SLOVENSKI STANDARD
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Nizkonapetostne stikalne in krmilne naprave ï 7. del: Pomoġna oprema ï 2. oddelek: Vrstne sponke za bakrene zaġļ itne vodnike

Low-voltage switchgear and controlgear -- Part 7: Ancillary equipment -- Section 2: Protective conductor terminal blocks for copper conductors

Niederspannungsschaltgeräte -- Teil 7: Hilfseinrichtungen -- Hauptabschnitt 2: Schutzleiter-Reihenklemmen für Kupferleiter

Appareillage à basse tension -- Partie 7: Matériels accessoires -- Section 2: Blocs de jonction de conducteurs de protection pour conducteurs en cuivre

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English version

Low-voltage switchgear and controlgear
Part 7: Ancillary equipment
Section 2: Protective conductor terminal blocks for copper conductors

(IEC 947-7-2 : 1995)

Appareillage à basse tension
Partie 7: Matériels accessoires
Section 2: Blocs de jonction de conducteurs de protection pour conducteurs en cuivre
(CEI 947-7-2 : 1995)

Niederspannungs-Schaltgeräte
Teil 7: Hilfseinrichtungen
Hauptabschnitt 2: Schutzleiter-Reihenklemmen für Kupferleiter
(IEC 947-7-2 : 1995)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

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CENELEC

European Committee for Electrotechnical Standardization
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Foreword

The text of document 17B/635/DIS, future edition 1 of IEC 947-7-2, prepared by SC 17B, Low-voltage switchgear and controlgear, of IEC TC 17, Switchgear and controlgear, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60947-7-2 on 1995-09-20.

The following dates were fixed:

- latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 1996-07-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1996-07-01

Annexes designated 'normative' are part of the body of the standard. In this standard, annexes A and ZA are normative. Annex ZA has been added by CENELEC.

Contents

INTRODUCTION

The provisions of the general rules dealt with in part 1 (IEC 947-1) and the requirements for terminal blocks of part 7-1 (IEC 947-7-1) are applicable to this section of IEC 947-7 where specifically called for.

Clauses and subclauses, tables, figures and appendices of part 1 or part 7-1 thus applicable are identified by reference to part 1 or part 7-1, for example subclause 1.2 of part 1, table IV of part 7-1 or appendix A of part 1.

LOW-VOLTAGE SWITCHGEAR AND CONTROLGEAR –

Part 7: Ancillary equipment –

Section 2: Protective conductor terminal blocks for copper conductors

1 General

1.1 *Scope and object*

This section of IEC 947-7 applies to protective conductor terminal blocks with PE function up to 120 mm² (250 MCM) and to protective conductor terminal blocks with PEN function equal to and above 10 mm² (AWG 8) with screw-type or screwless-type clamping units, primarily intended for industrial applications.

Protective conductor terminal blocks are used to form the electrical and mechanical connection between copper conductors and the fixing support.

It is applicable to protective conductor terminal blocks for the connection of round copper conductors with and without special preparation having a cross-section between 0,2 mm² and 120 mm² (AWG 24 and 250 MCM) applied for up to 1 000 V a.c. circuits up to 1 000 Hz and up to 1 500 V d.c. circuits, most commonly in conjunction with terminal blocks according to IEC 947-7-1.

This section does not apply to:

- special construction protective conductors terminal which form an integral part of equipment, being dealt with in the relevant product standard;
- protective conductor terminals requiring the fixing of special devices to the conductors before clamping them into the terminal, for example flat push-on connectors;
- protective conductor terminals requiring twisting of the conductors, for example those with twisted joints;
- protective conductor terminals providing direct contact to the conductors by means of edges or points penetrating the insulation;
- protective conductor terminals which are dealt with in other particular requirements.

1.2 *Normative references*

The following normative documents contain provisions which, through reference in this text, constitute provisions of this section of IEC 947-7. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this section of IEC 947-7 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 50 (826): 1982, *International Electrotechnical Vocabulary (IEV) – Chapter 826: Electrical installations of buildings*

IEC 228: 1978, *Conductors of insulated cables*

IEC 439-1: 1992, *Low-voltage switchgear and controlgear assemblies – Part 1: Type-tested and partially type-tested assemblies*

IEC 715: 1981, *Dimensions of low-voltage switchgear and controlgear – Standardized mounting on rails for mechanical support of electrical devices in switchgear and controlgear installations*

IEC 947-7-1: 1989, *Low-voltage switchgear and controlgear – Part 7: Ancillary equipment – Section One: Terminal blocks for copper conductors*

2 Definitions

For the majority of the definitions required in connection with this section of IEC 947-7, see clause 2 of part 1.

For the purpose of this section, the following additional definitions shall apply.

2.1 **protective conductor terminal block**: Device with one or more clamping units for connecting and/or joining protective conductors (PE and PEN conductors) with conducting connection to their supports, which may be designed with screw-type or screwless-type fixing means. Supports are, for example, mounting rails, sheet metal cut-outs, mounting plates, etc.

A protective conductor terminal block can be either partially insulated or not at all. It does not require any operating insulation.

2.2 **partially insulated protective conductor terminal block**: Device which is only insulated against live parts of other devices but not against the support itself.

2.3 **PEN conductor**: An earthed conductor combining the functions of both protective conductor and neutral conductor.

NOTE – The acronym PEN results from the combination of both symbols PE for the protective conductor and N for the neutral conductor [IEV 826-04-06] (see also 2.1.15 of part 1).

3 Classification

Distinction is made between various types of protective conductor terminal blocks according to the:

- method of fixing the protective conductor terminal block to the support;
- type of terminal (e.g. screw-type terminals, screwless-type terminals, etc.);
- ability to receive conductors with or without special preparation (e.g. cable lugs);
- terminal assemblies with identical or dissimilar clamping units;
- number of terminals on each terminal assembly;
- service conditions;
- PE or PEN functions.

4 Characteristics

4.1 *Summary of characteristics*

Subclause 4.1 of part 7-1 applies.

4.2 *Type of protective conductor terminal block*

Subclause 4.2 of part 7-1 applies.

4.3 *Rated and limiting values*

4.3.1 Void.

4.3.2 *Rated short-time withstand current (of a protective conductor terminal block)*

Subclause 4.3.2 of part 7-1 applies.

4.3.3 *Standard cross-section*

Subclause 4.3.3 of part 7-1 applies.

NOTE – In accordance with the scope of this section, table 1 of part 1 applies only up to 120 mm^2 (250 MCM).

4.3.4 *Rated cross-section*

Subclause 4.3.4 of part 7-1 applies.

4.3.5 *Rated connecting capacity (of a protective conductor terminal block)*

Subclause 4.3.5 of part 7-1 applies with the following addition to table II.

Rated cross-section		Rated connecting capacity	
mm^2	AWG/MCM	mm^2	AWG/MCM
50	0	25 – 35 – 50	4 – 2 – 0
70	00	35 – 50 – 70	2 – 0 – 00
95	000	50 – 70 – 95	0 – 00 – 000
120	250	70 – 95 – 120	00 – 000 – 250

5 Product information

5.1 *Marking*

A protective conductor terminal block shall be marked in a durable and legible manner with:

a) the name of the manufacturer or a trade mark by which the manufacturer can be readily identified;

b) a type reference permitting to identify it and to get relevant information from the manufacturer or his catalogue;

c) IEC 947-7-2, if the manufacturer claims compliance with this standard;

Additional information

The following information shall be marked on the terminal block or contained in the manufacturer's data sheet or on the smallest packing unit.

d) the rated cross-section;

e) the rated connecting capacity if different from table II and for one conductor per terminal as for 7.4.3.1.6 of IEC 439-1;

f) service conditions if different from those of clause 6 below;

g) PE function only if supplied with or intended for use only with steel in the current-carrying path.

NOTE – No marking indicates suitability for use in both PE + PEN functions.

6 Normal service, mounting and transport conditions

Clause 6 of part 1 applies.

7 Constructional and performance requirements

7.1 *Constructional requirements*

Subclause 7.1 of part 1 is amplified as follows:

7.1.1 *Terminals*

The terminals shall permit a reliable connection between the conductor connections and the connections to the support.

The terminals shall be able to withstand the forces that can be applied through the connected conductors and the connected support under the conditions 8.2.1 and 8.2.2 of part 7-1.

7.1.2 *Connection of support*

Protective conductor terminal blocks shall be provided with means that allow them to be securely attached to the corresponding support without risk of galvanic corrosion.

The design of the protective conductor terminal block shall clearly show how the fixation has to be made to ensure the correct conducting connection to the appropriate support.

The clamping connection to the support shall only be released by means of tools.

The test shall be carried out in accordance with 8.2.1 of part 7-1.

NOTE – Further requirements concerning materials and current-carrying parts are under consideration for 7.1.1 and 7.1.2 of part 1. Their application to this section will be subject to further consideration.