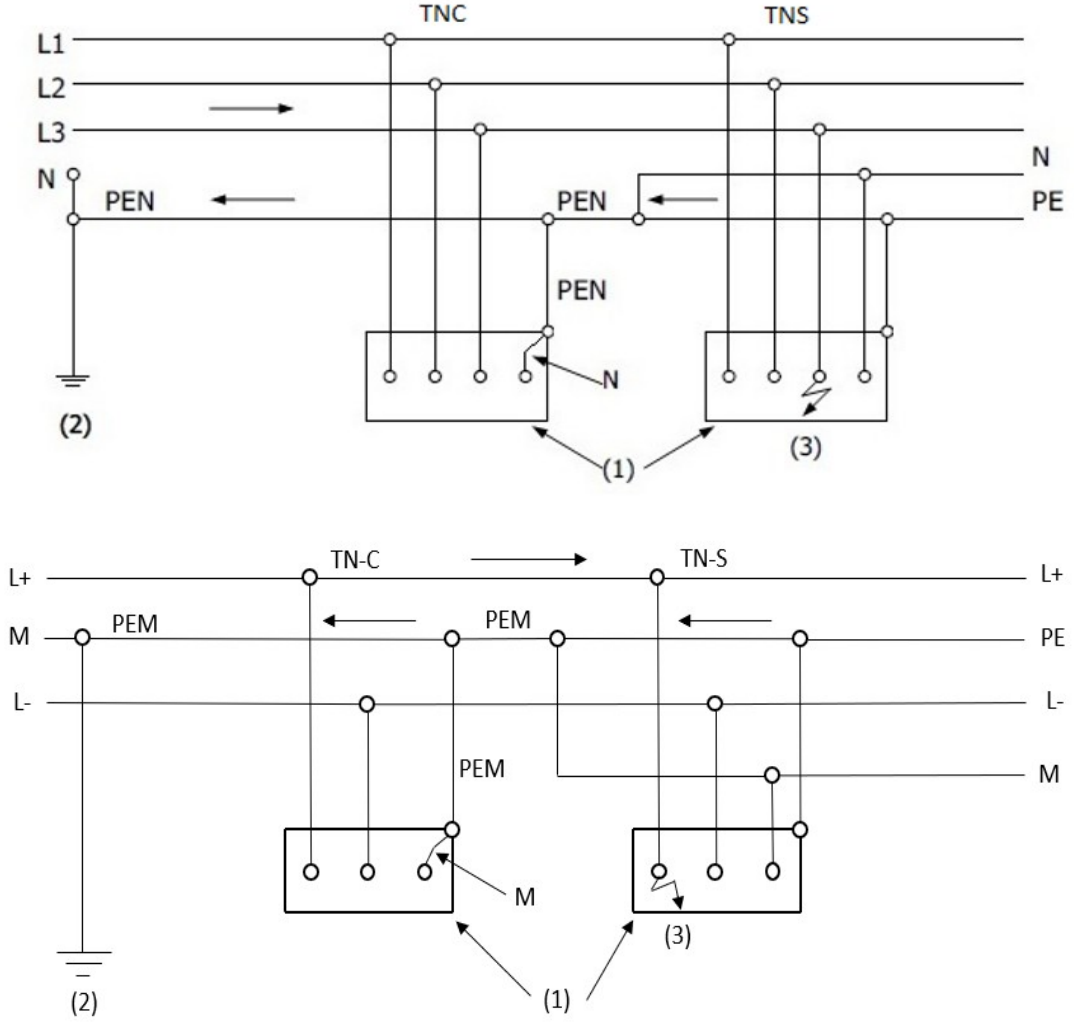
(1) Earth
(2) Earthing of the network
(3) Default

Figure 4.4. Fault loop in alternating current and direct current TN-C scheme



(1) Earth
(2) Earthing of the network
(3) Default

Figure 4.5. Fault loop in alternating current and direct current TN-C-S scheme



(1) Earth
(2) Earthing of the network
(3) Default

In the TN-C diagram, protection is provided by overcurrent protective devices.

b.2. Verification of the safety curve

The time to operate of the protective device shall not exceed the time defined by the safety curve for the assumed contact voltages.

The condition referred to in the first subparagraph shall be satisfied if the following formula is satisfied:

$$I_a \leq U_o/Z_s$$

where:

I_a EN A: operating current of the protection structure over the time defined by the safety curve referred to in Table 2.4 in section 2.4.1.;
U_o EN V: voltage in relation to the earth of the network;
$Z_s$in Ω: impedance of the fault loop.

b.3. TN-C system

The earthed active conductor (PEN, PEM and PEL) shall have a section at least equal to 10 mm² of copper or 16 mm² of aluminium, unless the rated voltage of the circuit is limited to the values of the absolute conventional limit voltage U_L mentioned in Table 2.3. in section 2.4.1.

The TN-C system is prohibited:

1° where the grounded active conductor (PEN, PEM and PEL) is used in the terminal circuit for the transmission of the electrical energy of a consumer powered by a line conductor and a grounded active conductor (PEN, PEM and PEL), unless the rated voltage of the equipment is limited to the values of the conventional absolute limit voltage U_L referred to in Table 2.3. in Section 2.4.1.;

2° in domestic installations, the common parts of a residential complex and equipment without informed (BA4) or qualified (BA5) personnel;

3° in places characterised by BE2 and/or BE3 and/or CA2 external influences;

4° for the dedicated circuit of a charging station for electric vehicles;

5° in temporary, mobile or transportable equipment.

b.4. TN-C system

If, from one point in the network, the earthed active conductor (PEN, PEM or PEL) is split according to its two functions into N conductor, M, L, L_+ or L_- on the one hand and protective conductor on the other, it is prohibited to reconnect these conductors downstream of that point.

The doubling shall be carried out in such a way as to ensure a direct and permanent connection of the common conductor to the protective conductor.

b.5. Use of differential-residual current protective devices in TN-(C)-S diagram

If one or more of the conditions set out above are not met for certain electrical appliances or for certain parts of the equipment, these appliances or parts of the installation are protected by a residual current protective device.

If this type of device is used, the exposed conductive parts cannot be connected to the network protective conductor when they are connected to an earth electrode whose resistance is adapted to the differential operating current of the differential-residual current protective device.

The circuit protected by this differential-residual current protective device shall then be considered in accordance with the TT scheme and the protective measures set out in point c. below shall apply.

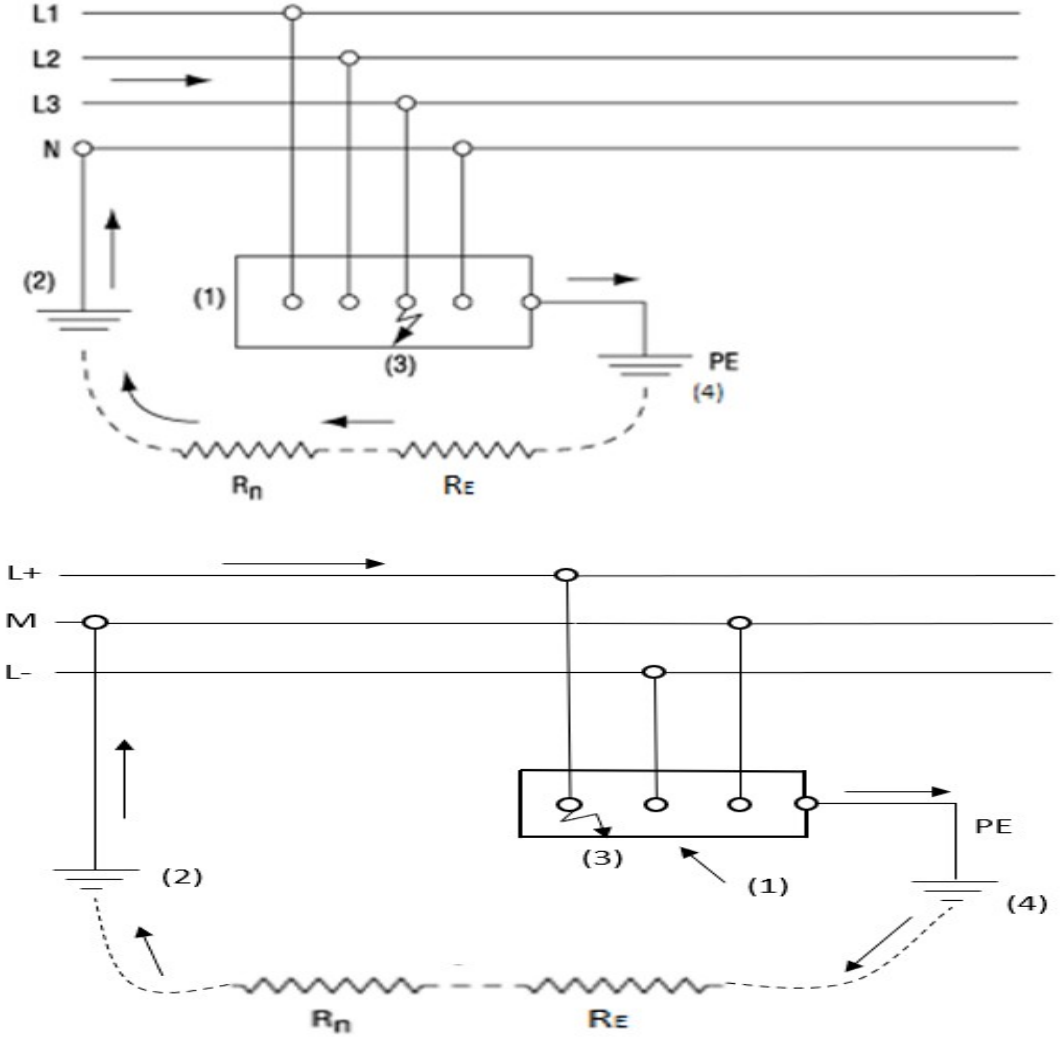
c. Protection measures in equipment according to a TT system

c.1. Fault loop

The fault loop usually includes the earth through which a de facto electrical connection is created between the earth sockets of the equipment and those of the grid.

The fault currents between a line conductor and a mass of the equipment or earth shall be limited by the impedance of the fault loop, while having a lower value than a shunt current.

Figure 4.6. Fault loop in TT diagram for alternating current and direct current



(1) Earth
(2) Earthing of the network (R_n)
(3) Default
(4) Earthing of the exposed conductive part (R_E)

At least one of the following protective devices is used:

- overcurrent protective devices;
- choice of residual current protective devices;
- fault voltage protective devices.

c.2. Verification of the safety curve

The time to operate of the protective device shall not exceed the time defined by the safety curve for the assumed contact voltages.

The condition referred to in the first

subparagraph shall be satisfied if the following formula is satisfied:

$$I_a \leq U_o/Z_s$$

where:
I_a EN A: operating current of the protection structure over the time defined by the safety curve referred to in Table 2.4 in section 2.4.1.;
U_o EN V: voltage in relation to the earth of the network;
$Z_s$in Ω: impedance of the fault loop.

If a differential-residual current protective device is used as an automatic power supply cut-off, the condition referred to in the first paragraph shall be fulfilled if the following formula is satisfied:

$$I_{\Delta n} \times R_E \leq U_L$$

where:
R_E in Ω: earthing dispersion resistance of the exposed conductive part of the equipment;
U_L at V: conventional absolute limit voltage as defined in Table 2.3. in Section 2.4.1.;
$I_{\Delta n}$ in A: rated operating differential current of the protective device.

The rated operating differential current $I_{\Delta n}$ and the dispersion resistance of the ground socket R_E are fixed:

- for domestic installations and common elements of a residential unit in sub-sections 4.2.3.2., 4.2.4.3.b. and 4.2.4.4.e.;
- for non-domestic installations in sub-section 4.2.4.4.d.;
- for special installations and locations in Part 7.

If an overcurrent protective device is used as an automatic power cut-off, the condition referred to in the first subparagraph shall be fulfilled if the following formula is satisfied:

$$I_a \leq U_o/Z_s$$

where:
I_a EN A: operating current of the protection structure over the time defined by the

safety curve referred to in Table 2.4 in section 2.4.1.;
U_o EN V: voltage in relation to the earth of the network;
$Z_s$in Ω: impedance of the fault loop.

c.3. Installation of differential-residual current protective device

All exposed conductive parts protected using the same residual current protective device are connected to the same earth electrode.

The earthed active n conductor is not connected to the earth downstream of the differential-residual current protective device.

c.4. Protection of a neutral conductor

Where in the circuit under consideration no differential-residual current protective device is present, overcurrent detection shall be provided on the neutral conductor with the exception of the special cases mentioned in sub-section 4.4.4.4.

This overcurrent detection cuts off the power supply including the neutral conductor.

d. Protection measures in equipment according to a IT system

d.1. The IT diagram

At least one of the following devices or apparatus shall be used, namely:
- overcurrent protective devices;
- choice of residual current protective devices;
- fault voltage protective devices;
- permanent isolation controllers that may be associated with an isolation fault location system;
- differential-residual current isolation controllers;
- checking equipment equipped with technology ensuring a level of control at least equivalent to the controllers referred to in indents 4 and 5.

Any neutral conductor is insulated and

installed in the same conditions as a line conductor.

Electrical equipment supplied between line and neutral conductors shall be chosen in such a way that its insulation corresponds at least to the voltage between line conductors.

d.2. Measures to be taken in the event of a first ground or mass fault

Automatic power cut-off is not mandatory in the case of a first clear fault between a line conductor and a mass or earth, provided that the following formula is met:

$$I_d \times R_E \leq U_L$$

where:
R_E in Ω: earthing dispersion resistance of the exposed conductive part of the equipment;
U_L at V: conventional absolute limit voltage as defined in Table 2.3. in Section 2.4.1.;
I_d in A: fault current in the event of a first clear fault between a line conductor and a mass or earth and takes into account the leakage currents and the overall earthing impedance of the equipment.

If the condition referred to in paragraph 1 is satisfied, provision shall be made for permanent surveillance to indicate the existence of a first fault at mass or earth. This monitoring shall be carried out by:

- either a permanent isolation controller;
- either a differential/residual current isolation controller;

- or a checking equipment equipped with technology ensuring a level of safety at least equivalent to that of the controllers mentioned above.

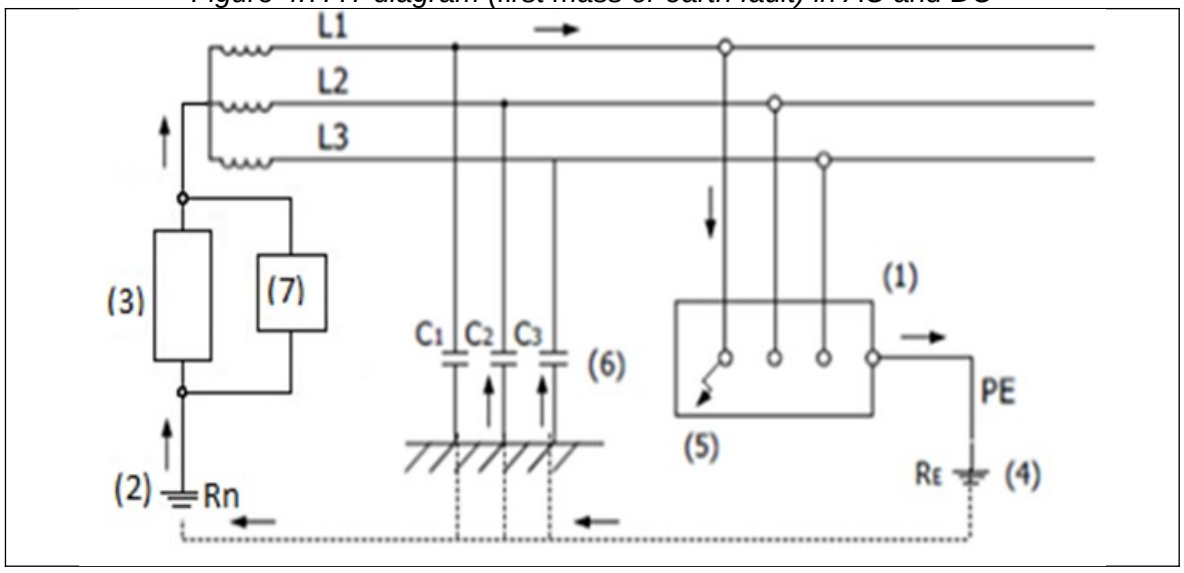
This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation.

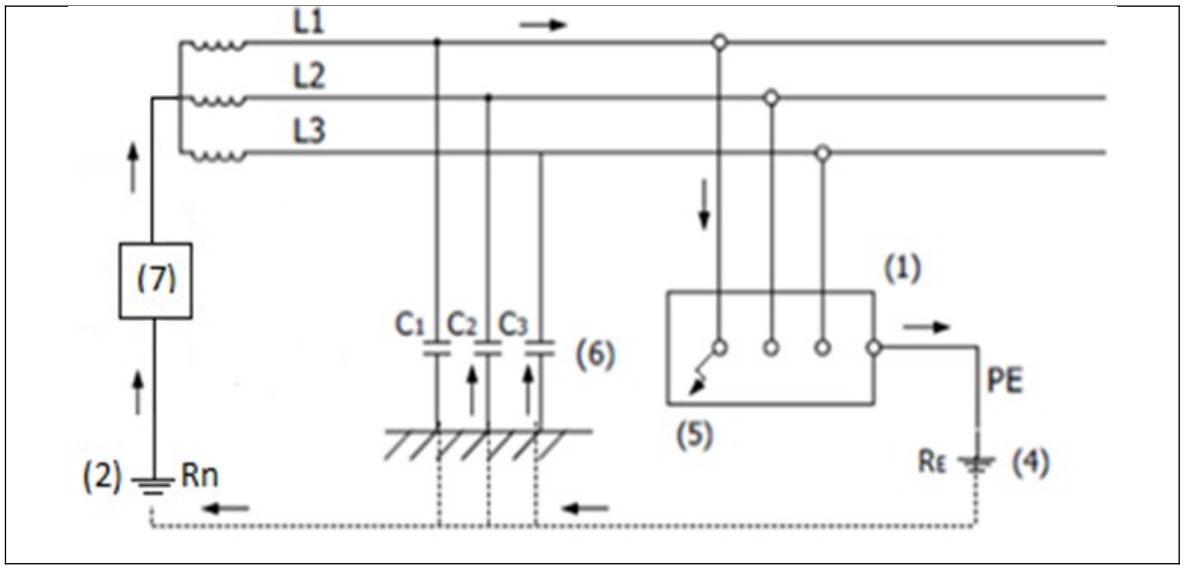
Subparagraph 2 shall not apply to

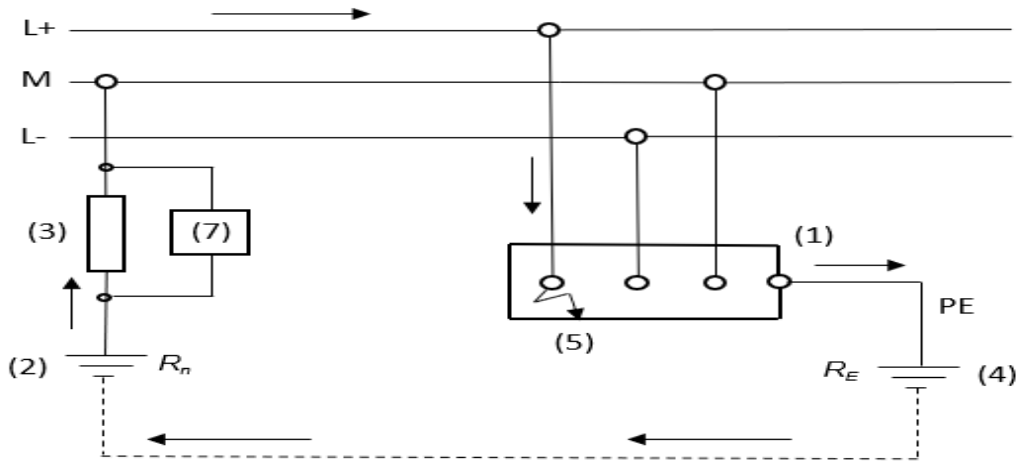
equipment with a rated voltage less than or equal to the absolute conventional limit voltage referred to in Table 2.3. in Section 2.4.1.

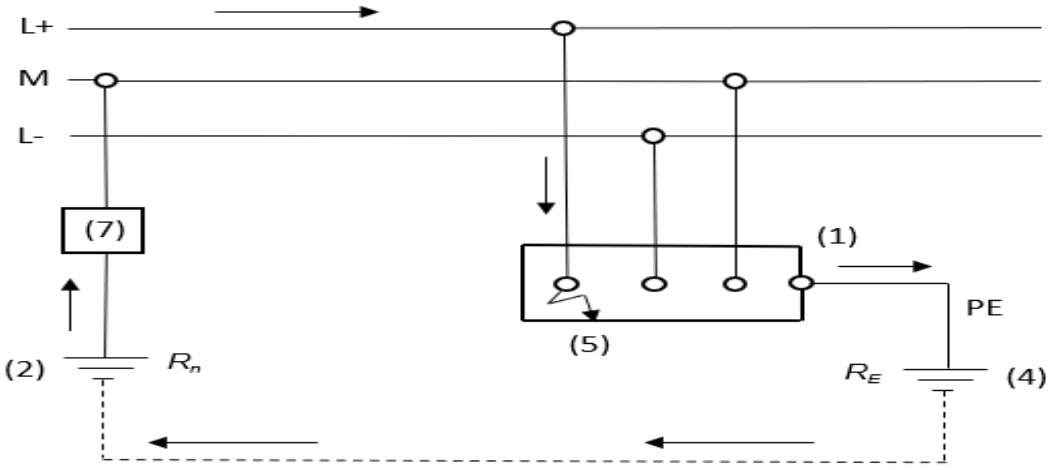
When a circuit is added to equipment according to an IT scheme and powered by the same energy source, the requirements of point d.2. shall apply to the entire equipment.

Figure 4.7. IT diagram (first mass or earth fault) in AC and DC









(1) Earth
(2) Earthing of the network (R_n)
(3) Impedance
(4) Earthing of the exposed conductive part (R_E)
(5) First mass or earth fault
(6) Spillage capacity
(7) Permanent isolation controller

d.3. Measures to be taken in the event of two mass or earth defects

After the occurrence of the first mass or earth fault, the conditions for automatically switching off the power supply to the second mass or earth fault that occurs on another active conductor shall be as follows:

a) If the masses are interconnected by a protective conductor and are collectively grounded (see Figure 4.8.), the conditions of the TN diagram apply. If the neutral conductor is not distributed in the IT diagram and assuming that the impedances of the circuits each with a ground or mass fault are equal, the following formula is met:

$$I_a \leq U/(2 \times Z_s)$$

If the neutral conductor is distributed in the IT diagram and assuming that the impedances of the circuits are equal, each with a fault to mass or earth, the following formula is satisfied:

$$I_a \leq U_o/(2 \times Z'_s)$$

where:
I_a EN A: operating current of the protection structure over the time defined by the safety curve referred to in Table 2.4 in section 2.4.1.;
U in V: voltage between line conductors;
U_o In V: voltage between line conductor and neutral conductor;
Z_s In Ω: impedance of the circuit with an insulation fault (line conductor and circuit protection conductor);
Z'_s In Ω: impedance of the circuit with an insulation fault (neutral conductor and protective conductor of the circuit).

b) If the masses are grounded either individually, in groups or together (see Figures 4.9.), the conditions of the TT scheme apply.

If a differential-residual current protective device is used as an automatic power supply cut-off, the following formula shall be met:

$$I_{\Delta n} \times R_E \leq U_L$$

where:
R_E in Ω: earthing dispersion resistance of the exposed conductive part of the equipment;
U_L at V: conventional absolute limit voltage as defined in Table 2.3. in Section 2.4.1.;
$I_{\Delta n}$ in A: rated operating differential current of the protective device.

The rated operating differential current $I_{\Delta n}$ and the dispersion resistance of the ground socket R_E are fixed:

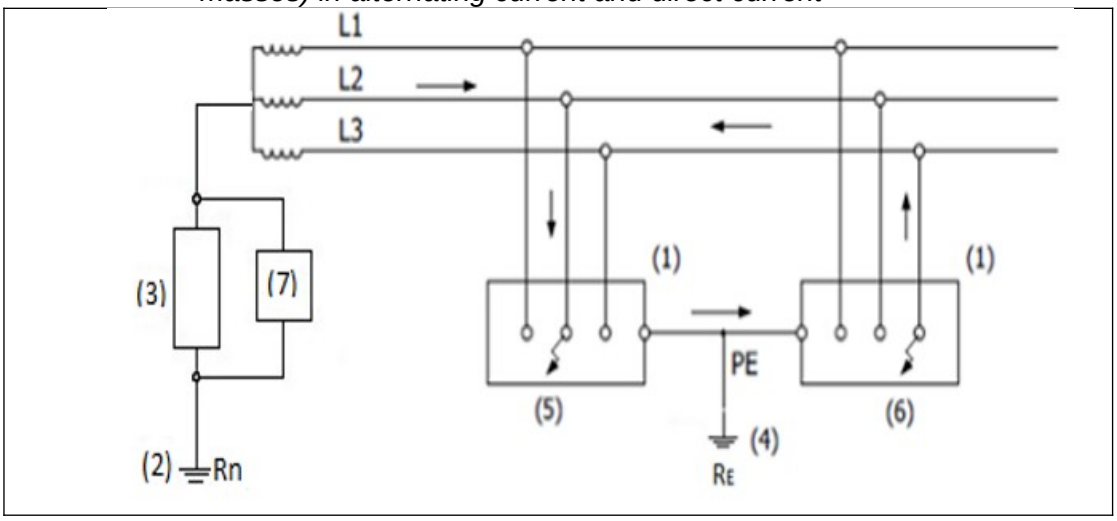
- for domestic installations and common elements of a residential unit in sub-sections 4.2.3.2., 4.2.4.3.b. and 4.2.4.4.e.;
- for non-domestic installations in sub-section 4.2.4.4.d.;
- for special installations and locations in Part 7.

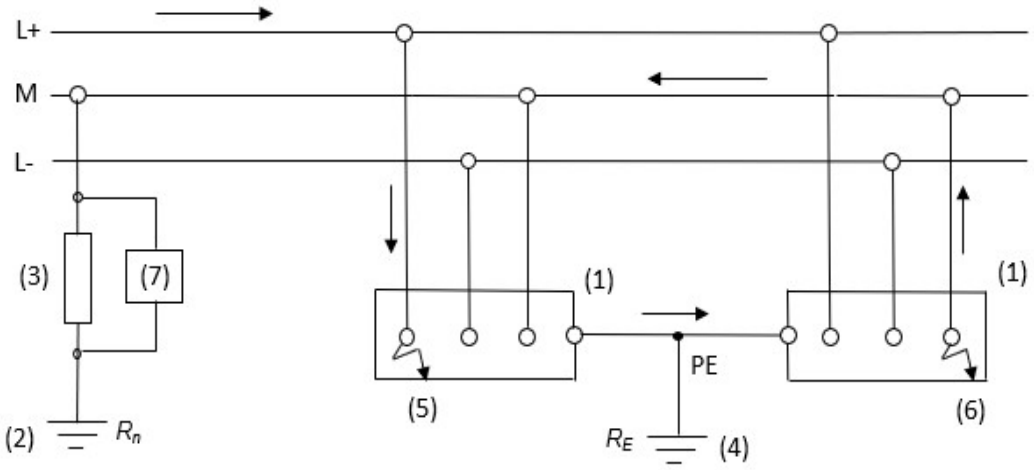
If an overcurrent protective device is used as an automatic disconnection of the power supply, the following formula shall be met:

$$I_a \leq U_o/Z_s$$

where:
I_a EN A: operating current of the protection structure over the time defined by the safety curve referred to in Table 2.4 in section 2.4.1.;
U_o EN V: voltage in relation to the earth of the network;
Z_s In Ω: impedance of the fault loop.

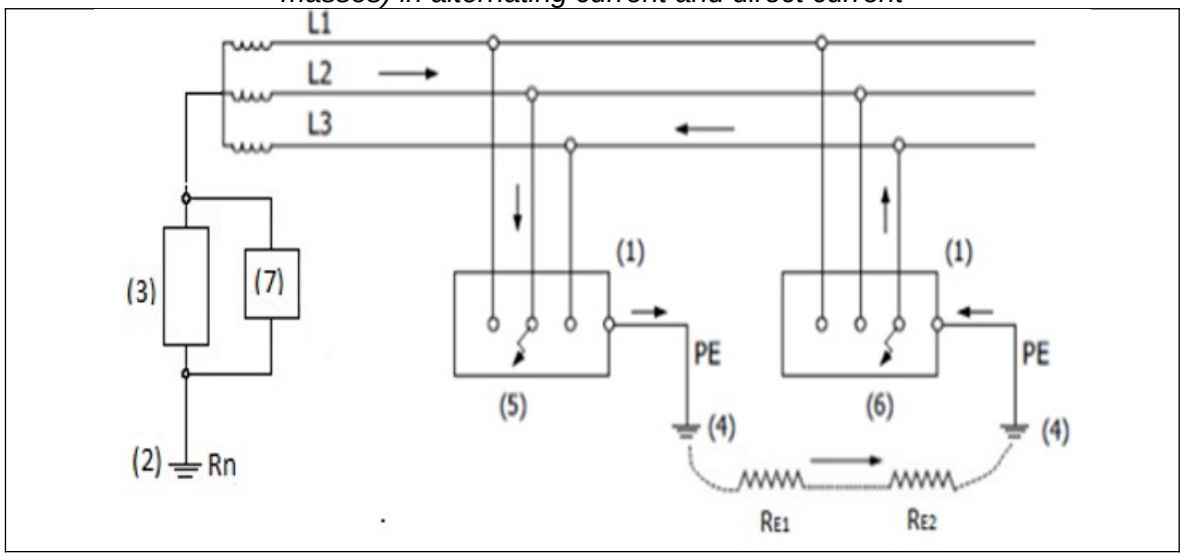
Figure 4.8. IT diagram (two simultaneous mass or earth faults with interconnected masses) in alternating current and direct current

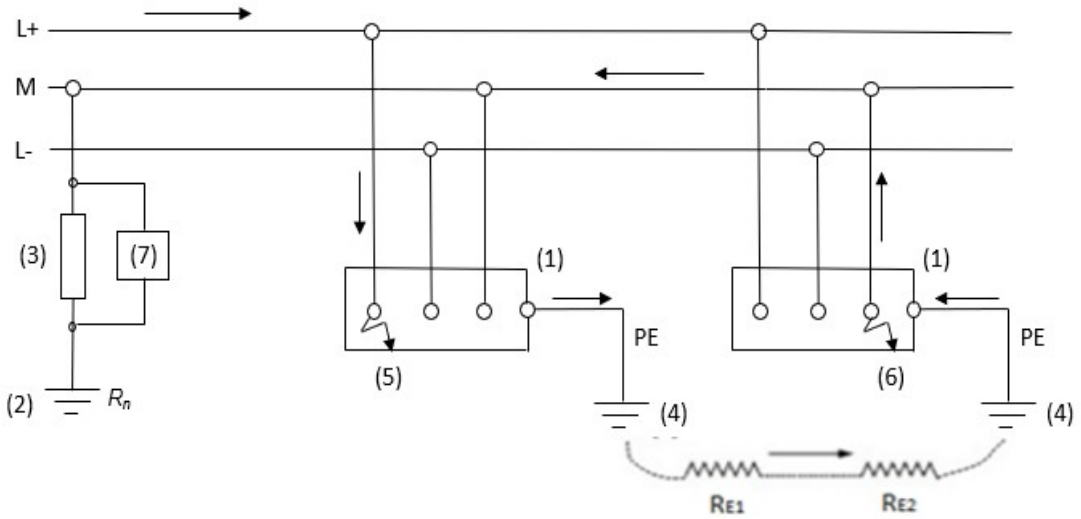




(1) Earth
(2) Earthing of the network (R_n)
(3) Impedance (installed or not)
(4) Earthing of the exposed conductive part (R_E)
(5) First mass or earth fault
(6) Second mass or earth fault
(7) Permanent isolation controller

Figure 4.9. IT diagram (two simultaneous mass or earth faults with non-interconnected masses) in alternating current and direct current





(1) Earth
(2) Earthing of the network (R_n)
(3) Impedance (installed or not)
(4) Earthing of the exposed conductive part (R_E)
(5) First mass or earth fault
(6) Second mass or earth fault
(7) Permanent isolation controller

Figures 4.8 and 4.9 apply to the IT system, regardless of whether it is insulated from the earth or connected to the earth via impedance.

e. ‘Transitional provisions

By way of derogation from points b.3. and d.2., sub-section 6.5.8.2., 5. May be applied to projects or works whose on-site execution is started before the entry into force of sub-section 6.5.8.2., 5., provided that the conformity control before putting into use takes place from the entry into force of sub-section 6.5.8.2., 5. The approved organisation which is entrusted with the conformity check before putting into use shall be informed by the applicant of the monitoring of the application of sub-section 6.5.8.2., 5. In the monitoring report, the approved body shall make reference to the application of sub-section 6.5.8.2., 5. ’.

Article 24. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.4., of the same Decree, amended by the Royal Decrees of 10 July 2022, 5 March 2023 and 3 October 2024, the heading of the Section is replaced by the following:

‘Section 4.2.4. Utilisation of protection measures against electric shocks due to indirect contact’.

Article 25. In Annex 1, Book 1, part 4, Chapter 4.2., Section 4.2.4., sub-section 4.2.4.3., b., of the same Decree, replaced by the Royal Decree of 5 March 2023 and modified by the Royal Decree of 3 October 2024, the following amendments are made:

1° in the French text, the words ‘operating current’ are replaced each time by the words ‘differential operating current’;

2° in the Dutch text, the word ‘aanspreekstroom’ is each time replaced by the word ‘differentiële aanspreekstroom’.

Article 26. In Annex 1, Book 1, Part 4, Chapter 4.2., Section 4.2.4., sub-section 4.2.4.4., of the same Decree, as amended by the Royal Decree of 10 July 2022, point d is replaced by the following:

‘d. Use of differential-residual current protective device

When using a residual-differential current protective device, the earth electrode dispersion resistance shall not be greater than 500 Ω for dry and non-conductive locations (AD1, BB1 and BC1) and 250 Ω for other locations (AD2 to AD5, BC2 and BB2).

The sensitivity of the residual-differential current protective device is calculated according to the following formula:

$$I_{\Delta n} \times R_E \leq U_L$$

where:
$I_{\Delta n}$ in A: rated operating differential current of the protective device;
R_E in Ω: earthing dispersion resistance of the exposed conductive part of the equipment;
U_L in V: absolute conventional limit voltage as referred to in Table 2.3. in Section 2.4.1. ’.

Article 27. In Annex 1, Book 1, Part 4, Chapter 4.2., to the same Decree, as amended by the Royal Decrees of 10 July 2022, 5 March 2023 and 3 October 2024, Section 4.2.4. is supplemented by a sub-section 4.2.4.5., worded as follows:

‘Sub-section 4.2.4.5. Propagation of potential following insulation failure in high-voltage equipment

Measures are taken to prevent the propagation of potential following an insulation fault in high-voltage equipment via live conductors, via the earthing installation or via extraneous conductive parts related to the equipment, giving rise, in relation to dangerous contact voltage in the equipment, to BT and to TBT.

The requirements of section 4.2.4. of Book 2 apply. ’.

Article 28. In Annex 1, Book 1, part 4, Chapter 4.2., Section 4.2.5., sub-section 4.2.5.3., ‘A’ item, subparagraph 1, of the same Decree, as amended by the Royal

Decree of 5 March 2023, in the Dutch text, the word ‘stroombronnen’ is inserted after the word ‘energiebronnen’.

Article 29. In Annex 1, Book 1, Part 4, Chapter 4.3., Section 4.3.3., sub-section 4.3.3.6, point d of the same Decree, as amended by the Royal Decree of 10 July 2022, the following amendments are made:

1° in the French text, paragraph 3, the words ‘differential current’ are replaced by the words ‘operating differential current’;
2° in the Dutch text, paragraph 3, the words ‘aanspreekstroom kleiner’ are replaced by the words ‘differentiële aanspreekstroom lager’;

3° Subparagraph 4 is replaced as follows:

‘In the IT diagram, the circuits are permanently controlled by a device in accordance with the requirements of point d.2. of sub-section 4.2.3.4. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation. In locations characterised by external influence BE3, the provisions of point d) of sub-section 7.102.9.2. apply. ’.

Article 30. In Annex 1, Book 1, Part 4, Chapter 4.4., Section 4.4.1., of the same Decree, as amended by the Royal Decree of 5 March 2023, the following amendments are made:

1° In the Dutch text, sub-section 4.4.1.1. is replaced by the following:

‘Onderafdeling 4.4.1.1. Principle

De elektrische bescherming tegen overstromen vermijdt de doorstroming van het elektrisch materieel met stromen die schadelijk kunnen zijn zowel voor het elektrisch materieel als voor de omgeving.

Deze bescherming gebeurt door een of meerdere toestellen die de stroom onderbreken vooraleer een opwarming kan

ontstaan die gevaarlijk is voor de isolatie, de verbindingen, de geleiders en hun omgeving. »;

2° sub-section 4.4.1.2. shall be repealed;

3° sub-section 4.4.1.3. is renumbered as sub-section 4.4.1.2.;

4° sub-section 4.4.1.4. is renumbered as sub-section 4.4.1.3.;

5° sub-section 4.4.1.5. is renumbered as sub-section 4.4.1.4.;

6° sub-section 4.4.1.6. is renumbered as sub-section 4.4.1.5..

Article 31. In Annex 1, Book 1, Part 4, Chapter 4.4., Section 4.4.2., of the same Decree, the heading of the section is replaced by the following:

‘Section 4.4.2. Shut protection'.

Article 32. In Annex 1, Book 1, Part 4, Chapter 4.4., Section 4.4.3. of the same Decree, as amended by the Royal Decrees of 10 July 2022 and 5 March 2023, the following amendments are made:

1° The heading of the the section is replaced by the following:

‘Section 4.4.3. Overload protection’;

2° in sub-section 4.4.3.3.(2), the words ‘powered by a TT or TN scheme network’ are replaced by the words ‘powered by equipment according to a TT or TN scheme’;

3° in sub-section 4.4.3.3., paragraph 4, the words ‘shall be powered by an IT schema network’ are replaced by the words ‘shall be powered by equipment according to an IT schema’.

Article 33. In Annex 1, Book 1, Part 4, Chapter 4.4., to that Order, Section 4.4.4., as amended by the Royal Decrees of 10 July 2022 and 5 March 2023, is replaced by the following:

‘Section 4.4.4. Over-current protection

Sub-section 4.4.4.1. Disconnection of affected conductor

Overcurrent detection is provided on all line conductors. It causes the disconnection of the conductor in which the overcurrent is detected but does not necessarily cause the disconnection of other active conductors.

If the disconnection of a line conductor may lead to danger, for example in the case of three-phase motors, appropriate arrangements shall be made.

Sub-section 4.4.4.2. Protection of single-phase or two-phase alternating current circuits

In single-phase or two-phase circuits of domestic installations, an overcurrent detection shall be carried out on the two active conductors unless there is a differential-residual current protective device at this level that also contains an overcurrent detection of one of the line conductors and ensures the disconnection of the two active conductors. This device has the required cutting power.

Sub-section 4.4.4.3. Three-phase circuits in TT and TN diagram with N conductor not distributed in alternating current – protection of line conductors

In equipment according to a TT or TN schema in which the neutral conductor is not distributed, overcurrent detection may be dispensed with on one line conductor provided that the following conditions are simultaneously met:

- at the same level, a differential-residual current protective device shall be present which shall cause all line conductors to be cut off;
- no N conductors shall be distributed from an artificial neutral point to the circuits located downstream of the protective device referred to in the indent above.

Sub-section 4.4.4.4. Three-phase circuits in TT and TN diagram with N conductor distributed in alternating current –

protection of N conductor

In equipment according to a TT or TN system in which the N conductor is distributed, the protection of the N conductor is done as follows:

- where the cross-sectional area of the N conductor is at least equivalent to that of line conductors, there is no need for overcurrent detection and a cut-off device on the N conductor, subject to the requirement of sub-section 4.4.4.8.;
- where the cross-sectional area of the N conductor is not at least equivalent to that of line conductors, it is necessary to provide for overcurrent detection on the N conductor, appropriate to the cross-sectional area of that conductor. This detection results in the disconnection of line conductors but not necessarily that of N conductor. However, in this case, it is permissible not to provide for overcurrent detection on the N conductor if both of the following conditions are met simultaneously:
  - the neutral conductor is protected against shunts by the protective device on the phase conductors in the circuit;
  - the maximum current likely to cross the N conductor is, in normal operation, lower than the value of the current-carrying capacity in this conductor.

Sub-section 4.4.4.5. IT diagram with N conductor distributed in alternating current – Protection of an N conductor

In equipment according to an IT schema, the N conductor is in principle not distributed. However, if for operating reasons the N conductor must be distributed, overcurrent detection is provided on the N conductor of each circuit leading to the disconnection of all live conductors on the corresponding circuit, including the N conductor.

This measure is not necessary:

- if the circuit in question is protected by a residual current protective device with differential operating current lower than or equal to 0.15 times the current-

carrying capacity in the corresponding neutral conductor and this device disconnects all live conductors in the corresponding circuit, including the N conductor;

- or if the N conductor is protected upstream by an overcurrent protective device.

Sub-section 4.4.4.6. Grounded active conductor (PEN, PEM and PEL)

If the active earthed conductor also serves as the protective conductor, it must not be disconnected.

Sub-section 4.4.4.7. Sequence in which line and neutral conductors are disconnected

When the cut-off of the neutral conductor is prescribed, the cut-off and closure of the conductor shall be such that the neutral conductor is cut at the same time or after the line conductors and is closed at the same time or before the line conductors.

Sub-section 4.4.4.8. Presence of harmonic currents on the N conductor

If harmonic currents in the N conductor cause its maximum permissible temperature to be exceeded, an overcurrent detection shall be provided on the N conductor. This detection shall cause all active conductors, including the N conductor, to be cut off.

Sub-section 4.4.4.9. M conductor

M conductor overcurrent detection and cut-off shall be carried out in accordance with the provisions laid down for N conductor in section 4.4.4. ’.

Article 34. In Annex 1, Book 1, Part 4, Chapter 4.5. of the same Decree, section 4.5.3. is replaced by the following:

‘Section 4.5.3. Voltage limiters in the IT system

In IT schemas, a voltage limiter is, if necessary, connected to the source of the equipment between the earth electrode of the equipment and either the neutral

conductor or line conductor. ’.

Article 35. In Annex 1, Book 1, Part 5, Chapter 5.1., Section 5.1.3., sub-section 5.1.3.1. of the same Decree, the following amendments are made:

1° in the French text, indent 2, the words ‘high-voltage electrical equipment’ are replaced by the words ‘a high-voltage device’;

2° in the Dutch text, indent 2, the words ‘elektrisch hoogspanningsmaterieel’ are replaced by the word ‘hoogspanningstoestel’.

Article 36. In Annex 1, Book 1, Part 5, Chapter 5.1., Section 5.1.3., sub-section 5.1.3.2., paragraph 1 of the same Decree, the words ‘of the same phase’ are replaced by the words ‘of the same line conductor’.

Article 37. In Annex 1, Book 1, Part 5, Chapter 5.1., Section 5.1.6. of the same Decree, sub-section 5.1.6.2. is replaced by the following:

‘Sub-section 5.1.6.2. Colour coding of single conductors

In laying systems (flowlines, ducts, waterways, architectural frames, ducts, gutters, etc.) and electrical lines, conductors insulated with solid insulation materials identified by the combination of the colours green and yellow are used either as a protective conductor (PE) or as an equipotential bonding conductor or as an earthed active conductor (PEN, PEM and PEL).

The combination of the above-mentioned colours is present throughout the length of the conductor.

The use of green and yellow and the use of one of these colours in a multicoloured combination is prohibited for insulation materials on live conductors excluding live earthed conductors (PEN, PEM and PEL).

By way of derogation from the requirements of the preceding paragraph, insulation materials in yellow or green are permitted in

electrical lines which are part of the control, control, signalling and measurement circuits, provided that their cross-section is less than 1.5 mm².

Blue insulation materials shall be reserved for the neutral conductor in circuits with such a conductor.

Where the circuit does not have a neutral conductor, the conductor of a multipolar cable, whose insulation material is blue, may be used for another purpose, except as a protective or equipotential bonding conductor. '.

Article 38. In Annex 1, Book 1, Part 5, Chapter 5.2., Section 5.2.1., sub-section 5.2.1.2., paragraph 1(a) of the same decree, as amended by the Royal Decrees of 10 July 2022 and 5 March 2023, the words 'sub-section 4.4.1.5. are replaced by the words 'sub-section 4.4.1.4. '.

Article 39. In Annex 1, Book 1, Part 5, Chapter 5.2., Section 5.2.6., sub-section 5.2.6.2, of the same Decree, as amended by the Royal Decree of 05 March 2023, the following amendments are made:
1° paragraph 3 of point a. is replaced by the following:

'In laying systems (flowlines, ducts, waterways, architectural frames, ducts, gutters, etc.) and electrical lines, conductors insulated with solid insulation materials identified by the combination of the colours green and yellow are used either as a protective conductor (PE) or as an equipotential bonding conductor or as an earthed active conductor (PEN, PEM and PEL). ';

2° paragraph 5 of point a. is replaced by the following:

'The use of green and yellow and the use of one of these colours in a multicoloured combination is prohibited for insulation materials on live conductors excluding live earthed conductors (PEN, PEM and PEL). ';

3° in the French text of the first indent of the fourth subparagraph of point (c), the

words ‘connected flexible cables’ are replaced by the words ‘connected flexible electrical lines’;

4° in the French text of point c., paragraph 5, indent 3, the word ‘phases’ is replaced by the word ‘line’;

5° in the Dutch text of point c., paragraph 2, the words ‘De elektrische snoeren’ are replaced by the words ‘De soepele elektrische leidingen’;

6° in the text of point c., paragraph 3, indent 3, the words ‘of mobile equipment or lamps’ are replaced by the words ‘of mobile electrical equipment’;

7° in the Dutch text of point c., subparagraph 5, indent 2, the words ‘zijde bron’ are replaced by the words ‘aan bronzijde’;

8° in the Dutch text of point c., paragraph 5, indent 3, the word ‘fase-’ is replaced by the word ‘lijn-’.

Article 40. In Annex 1, Book 1, Part 5, Chapter 5.2., Section 5.2.9., sub-section 5.2.9.5., of the same Decree, paragraph 1 is replaced by the following:

‘With the exception of independent protective or equipotential conductors and independent active grounded conductors (PEN, PEM and PEL), only the placement of cables is permitted for outdoor installation and surface mounting. ’.

Article 41. In Annex 1, Book 1, Part 5, Chapter 5.2., Section 5.2.9., sub-section 5.2.9.6., of the same Decree, as amended by the Royal Decree of 5 March 2023, paragraph 1 is replaced by the following:

“In the waterways, only cords may be placed with the exception of independent protective or equipotential bonding conductors and independent earthed active conductors (PEN, PEM and PEL). ’.

Article 42. In Annex 1, Book 1, Part 5, Chapter 5.2., Section 5.2.9., sub-section 5.2.9.13. of the same Decree, as amended by the Royal Decree of 10 July 2022, and 5

March 2023, the following amendments are made:

1° in the French text of point b.4., the word ‘source’ is replaced by the words ‘energy source’;

2° point b.13. is replaced by the following:

‘B.13. Protection against electric shock due to indirect contact

Protection against electric shock due to indirect contact is provided either by TBTS, less than or equal to 25 V for alternating current or 36 V for non-smooth direct current or 60 V for smooth direct current, or by the installation of one or more protective devices with differential-residual current with a rated operating differential current of 100 mA or less if TBTS is not applied. In the walls of damp premises, this latter protection is supplemented by an earthed metallic screen making up the heating panel or made up of a metal screen protected against corrosion. ’;

3° in the French text of point c.4., the word ‘source’ is replaced by the words ‘energy source’;

4° point c.13. is replaced by the following:

‘c.13. Protection against electric shock due to indirect contact

Protection against electric shock due to indirect contact is provided either by TBTS, less than or equal to 25 V for alternating current or 36 V for non-smooth direct current or 60 V for smooth direct current, or by the installation of one or more protective devices with differential-residual current with a rated operating differential current of 100 mA or less if TBTS is not applied. In outdoor premises and damp indoor premises, this latter protection is supplemented by an earthed metallic screen making up the heating line or made up of a metal screen protected against corrosion. ’.

Article 43. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.3., sub-section 5.3.3.1. of the same Decree, the following

amendments are made:

1° point a.1. is replaced by the following:

‘a.1. Background information

Devices are set up to enable the isolation of all or part of the equipment for maintenance, verification, fault localisation and repair purposes. These devices cut off all active conductors including the neutral conductor, except:

- in diagram TN-C where it is prohibited to cut the grounded active conductor (PEN, PEM and PEL);
- in the TN-S system where the neutral conductor must not be cut off;
- in the TT system where the disconnection of the neutral conductor is carried out under the conditions described in sub-section 4.2.3.4.c.4. ’;

2° the title of point a.2. is replaced by the following:

‘a.2. Sectioning energy sources’;

3° in point a.2., a paragraph is inserted before the first paragraph, worded as follows:

‘Devices shall be provided for the sectioning of the energy source. ’;

4° in the Dutch text of point a.2., first paragraph, the words ‘moet voorzien zijn’ are replaced by the words ‘wordt voorzien’;

5° in Point a.2., paragraph 3 is replaced by the following:

‘In the case of transformers operating in parallel and whose neutral points are connected to each other and are not earthed, the sectioning devices cut off the N conductor and the line conductors simultaneously. ’.

Article 44. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.3., sub-section 5.3.3.2., point c. of the same Decree, the following amendments are made:

1° Subparagraph 3 is replaced as follows:

‘Checking equipment that switch between power supplies involve all live conductors and do not unintentionally place sources in parallel. ’;

2° Subparagraph 4 is replaced as follows:

‘However, in the TN scheme, the grounded active conductor may not be switched off if the grounded active conductors of both energy sources are connected to the same grounding. ’.

Article 45. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.4., sub-section 5.3.4.2. of the same Decree, as amended by the Royal Decree of 10 July 2022, and 5 March 2023, the following amendments are made:
1° ‘A’ item is repealed;

2° points b. to j. are renumbered as a. to i.;

3° points e.1. to e.4. are renumbered as d.1. to d.4.;

4° points h.1. to h.3. are renumbered as g.1. to g.3.;

5° in point h.1., the words ‘point h.’ are replaced by the words ‘point g.’;

6° in the French text of point h.2., indent 6, ball 3, the words ‘operating current’ are replaced by the words ‘differential operating current’;

7° in the Dutch text of point h.2., indent 6, ball 3, the word ‘werkingsstroom’ is replaced by the words ‘differentiële aanspreekstroom’;

8° in the French text of point h.3., the words ‘point h.2. ’ are replaced by the words ‘point g.2. ’;

9° in the Dutch text of point h.3., the words ‘de punt h.2. ’ are replaced by the words ‘het punt g.2. ’;

10° in Point j., paragraph 2 is replaced by the following:

‘When installed within arm’s reach, these

lighting devices are:
- powered by the TBTS, or
- protected by a high or very high sensitivity differential-residual current protective device. '.

Article 46. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.5., sub-section 5.3.5.1, 'B' item, of the same Decree, as amended by the Royal Decree of 5 March 2023, the following amendments are made:

1° Subparagraph 1 is replaced as follows:

'The main switchboard and relocation shall be equipped with a general switch-disconnector. The latter enables the simultaneous disconnection of all line conductors and, optionally, the neutral conductor. Its rated intensity is appropriate for the installation, but is not less than 25 A.';

2° in subparagraph 2, the word "nominale" is replaced by the word "assignée";

3° in subparagraphs 2 and 3 of the Dutch text, the word 'scheidingsschakelaar' shall be replaced each time by the word 'lastscheidingsschakelaar'.

Article 47. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.5., sub-section 5.3.5.3. of the same Decree, as amended by the Royal Decree of 10 July 2022, and 5 March 2023, the following amendments are made:

1° The heading of the sub-section is replaced by the following:

'Sub-section 5.3.5.3. Alternating current differential-residual current protective devices';

2° in the French text of point c., paragraphs 2 and 3, the word "neutral" shall be replaced each time by the words "N conductor";

3° in the Dutch text of point c., paragraphs 2 and 3, the word 'nulgeleider' shall be replaced each time by the word 'N-geleider';

4° in point e., subparagraph 1, the words ‘between phase and earth’ are replaced by the words ‘between line conductor and earth’;

5° in point e., paragraph 2, the words ‘shall therefore be designed’ are replaced by the words ‘are therefore designed’;

6° in the French text of point g., paragraph 3, the words ‘neutral conductor’ are replaced by the words ‘N conductor’;

7° in the Dutch text of point g., paragraph 3, the word ‘nulgeleider’ is replaced by the word ‘N-geleider’;

8° in the French text of point i., subparagraph 2, the words ‘differential-residual operating current’ are replaced by the words ‘differential operating current’;

9° in the Dutch text of point i., first paragraph, second indent, the words ‘door snoeren’ are replaced by the words ‘door verplaatsbare elektrische leidingen’;

10° in the Dutch text of point i., paragraph 2, the word ‘aanspreekstroom’ is replaced by the word ‘differentiële aanspreekstroom’.

Article 48. In Annex 1, Book 1, Part 5, Chapter 5.3., Section 5.3.5., sub-section 5.3.5.5. of the same Decree, as amended by the Royal Decree of 10 July 2022, and 5 March 2023, the following amendments are made:

1° The heading of the sub-section is replaced by the following:

‘Sub-section 5.3.5.5. Fuse circuit breakers and alternating current earth-leak circuit breaker’;

2° in the Dutch text of point h., paragraph 3, the word ‘werkingsstroom’ is replaced by the word ‘aanspreekstroom’;

3° in the French text of point h., paragraph 6, the words ‘between phase and neutral’ are replaced by the words ‘between line conductors and N’;

4° in the Dutch text of point h., paragraph 6, the words ‘tussen fase- en nullgeleider’ are replaced by the words ‘tussen lijn- en N-geleider’.

Article 49. Annex 1, Book 1, Chapter 5.4., Section 5.4.2., sub-section 5.4.2.2., subparagraph 1, to the same Decree, in the French text, the word ‘neutral’ is replaced by the words ‘neutral point’.

Article 50. In Annex 1, Book 1, Part 5, Chapter 5.4., to that decree, Section 5.4.2., as amended by the Royal Decree of 5 March 2023, is supplemented by a sub-section 5.4.2.3., worded as follows:

‘Sub-section 5.4.2.3. Resistance to mechanical and chemical influences

The components of an earthing arrangement are manufactured and protected according to the state of the art with materials offering sufficient resistance to corrosion phenomena (chemical or biological corrosion, oxidation, electrolytic corrosion, etc.).

They also offer the necessary mechanical resistance to the mechanical constraints to which they are subject both when they are placed and during normal operating conditions. ’.

Article 51. The following amendments are made to Annex 1, Book 1, Part 5, Chapter 5.4., Section 5.4.3., sub-section 5.4.3.1., paragraph 1, of the same Decree, as amended by the Royal Decrees of 5 March 2023 and 3 October 2024:

1° in the French text, indent 6, the words ‘where the neutral conductor and the protective conductor are combined (TN-C network)’ are replaced by the words ‘of a TN-C diagram’;

2° the Dutch text. Indent 5 is replaced by the following:

« − geleidende delen, zoals metalen gebinten, raamwerken van machines en heftoestellen evenals waterleidingen van een privaat en onafhankelijk verdeelnet,

wanneer zij geen deel uitmaken van een TN-C-netsysteem net en wanneer zij tezelfdertijd voldoen aan volgende voorwaarden:

- hun elektrische continuïteit wordt verzekerd door constructie of door middel van gepaste verbindingen;
- hun elektrische continuïteit mag niet in gevaar gebracht worden door mechanische, chemische of elektrochemische beschadiging;
- zij mogen niet losgekoppeld worden zonder vervangende maatregelen toe te passen. ».

Article 52. In Annex 1, Book 1, Part 5, Chapter 5.4., Section 5.4.3., sub-section 5.4.3.3. of the same Decree, the following amendments are made:

1° in the French text, paragraph 2, the words ‘flexible cables’ are replaced by the words ‘flexible electrical lines’;

2° Subparagraph 4 is replaced as follows:

‘If the electrical wiring systems are such that it is technically impossible to render their insulation in green and yellow, the protective conductor can be identified using another colour combination provided this is different to the single colour used for line conductors and blue ones. ’.

Article 53. In Annex 1, Book 1, Part 5, Chapter 5.4., Section 5.4.4., sub-section 5.4.4.2, of the same Decree, as amended by the Royal Decree of 5 March 2023, point c. is repealed.

Article 54. In Annex 1, Book 1, Part 5, Chapter 5.5., Section 5.5.6., sub-section 5.5.6.4., point b., subparagraph 1, indent 1, of the same Decree, in the Dutch text, the words ‘equivalent hiermee’ are replaced by the words ‘gelijkwaardig hieraan’.

Article 55. In Annex 1, Book 1, Part 5, Chapter 5.5., Section 5.5.7., sub-section 5.5.7.2., paragraph 3 of the same Decree, as amended by the Royal Decree of 10 July 2022, indent 3 is replaced by the following:

‘– precautions shall be taken to limit the current flowing in the connections between

the neutral points or the midpoints of the energy sources. ’.

Article 56. In Annex 1, Book 1, Part 5, Chapter 5.5., Section 5.5.7., sub-section 5.5.7.5., point b.1. of the same Decree, the following amendments are made:

1° in paragraph 1 point 5 is replaced by the following:

‘5. the use of the IT diagram on all or part of the security installation (to be defined as part of the risk analysis of security installations). The circuits concerned shall be permanently controlled by a device in accordance with the requirements of point d.2. of sub-section 4.2.3.4. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation’;

2° in paragraph 1 point 6 is replaced by the following:

‘6. for safety consumers operating only in emergency situations (e.g. smoke and heat evacuation system (EFC) during a fire), the safety terminal circuit shall be permanently controlled by checking equipment referred to in point a.2. of sub-section 4.2.3.4. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation. ’;

3° subparagraph 2 is repealed;

4° in the French text, paragraph 3, indent 2, the word ‘neutral’ is replaced by the words ‘N conductor’;

5° in the Dutch text, paragraph 3, indent 2, the word ‘nulgeleider’ is replaced by the word ‘N-geleider’.

Article 57. In Annex 1, Book 1, Part 5, Chapter 5.6., Section 5.6.2., sub-section

5.6.2.2. paragraph 2 of the same Decree, indent 3 point 2 is replaced by the following:

‘– precautions shall be taken to limit the current flowing in the connections between the neutral points or the midpoints of the energy sources. ’.

Article 58. In Annex 1, Book 1, Part 5, Chapter 5.6., Section 5.6.2., sub-section 5.6.2.4., point d.2.1. of the same Decree, the following amendments are made:

1° in paragraph 1 point 5 is replaced by the following:

‘5. the use of the IT diagram on the whole or part of the critical installation (to be defined as part of the critical installation risk analysis). The circuits concerned shall be permanently controlled by a device in accordance with the requirements of point d.2. of sub-section 4.2.3.4. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation’;

2° in paragraph 1 point 6 is replaced by the following:

‘6. For critical consumers not operating permanently or for long periods of time, the critical terminal circuit shall be permanently controlled by checking equipment referred to in point a.2. of sub-section 4.2.3.4. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation.

3° subparagraph 2 is repealed;

4° in the French text, paragraph 3, indent 2, the word ‘neutral’ is replaced by the words ‘N conductor’;

5° in the Dutch text, paragraph 3, indent 2, the word ‘nulgeleider’ is replaced by the

word ‘N-geleider’.

Article 59. In Annex 1, Book 1, Part 6, Chapter 6.5., Section 6.5.8., sub-section 6.5.8.2., of the same Decree, inserted by the Royal Decree of 5 March 2023 and amended by the Royal Decree of 3 October 2024, a provision under 5. is inserted, worded as follows:

‘5. Protection measures in electrical equipment

5.1. By way of derogation from point b.3. of sub-section 4.2.3.4., it is permitted to leave in service two-phase circuits in fixed equipment according to a TN diagram whose PEN conductor has a cross-section of less than 10 mm^2 in copper or 16 mm^2 in aluminium whose on-site performance was started before the entry into force of this provision.

5.2. By way of derogation from point d.2. of sub-section 4.2.3.4., it is permitted to leave in operation equipment according to an IT scheme which are not equipped with permanent insulation monitoring signalling the existence of a first ground or mass fault provided that:

- the warning of a first fault to the mass or earth is not necessary from a safety point of view; and
- it is not required in the special cases mentioned in Book 1; and
- the requirement referred to in paragraph 1 of point d.2. of sub-section 4.2.3.4 is met; and
- the on-the-spot execution was commenced before the entry into force of this provision.

The derogation provided for in paragraph 5 shall also apply to non-substantial modifications or extensions to such equipment. ’.

Article 60. In Annex 1, Book 1, Part 7, Chapter 7.11., Section 7.11.2. of the same Decree, as amended by the Royal Decree of 10 July 2022, the following amendments are made:

1° in the Dutch text, the words ‘niet groter’ are replaced each time by the words ‘niet

hoger';

2° in the French text, paragraph 2, the words 'operating current' are replaced by the words 'differential operating current';

3° in the Dutch text, paragraph 2, the word 'aanspreekstroom' is replaced by the words 'differentiële aanspreekstroom'.

Article 61. In Annex 1, Book 1, Part 7, Chapter 7.22., Section 7.22.4., sub-section 7.22.4.1, point b of the same Decree, as amended by the Royal Decree of 10 July 2022, the following amendments are made:

1° in the first paragraph of the French text, the words 'TN-C earthing system' are replaced by the words 'TN-C system';

2° in the French text, paragraph 2, the words 'operating current' are replaced by the words 'differential operating current';

3° in the Dutch text, paragraph 2, the word 'aanspreekstroom' is replaced by the words 'differentiële aanspreekstroom';

4° in the French text, paragraph 5, the words 'IT earthing system' are replaced by the words 'IT system';

5° in paragraph 5 point 2 is replaced by the following:

'2. several dedicated circuits are permanently controlled by a single device in accordance with the requirements of point d.2. of sub-section 4.2.3.4., if these circuits are powered by the same energy source, such as a transformer. This requirement is met by the implementation of this device either in the fixed equipment upstream or in the charging station. This device shall activate a warning signal until the necessary steps are taken to detect a first fault at mass or earth. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation. '.

Article 62. In Annex 1, Book 1, Part 7, Chapter 7.101., Section 7.101.2., paragraph 2, to the same Decree, as

amended by the Royal Decree of 10 July 2022, in the French text, the words ‘flexible power cable’ are replaced by the words ‘the flexible electrical supply conduit’.

Article 63. In Annex 1, Book 1, Part 7, Chapter 7.102., Section 7.102.8., sub-section 7.102.8.5. of the same Decree, as amended by the Royal Decree of 10 July 2022, and 5 March 2023, the following amendments are made:

1° in the French text, paragraph 3 is repealed;

2° in the Dutch text, paragraphs 2 and 3 are repealed;

3° in subparagraph 4, the word ‘a phase’ shall be replaced by the words ‘a line conductor’.

Article 64. In Annex 1, Book 1, Part 7, Chapter 7.102., Section 7.102.9., sub-section 7.102.9.2, of the same Decree, as amended by the Royal Decree of 10 July 2022, the following amendments are made:

1° point d) is replaced by the following:

‘d) if an IT diagram is used, the circuits shall be permanently controlled in any area by a device in accordance with the requirements of point d.2. of sub-section 4.2.3.4. which, during the first fault at the mass or earth which lowers the insulation level below the permitted level:

- instantaneously activate the power supply in zones 0 and 20;
- activates a warning signal when the insulation level, at the rated voltage, decreases below an insulation resistance of 50 Ω/V in zones 1, 2, 21 and 22 and until the necessary measures for the detection of the first mass or earth fault are taken. As soon as the device has reported the existence of this fault, the necessary measures shall be taken without delay to remedy the faulty situation. ’;

2° in the French text, points a) to c), the words ‘network diagram’ are replaced by the word ‘system’;

3° in the Dutch text, points a) to c), the word ‘netstelsel’ is replaced by the word ‘-netsysteem’;

4° in the French text, points b) and c), the words ‘operating current’ are each time replaced by the words ‘differential operating current’;

5° in the Dutch text, points b) and c), the word ‘aanspreekstroom’ is replaced each time by the words ‘differentiële aanspreekstroom’.

Article 65. In Annex 1, Book 1, Part 7, Chapter 7.103., Section 7.103.4., sub-section 7.103.4.1., subparagraph 7, of the same Decree, in the French text, the words ‘flexible cables’ are replaced by the words ‘flexible electrical conduits’.

Article 66. In Annex 2, Book 1, Part 7, Chapter 7.112., Section 7.112.2. of the the same Order, in the Dutch text, the following amendments are made:

1° in indent 3, the words ‘hiermee equivalent’ are replaced by the words ‘hieraan gelijkwaardig’;

2° in indent 4, the words ‘equivalent met’ are replaced by the words ‘gelijkwaardig aan’.

Article 67. In Annex 1, Book 1, Part 8, Chapter 8.1, Section 8.2.1, point 4, to that decree, replaced by the Royal Decree of 5 March 2023 and amended by the Royal Decree of 3 October 2024, in the Dutch text, the word ‘scheidingsschakelaar’ is each replaced by the word ‘lastscheidingsschaklaar’.

Article 68. In Annex 1, Book 1, Part 8, Chapter 8.1, Section 8.2.2, point 4, to that decree, replaced by the Royal Decree of 5 March 2023 and amended by the Royal Decree of 3 October 2024, in the Dutch text, the word ‘scheidingsschakelaar’ is each replaced by the word ‘lastscheidingsschaklaar’.

Article 69. In Annex 1, Book 1, Part 8, Chapter 8.3., Section 8.3.2., sub-section 8.3.2.2., of the same Decree, as amended

by the Royal Decree of 5 March 2023 and 3 October 2024, a provision under 7 is inserted, worded as follows:

‘7. Protection measures in electrical equipment

7.1. By way of derogation from point b.3. of sub-section 4.2.3.4., it is permitted to leave in service two-phase circuits in fixed equipment according to a TN diagram whose PEN conductor has a cross-section of less than 10 mm^2 in copper or 16 mm^2 in aluminium.

7.2. By way of derogation from point d.2. of sub-section 4.2.3.4., it is permitted to leave in operation equipment according to an IT scheme which are not equipped with permanent insulation monitoring signalling the existence of a first ground or mass fault provided that:

- the warning of a first fault to the mass or earth is not necessary from a safety point of view; and
- it is not required in the special cases mentioned in Book 1; and
- the requirement referred to in the 1st paragraph of sub-section d.2. of sub-section 4.2.3.4 is met.

The derogation provided for in paragraph 7 shall also apply to non-substantial modifications or extensions to such equipment. ’.

Article 70. In Annex 1, Book 1, Part 9, Chapter 9.3., Section 9.3.5., sub-section 9.3.5.4., point a., subparagraph 2, of the same Decree, as amended by the Royal Decree of 5 March 2023, in the Dutch text, the words ‘tegen rechtstreekse aanrakingen’ are replaced by the words ‘tegen elektrische schokken bij rechtstreekse aanraking’.

Article 71. In Annex 1, Book 1, to the same Decree, as amended by the Royal Decrees of 10 July 2022, 5 March 2023 and 3 October 2024, the following amendments are also made in the French text:

1° the words ‘earthing system’ and ‘earthing systems’ shall each time be replaced by the words ‘earthing system’ and ‘earthing

systems' respectively;

2° the words 'phase conductors' shall be replaced each time by the words 'line conductors';

3° the words 'between phases' are replaced each time by the words 'between line conductors';

4° the words 'high-voltage apparatus for use' are replaced each time by the words 'high-voltage apparatus';

5° the words 'by direct contact' are replaced each time by the words 'by direct contact';

6° the words 'by indirect contact' are replaced each time by the words 'by indirect contact';

7° the words 'against direct contact' are replaced each time by the words 'against electric shocks by direct contact';

8° the words 'against indirect contact' shall be replaced each time by the words 'against electric shock by indirect contact';

9° the words 'protection against direct and indirect contact' are replaced in each case by the words 'protection against electric shock by direct and indirect contact';

10° the words 'against direct contact' are replaced each time by the words 'against electric shocks by direct contact';

11° the words 'power source' and 'power sources' are each time replaced by the words 'energy source' and 'energy source' respectively.

Article 72. In Annex 1, Book 1, to the same Decree, as amended by the Royal Decrees of 10 July 2022, 5 March 2023 and 3 October 2024, the following amendments are also made in the Dutch text:

1° the words 'een aardverbindings-systemeem' are replaced each time by the words 'een geaard netsystemeem';

2° the words 'het aardverbindingssysteem' are replaced each time by the words 'het

geaarde netsysteem';

3° the words 'een ander aardverbindings-systemeem' are replaced each time by the words 'een ander geaard netsystemeem';

4° the word '-systeem' is replaced each time by the words '-netsysteem';

5° the word 'IT-net' is each time replaced by the word 'IT-netsysteem';

6° the word 'TN-C-net' is each time replaced by the word 'TN-C-netsysteem';

7° the word 'TN-S-net' is each time replaced by the word 'TN-S-netsysteem';

8° the word 'fasegeleiders' is each time replaced by the word 'lijngeleiders';

9° the words 'tussen fasen' are replaced each time by the words 'tussen lijngeleiders';

10° the words 'tussenstuk' and 'tussenstukken' are replaced by the words 'intermediair deel' and 'intermediaire delen' respectively;

11° the words 'in de fabriek vervaardigde' are each time replaced by the word 'geprefabriceerde';

12° the words 'gebruikstoestellen op hoogspanning' are replaced each time by the word 'hoogspanningstoestellen';

13° the word 'hoogspanningsgebruiks-toestellen' is each time replaced by the word 'hoogspanningstoestellen';

14° the words 'absolute concentionele' are replaced each time by the words 'conventionele absolute';

15° the words 'relatieve conventionele' are replaced each time by the words 'conventionele relatieve';

16° the words 'equivalent' and 'equivalente' are each time replaced by the words 'gelijkwaardig' and 'gelijkwaardige' respectively;

17° the words ‘tegen rechtstreekse aanraking’ are replaced each time by the words ‘tegen elektrische schokken bij rechtstreekse aanraking’;

18° the words ‘tegen onrechtstreekse aanraking’ are replaced each time by the words ‘tegen elektrische schokken bij onrechtstreekse aanraking’;

19° the words ‘bescherming tegen rechtstreekse en onrechtstreekse aanraking’ are replaced each time by the words ‘bescherming tegen elektrische schokken bij rechtstreekse en onrechtstreekse aanraking’;

20° the words ‘tegen onrechtstreekse aanrakingen’ are replaced each time by the words ‘tegen elektrische schokken bij onrechtstreekse aanraking’;

21° the words ‘tegen direct aanraking’ and ‘tegen de direct aanraking’ are replaced, respectively, by the words ‘tegen elektrische schokken bij rechtstreekse aanraking’;

22° the words ‘snoer’ and ‘snoeren’ are replaced each time by the words ‘soepele elektrische leiding’ and ‘soepele elektrische leidingen’ respectively;

23° the words ‘het voedingsnoer’ are replaced each time by the words ‘de soepele elektrische voedingsleiding’;

24° the words ‘voedingsbron’ and ‘voedingsbronnen’ are replaced respectively by the words ‘energiebron’ and ‘energiebronnen’.

Article 73. In Annex 2, Book 2, Part 2, Chapter 2.4., Section 2.4.1., of the same Decree, as amended by the Royal Decrees of 5 March 2023 and 3 October 2024, in the Dutch text, the following amendments are made:

1° in the definition ‘Tussenstuk’, the word ‘Tussenstuk’ is replaced by the words ‘Intermediair deel’;

2° in the definition ‘Contactspanning’, the words ‘tegen onrechtstreekse aanrakingen’

are replaced by the words ‘tegen elektrische schokken bij onrechtstreekse aanraking’.

Article 74. The following amendments are made to Annex 2, Book 2, Part 2, Chapter 2.5 of the same Decree:

1° in the Dutch definition ‘Beschermingsgeleider’, the words ‘tegen onrechtstreekse aanraking’ are replaced by the words ‘tegen elektrische schokken bij onrechtstreekse aanraking’;

2° in the French definition ‘main conductor protection’, the word ‘neutral’ is replaced by the words ‘neutral conductor’.

Article 75. In Annex 2, Book 2, Part 3, Chapter 3.1., Section 3.1.1., subparagraph 1, indent 1, of the same Decree, in the French text, the word ‘feeds’ is replaced by the words ‘energy sources’.

Article 76. In Annex 2, Book 2, Part 3, Chapter 3.3., Section 3.3.2., paragraph 2, of the same Decree, the words ‘the power source’ are replaced by the words ‘the power supply to the equipment’.

Article 77. In Annex 2, Book 2, Part 4, Chapter 4.2., Section 4.2.2., sub-section 4.2.2.2., point b. of the same Decree, the following amendments are made:

1° in the Dutch text, the word ‘Snoeren’ is replaced by the words ‘Soepele elektrische leidingen’;

2° in the French text, the words ‘Flexible cables with insulation protection may be used’ are replaced by the words ‘Flexible electrical lines with insulation protection may be used’.

Article 78. In Annex 2, Book 2, Part 4, Chapter 4.4., Section 4.4.1. of the same Decree, the following amendments are made:

1° sub-section 4.4.1.2. shall be repealed;

2° sub-section 4.4.1.3. is renumbered as sub-section 4.4.1.2.;

3° sub-section 4.4.1.4. is renumbered as sub-section 4.4.1.3..

Article 79. In Annex 2, Book 2, Part 5, Chapter 5.1., Section 5.1.2. of the same Decree, in the Dutch text, the word ‘hoogspanningsgebruikstoestellen’ is replaced by the word ‘hoogspanningstoestellen’.

Article 80. In Annex 2, Book 2, Part 5, Chapter 5.1., Section 5.1.3., sub-section 5.1.3.2., paragraph 1 of the same Decree, the following amendments are made:

1° in the French text, the words ‘le matériel à haute tension’ are replaced by the words ‘l’appareil à haute tension’;

2° in the Dutch text, the word ‘hoogspanningsmaterieel’ is replaced by the word ‘hoogspanningstoestel’.

Article 81. In Annex 2, Book 2, Part 5, Chapter 5.2., Section 5.2.10., sub-section 5.2.10.2, ‘B’ item, paragraph 8 of the same Decree, as amended by the Royal Decree of 5 March 2023, the following amendments are made:

1° in the French text, the words ‘against direct and indirect contact’ are replaced by the words ‘against electric shock by direct and indirect contact’;

2° in the Dutch text, the words ‘tegen rechtstreekse en rechtstreekse aanraking’ are replaced by the words ‘tegen elektrische schokken bij rechtstreekse en onrechtstreekse aanraking’.

Article 82. In Annex 2, Book 2, to the same Decree, as amended by the Royal Decrees of 5 March 2023 and 3 October 2024, the following amendments are also made to the French text:

1° the words ‘earthing system’ and ‘earthing systems’ shall each time be replaced by the words ‘earthing system’ and ‘earthing systems’ respectively;

2° the word ‘compensator’ is replaced by the words ‘midpoint conductor’ in each

case;

3° the words ‘high-voltage apparatus for use’ are replaced each time by the words ‘high-voltage apparatus’;

4° the words ‘by direct contact’ are replaced each time by the words ‘by direct contact’;

5° the words ‘by indirect contact’ are replaced each time by the words ‘by indirect contact’;

6° the words ‘against direct contact’ are replaced each time by the words ‘against electric shocks by direct contact’;

7° the words ‘against indirect contact’ are replaced each time by the words ‘against electric shock by indirect contact’;

8° the words ‘against direct contact’ are replaced each time by the words ‘against electric shocks by direct contact’;

9° the words ‘power source’ and ‘power sources’ are each time replaced by the words ‘energy source’ and ‘energy source’ respectively.

Article 83. In Annex 2, Book 2, to the same Decree, amended by the Royal Decrees of 5 March 2023 and 3 October 2024, in the Dutch text, the following amendments are also made:

1° the words ‘aardverbindingssysteem’ and ‘aardverbindingssystemen’ are each time replaced by the words ‘geoaarde netsysteem’ and ‘geoaarde netsysteem’ respectively;

2° the word ‘compensatorgeleider’ is each time replaced by the word ‘middelpuntsgeleider’;

3° the words ‘gebruikstoestellen op hoogspanning’ are replaced each time by the word ‘hoogspanningstoestellen’;

4° the words ‘absolute concentionele’ are replaced each time by the words ‘conventionele absolute’;

5° the words ‘relatieve conventionele’ are replaced each time by the words ‘conventionele relatieve’;

6° the words ‘equivalent’ and ‘equivalente’ are each time replaced by the words ‘gelijkwaardig’ and ‘gelijkwaardige’ respectively;

7° the words ‘tegen rechtstreekse aanraking’ are replaced each time by the words ‘tegen elektrische schokken bij rechtstreekse aanraking’;

8° the words ‘tegen direct aanraking’ and ‘tegen de direct aanraking’ are replaced, respectively, by the words ‘tegen elektrische schokken bij rechtstreekse aanraking’;

9° the words ‘voedingsbron’ and ‘voedingsbronnen’ are replaced each time by the words ‘energy source’ and ‘energy sources’ respectively.

Article 84. This Order enters into force on the first day of the fifth month following its publication in the Moniteur belge (Belgian Official Gazette).

Article 85. The Minister for Employment and the Minister for Energy shall be responsible, each in their respective areas of competence, for the execution of this Order.

Issued

By the King:
The Minister for Employment,

David Clarinval

The Minister for Energy,

Mathieu Bihet