IEC 61534-22

Edition 2.0 2014-06

INTERNATIONAL STANDARD

NORME INTERNATIONALE

Powertrack systems –
Part 22: Particular requirements for powertrack systems intended for onfloor or underfloor installation

Systèmes de conducteurs préfabriqués –
Partie 22: Exigences particulières pour les systèmes de conducteurs préfabriqués destinés au montage sur le sol ou sous le sol

IEC 61534-22:2014-06(en-fr)

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Part 22: Particular requirements for powertrack systems intended for onfloor or underfloor installation

FOREWORD

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International Standard IEC 61534-22 has been prepared by subcommittee 23A: Cable management systems, of IEC Technical Committee 23: Electrical accessories.

This second edition cancels and replaces the first edition published in 2009. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- Clauses 18 to 22 have been adapted to IEC 61534-1:2011 and include short-circuit test requirements;
- addition of a new (500 N) classification for the resistance to traffic load applied to small surface areas on a flushfloor service unit;

- addition of a new classification for the non-automatic closing of the lid on flushfloor service units and appropriate tests;
- addition of tests for floor service units declared for use when a floor is wet-treated.

The text of this standard is based on the following documents:

FDIS	Report on voting
23A/702/FDIS	23A/708/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

This standard is to be used in conjunction with IEC 61534-1:2011, *Powertrack systems – Part 1: General requirements*.

This Part 22 supplements or modifies the corresponding clauses of IEC 61534-1. Where a particular clause or subclause of IEC 61534-1:2011 is not mentioned in this Part 22, that clause or subclause applies as far as is reasonable. Where this Part 22 states "*addition*" or "*replacement*", the relevant text of IEC 61534-1:2011 is to be adapted accordingly.

Subclauses, tables and figures which are in addition to those in IEC 61534-1:2011 are numbered starting with 101.

A list of all parts of IEC 61534 series, published under the general title *Powertrack systems,* can be found on the IEC website.

The following differences exist in the countries indicated below:

Subclause 7.105.2: In the United Kingdom, this classification is not permitted.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

POWERTRACK SYSTEMS –

Part 22: Particular requirements for powertrack systems intended for onfloor or underfloor installation

1 Scope

Clause 1 of IEC 61534-1:2011 and IEC 61534-1:2011/AMD1:2014 is applicable except as follows:

1.1 *Addition:*

This part of IEC 61534 specifies the particular requirements and tests for PT systems intended for mounting on, or under the floor level and floor service units which are mounted on the floor, under the floor or flush with the floor.

NOTE 1 Types and applications are shown in Figures AA.1a, AA.1b and AA.2

NOTE 2 Flushfloor PT systems, with the exception of flushfloor service units, are not covered by this standard.

2 Normative references

Clause 2 of IEC 61534-1:2011 is applicable except as follows:

Addition:

IEC 61534-1:2011, *Powertrack systems – Part 1: General requirements*
IEC 61534-1:2011/AMD1:2014

3 Terms and definitions

Clause 3 of IEC 61534-1:2011 and IEC 61534-1:2011/AMD1:2014 is applicable except as follows:

Additional terms and definitions:

3.101
underfloor PT system
PT system whose components, except flushfloor service units, are intended for installation beneath the finished floor and in normal use are not exposed to traffic loads

Examples are shown in Figures AA.1a and AA.1b

3.102
onfloor PT system
PT system whose components are mounted on the floor surface

An example is shown in Figure AA.2.

3.103
finished floor
floor which carries the traffic load and which may be made of concrete, wood, or the like and which may or may not be completed with floor covering material such as carpet, tile, paint, parquet or similar means

3.104
apparatus mounting device
system component to accommodate electrical apparatus, for example switches, socket-outlets, circuit-breakers

3.105
floor service unit
system component used with a floor system and intended to accommodate one or more electrical apparatus such as switches, socket-outlets, circuit-breakers either directly or by use of mounting devices

3.106
flushfloor service unit
floor service unit that is flush with the finished floor when the unit is not in use'

3.107
in-use floor service unit
floor service unit which has cables and/or cords connected to external electrical appliances

3.108
not in-use floor service unit
floor service unit which has no cables and/or cords connected to external electrical appliances

4 General requirements

Clause 4 of IEC 61534-1:2011 is applicable.

5 General notes on tests

Clause 5 of IEC 61534-1:2011 is applicable.

6 Ratings

Clause 6 of IEC 61534-1:2011 is applicable.

7 Classification

Clause 7 of IEC 61534-1:2011 is applicable except as follows:

Replacement:

7.1 According to resistance to impact for installation and application

7.1.1 PT system for 5 J impact

7.1.2 PT system for 20 J impact

Additional subclauses:

7.101 According to floor treatment

7.101.1 Dry-treatment of floor

7.101.2 Wet-treatment of floor for not in-use floor service unit

7.101.3 Wet-treatment of floor for in-use floor service unit

7.102 According to the intended location

7.102.1 Underfloor PT system

7.102.2 Onfloor PT system

7.103 According to resistance to traffic load applied to small surface area on a flushfloor service unit

7.103.1 500 N

7.103.2 750 N

7.103.3 1 000 N

7.103.4 1 500 N

7.103.5 2 000 N

7.103.6 2 500 N

7.103.7 3 000 N

7.104 Optional classification according to resistance to traffic load applied to large surface area on a flushfloor service unit

7.104.1 2 000 N

7.104.2 3 000 N

7.104.3 5 000 N

7.104.4 10 000 N

7.104.5 15 000 N

7.105 According to the type of lid used on flushfloor service units

7.105.1 Automatic closing of the lid

7.105.2 Non-automatic closing of the lid

NOTE In the United Kingdom, classification 7.105.2 is not permitted.

8 Marking and documentation

Clause 8 of IEC 61534-1:2011 and IEC 61534-1:2011/AMD1:2014 is applicable.

9 Construction

Clause 9 of IEC 61534-1:2011 is applicable except as follows:

Additional subclauses:

9.101 Underfloor powertrack system components shall withstand external loads during transport and installation but are not subjected to traffic loads in normal use.

Compliance is checked by the tests specified in 14.101.2.

9.102 Onfloor powertrack system components shall withstand external loads.

Compliance is checked by the tests specified in 14.101.3.

9.103 Flushfloor service units shall withstand traffic loads in accordance with 7.103 and 7.104.

Compliance is checked by the tests specified in 14.101.4.

9.104 Lids of flush floor service units shall be so designed that in normal use they cannot be detached without an intentional action and also resist movement or unintentional opening when subject to external load.

Compliance is checked by inspection and the test of 14.101.4 and 14.101.5 as appropriate.

Lids of flush floor service units declared according to 7.105.1 shall be so designed that in normal use they will close automatically.

Compliance is checked by inspection and manual test.

9.105 Floor service units declared according to 7.101.2 and 7.101.3 shall avoid water coming into contact with insulated conductors and live parts during wet-treatment of floor by one or a combination of the following methods which may vary within the system:

– method 1: ensuring by design that water does not come into contact with insulated conductors and live parts when the water level is 10 mm above the upper level of the floor covering;
– method 2: providing an IP rating not less than IPX4;
– method 3: providing manufacturer's instructions which require that insulated conductors and live parts are positioned not less than 10 mm above the upper level of the floor covering.

For method 1, compliance is checked by measurement. For method 2, compliance is checked by the test of 21.2.3.101. For method 3, compliance is checked by inspection.

9.106 Flushfloor service units shall be so constructed that when installed with the lid closed they shall not present a trip hazard. Any protrusion above the finished floor shall not be greater than 4 mm, or 8 mm in the case of a chamfered step with an angle not exceeding 45º with the horizontal surface. When the service unit is in use this requirement does not apply.

Compliance is checked by inspection.

10 Clearances, creepage distances and solid insulation

Clause 10 of IEC 61534-1:2011 is applicable.

11 Protection against electric shock

Clause 11 of IEC 61534-1:2011 is applicable except as follows:

Additional subclause:

11.1.101 The minimum IP rating for powertrack system components accessible to ordinary persons during normal use shall be IP 3XD. This requirement does not apply to accessories.

12 Terminals and terminations

Clause 12 of IEC 61534-1:2011 is applicable.

13 Screws, current-carrying parts and connections

Clause 13 of IEC 61534-1:2011 is applicable.

14 Mechanical strength

Clause 14 of IEC 61534-1:2011 is applicable except as follows:

14.2 Impact test

Delete 14.2.

Additional subclauses:

14.101 External mechanical load test

14.101.1 General

Underfloor and onfloor PT systems and PT flushfloor service units, shall have sufficient mechanical strength against external mechanical loads likely to occur during normal use:

– underfloor PT system components by the test of 14.101.2;
– onfloor PT system components by the tests of 14.101.3;
– flushfloor service units by the test of 14.101.4 and 14.101.5 as appropriate.

Any part for temporary use only during the installation phase does not need to comply with these tests but may be included for the test to allow compliance of other parts.

14.101.2 Load test for underfloor powertrack system components

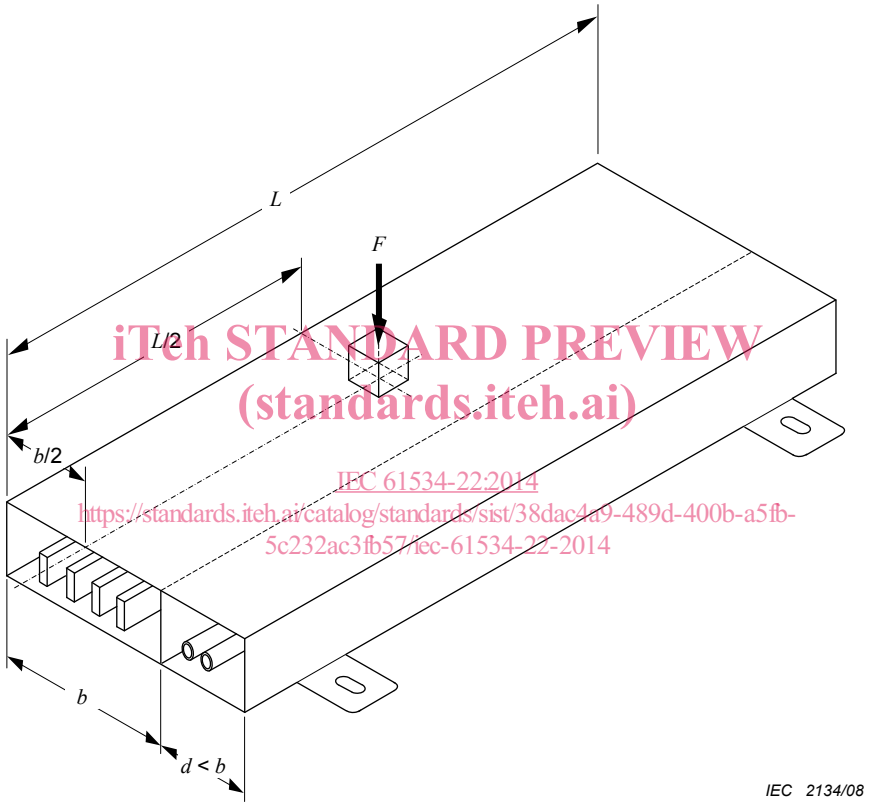
14.101.2.1 General

Powertrack (PT) systems including tap-off units shall have sufficient mechanical strength against external loads likely to occur during installation and use.

14.101.2.2 Powertrack

The test shall be performed on a sample consisting of two lengths of powertrack each with a minimum length of 0,5 m which are connected together with the necessary connectors and with a supply connector at each end of the sample.

The sample is positioned on a horizontal rigid support. A steel cube of (50 ± 0,5) mm with an edge radius of approximately 1 mm is placed centrally on the joint. In the case of multi-compartment powertrack whose partition walls provide support, the middle of the largest compartment is selected, see Figure 101.



Key

b width of the largest compartment

d width of the smallest compartment

L length of sample

F applied vertical force

Figure 101 – External load test

A vertical force of (750 ± 10) N is gradually applied over (60 ± 1) s and maintained for a further (120 ± 5) s centrally to the cube.

During the test, there shall be no deformation that impairs electrical safety.

In case of doubt, the sample shall conform to Clause 10 and 11.1.1.1.

After the test, the sample shall show no signs of damage, nor any cracks visible to normal or corrected vision without additional magnification.

After removal of the external load, the continuity of the protective circuit shall remain unaffected.

A current of (25 ± 1) A a.c. having a nominal frequency of 50 Hz or 60 Hz supplied by a source with a no-load voltage not exceeding 12 V shall be passed between the earthing terminals at each end of the sample. Measurement of the voltage drop shall be made within 120 s after the initiation of the current flow. The impedance per metre, calculated from the measurement of the voltage drop between the two supply connectors, shall not exceed the value declared by the manufacturer or 0,05 Ω/m whichever is the lower.

14.101.2.3 Tap-off units

A tap-off unit shall be centrally installed on a length of powertrack which has a minimum length of 0,5 m.

The powertrack is positioned on a horizontal rigid support. A steel cube of (50 ± 0,5) mm with an edge radius of approximately 1 mm is placed centrally on the tap-off unit.

A vertical force of (750 ± 10) N is gradually applied over (60 ± 1) s and maintained for a further (120 ± 5) s centrally to the cube.

During the test, there shall be no deformation that impairs electrical safety.

In case of doubt, the sample shall conform to Clause 10 and 11.1.1.1.

After the test, the sample shall show no signs of damage, nor any cracks visible to normal or corrected vision without additional magnification.

After removal of the external load, the continuity of the protective circuit shall remain unaffected.

A current of (25 ± 1) A a.c. having a nominal frequency of 50 Hz or 60 Hz supplied by a source with a no-load voltage not exceeding 12 V shall be passed between the earthing terminal or contact of the tap-off unit and the nearest point on the protective earth busbar with the tap-off unit fully engaged as in normal use. Measurement of the voltage drop shall be made within 120 s after the initiation of the current flow. The impedance calculated from the measurement of the voltage drop between the two points stated shall not exceed the value declared by the manufacturer or 0,05 Ω/m whichever is the lower.

14.101.3 Load test for onfloor PT system components

14.101.3.1 General

PT systems including tap-off units shall have sufficient mechanical strength against external loads likely to occur during installation and use.

14.101.3.2 Powertrack

The test shall be performed on a sample consisting of two lengths of powertrack each with a minimum length of 0,5 m which are connected together with the necessary connectors and with a supply connector at each end of the sample.

The sample is positioned on a horizontal rigid support. A steel cube of (50 ± 0,5) mm with an edge radius of approximately 1 mm is placed centrally on the joint. In the case of multi-compartment powertrack whose partition walls provide support, the middle of the largest compartment is selected, see Figure 101.