

Connecting devices — Flat quick-connect terminations for electrical copper conductors — Safety requirements

The European Standard EN 61210 : 1995 has the status of a
British Standard

Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee PEL/23 Electrical accessories, upon which the following bodies were represented:

- ASTA Certification Services
- Association of Control Manufacturers (TACMA (BEAMA Ltd.))
- Association of Manufacturers of Domestic Electrical Appliances
- British Cable Makers Confederation
- British Electrical Systems Association (BEAMA Ltd.)
- British Electrotechnical Approvals Board
- British Radio and Electronic Equipment Manufacturers' Association
- Consumer Policy Committee of BSI
- Consumers' Association
- Copper Development Association
- Department of Trade and Industry (Consumer Safety Unit, CA Division)
- ERA Technology Ltd.
- Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
- Electricity Association
- Federation of the Electronics Industry
- Industry Council for Electronic Equipment Recycling
- Institute of Trading Standards Administration
- Institution of Electrical Engineers
- Institution of Incorporated Executive Engineers
- International Consumer Electronics Association (ICEA)
- Lighting Association
- Lighting Industry Federation Ltd.
- National Inspection Council for Electrical Installation Contracting
- National Standards Authority of Ireland
- Royal Society for the Prevention of Accidents

The following body was also represented in the drafting of the standard, through subcommittees and panels:

British Gas plc

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 July 1995

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National foreword

This British Standard has been prepared by Technical Committee PEL/23 and is the English language version of EN 61210 : 1995 *Connecting devices — Flat quick-connect terminations for electrical copper conductors — Safety requirements*, published by the European Committee for Electrotechnical Standardization (CENELEC). It was derived by CENELEC from IEC 1210 : 1993 published by the International Electrotechnical Commission (IEC).

The CENELEC common modifications have been implemented at the appropriate places in the text and are indicated by a side line in the margin. Parts of the original IEC text that have been modified by CENELEC have been quoted in national annex NA.

The following print types are used in this standard:

- requirements proper; in roman type;
- *test specifications: in italic type;*
- notes: in smaller roman type.

Cross-references

Publication referred to	Corresponding British Standard
EN 60068-1 : 1994	BS 2011 <i>Environmental testing</i>
(IEC 68-1 : 1988)	Part 1.1 : 1989 <i>General and guidance</i>
IEC 760 : 1989	BS 5057 : 1992 <i>Specification for flat, quick-connect terminations</i>

Compliance with a British Standard does not of itself confer immunity from legal obligations.

ICS 29.120.30

Descriptors: Electrical equipment, electric conductor, copper, connecting equipment, electric terminal, definition, characteristic, test, dimension, marking

English version

Connecting devices
Flat quick-connect terminations for electrical copper
conductors
Safety requirements
(IEC 1210 : 1993, modified)

Dispositifs de connexion
Bornes plates à connexion rapide pour
conducteurs électriques en cuivre
Prescriptions de sécurité
(CEI 1210 : 1993, modifiée)

Verbindungsmaterial
Flachsteckverbindungen für elektrische
Kupferleiter
Sicherheitsanforderungen
(IEC 1210 : 1993, modifiziert)

This European Standard was approved by CENELEC on 1994-12-06. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

Foreword

The text of the International Standard IEC 1210 : 1993, prepared by SC 23F, Connecting devices, of IEC TC 23, Electrical accessories, together with common modifications prepared by Reporting Secretariat SR 23F, was submitted to the formal vote and was approved by CENELEC as EN 61210 on 1994-12-06.

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) 1995-12-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1995-12-01

For products which have complied with the relevant national standard before 1995-12-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 2000-12-01.

Annexes designated 'normative' are part of the body of the standard. Annexes designated 'informative' are given for information only. In this standard, annex ZA is normative and annex A is informative. Annex ZA has been added by CENELEC.

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CONNECTING DEVICES – FLAT QUICK-CONNECT TERMINATIONS FOR ELECTRICAL COPPER CONDUCTORS – SAFETY REQUIREMENTS

1 Scope

This International Standard applies to flat quick-connect terminations consisting of a male tab of size 2,8, 4,8, 6,3 or 9,5 mm and a mating female connector for use as either an incorporated or an integrated part of an equipment or of a component, or as a separate entity, for connecting electrical copper conductors according to the manufacturer's instructions.

Said electrical copper conductors may be flexible or rigid stranded, having a cross-sectional area up to and including 6 mm² or rigid solid having a cross-sectional area up to and including 2,5 mm².

The rated voltage by which electrical energy is utilized, shall not exceed 1 000 V a.c. with a frequency up to and including 1 000 Hz, and 1 500 V d.c. and having the temperature limits applicable to materials used within this standard.

Requirements for insulated male tabs and female connectors are under consideration.

NOTES

- 1 This standard, where applicable, may be used for conductors made of material other than copper, but not including aluminium.
- 2 For reasons of safety, it is recommended that flat quick-connect terminations beyond the scope of this standard should not be interchangeable with those of this standard.
- 3 This standard does not apply to female connectors with positive locking means.
- 4 The flat quick-connect terminations covered by this standard are not intended to be disconnected by pulling the cable.

This standard does not apply to flat quick-connect terminations for data and signal circuits.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this International Standard 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 68-1: 1988, *Environmental testing – Part 1: General and guidance*

IEC 760: 1989, *Flat, quick-connect terminations*

ISO 1456: 1988, *Metallic coatings – Electrodeposited coatings of nickel plus chromium and of copper plus nickel plus chromium*

ISO 2081: 1986, *Metallic coatings – Electroplated coatings of zinc on iron or steel*

ISO 2093: 1986, *Electroplated coatings of tin – Specification and test methods*

3 Definitions

For the purpose of this International Standard the following definitions apply:

3.1 flat quick-connect termination: Electrical connection consisting of a male tab and a female connector which can be inserted and withdrawn with or without the use of a tool.

3.2 male tab: That portion of a quick-connect termination which receives the female connector.

3.3 male test tab: Male tab manufactured to close tolerances with specific material without coating for the purpose of conducting mechanical tests on female connectors taken from the production line.

NOTE - In most cases a male tab from the production line (with or without coating) may be also suitable.

3.4 female connector: That portion of a quick-connect termination which is pushed onto the male tab.

3.5 detent: Dimple (depression) or hole in the male tab which engages a raised portion on the female connector to provide a latch for the mating parts.

3.6 maximum permissible temperature (maximum service temperature): Highest temperature which the quick-connect termination is allowed to attain in normal use as a result of ambient temperature, induced heat and heat caused by the connector itself.

4 General

Flat quick-connect terminations shall be so designed and constructed that in normal use their performance is reliable and without danger to the user or surroundings.

Compliance is checked by carrying out all tests specified.

5 General requirements for tests

5.1 Tests according to this standard are type tests.

5.2 Unless otherwise specified, the samples are tested as delivered and connected as for normal use, at an ambient temperature of $(20 \pm 5) ^\circ\text{C}$.

In case of doubt, (for example between test laboratories, or between manufacturer and test laboratory) IEC 68-1 applies.

5.3 If samples are not delivered with conductors already assembled, the conductors shall be connected to the associated parts in accordance with the manufacturer's instructions and using an appropriate tool.

5.4 The tests are carried out on each set in the sequence as specified in table 1, according to the most onerous combination of the tab and the female connector as declared and documented in item 5 of 7.2.

Table 1 – Test sequences and sets of samples

Sets	Number of new samples per set		Clauses and subclauses	Test sequence
	Tabs	Female connectors		
A	12 (6 double ended tabs)	24	8.2 9.3 9.4 9.5	Measurement of dimensions Temperature-rise test Electrical overload test Elevated temperature test
B	10 (male test tabs)	10	8.2 9.1 9.6	Measurement of dimensions Insertion and withdrawal force Tensile strength test for crimped connections
C (in-line tabs)	10		8.2 9.6	Measurement of dimensions Tensile strength test for crimped connections
D (integral tabs and female connectors)	12	12	8.2 9.2	Measurement of dimensions Mechanical overload force
E (integral female connectors)	12 (male test tabs)	12	8.2 9.1 9.2	Measurement of dimensions Insertion/withdrawal force Mechanical overload force

Set A These tests have to confirm the electrical performance of the female connectors.

Set B These tests have to confirm the mechanical performance of the female connectors.

Set B + C The Tensile Strength Test has to confirm the lack of undue heat emission by the crimp connection of the tabs.

Set D + E These tests only apply to devices with incorporated and integrated tabs or female connectors. The tests have to confirm the dimensional and mechanical requirements of tabs and female connectors forming part of a device.

The necessary further requirements (i.e. the admissible max. temperatures, nominal current) have to be specified in the device standard.

