

Specification for

**Distribution assemblies for
reduced low voltage electricity
supplies for construction and
building sites**

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Association of British Mining Equipment Companies
Association of Consulting Engineers
ASTA Certification Services
Construction Confederation
Department of Trade and Industry (Consumer Safety Unit, CA Division)
Electrical Installation Equipment Manufacturers' Association (BEAMA Ltd.)
Electricity Association
ERA Technology Ltd.
GAMBICA (BEAMA Ltd.)
Institute of Petroleum
Institution of Incorporated Executive Engineers
National Inspection Council for Electrical Installation Contracting

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Foreword

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution.

BS 4363:1998+A1:2013 supersedes BS 4363:1998, which is withdrawn.

Text introduced or altered by Amendment No. 1 is indicated in the text by tags **A1** **A1**. Minor editorial changes are not tagged.

The use of electrical power on construction and building sites is widespread. In addition to providing site lighting and power supplies for small portable tools and equipment, provision has to be made for major power consuming apparatus.

The essential requirements for the various types of distribution assemblies for reduced low voltage systems intended for use on construction and building sites have been established for over 20 years and were specified in BS 4363 : 1991.

This revision of BS 4363 takes into account the issue of BS EN 61439-4, BS 7671 and the recent revision of BS 7375, and the standard has also been updated to take account of current practice.

Equipment for distribution of electricity on construction and building sites at mains voltage is specified in BS EN 61439-4.

Experience has shown that to obtain effective use of the assemblies, uniformity of practice as regards plugs and socket-outlets is essential, and these are, therefore, specified with no permissible variations.

The use of reduced low voltage equipment on sites has made a major contribution to electrical safety in these environments.

Typical system voltages at mains frequency (50 Hz) employed on construction and building sites, together with recommended applications, are detailed in annex A.

Annex B shows a typical schematic layout indicating how the assemblies may be interconnected to give a single-phase reduced low voltage (RLV) supply, and annex C shows similar layout when both single-phase and three-phase RLV supplies are required.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

Specification

1 Scope

This British Standard specifies the requirements for distribution assemblies for the control and distribution of electricity from a three-phase reduced low voltage a.c. system at declared voltage up to 110 V (63.5 V to earth) or a single phase system at declared voltage up to 110 V (55 V to earth), for use for the protection and control of electricity supplies on construction and building sites in the UK.

2 References

2.1 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this British Standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

2.2 Informative references

This British Standard refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover but reference should be made to the latest editions.

3 Definitions

For the purposes of this British Standard the following definitions apply.

3.1 site

An area where any of the following works are undertaken/executed:

- a) new building construction;
- b) repair, alteration, extension or demolition of existing buildings or parts of buildings;
- c) engineering construction;
- d) earthworks;
- e) works similar to those listed in items a) to d).

NOTE. See [\[A1\] 704:1:1 \[A1\]](#) of BS 7671 : [\[A1\] 2008+A1:2011. \[A1\]](#)

3.2 [\[A1\]](#) rated current of the assembly (InA) [\[A1\]](#)

The current rating per phase of the input switchgear or the transformer, as appropriate.

3.3 transformer assembly (TA)

An assembly of equipment incorporating a transformer and arranged to distribute electricity at reduced low voltage.

NOTE. Designated as TA/1 for single-phase, TA/3 for three-phase, and TA/1/3 for single- and three-phase.

3.4 socket-outlet assembly (SOA)

An assembly of equipment providing facilities for the connection, control and protection of final circuits by means of one or more socket-outlets operating at a voltage lower than the incoming supply system voltage.

NOTE. Designated as SOA/1 for single-phase, and SOA/3 for three-phase.

3.5 extension-outlet assembly (EOA)

An assembly of equipment providing facilities for the connection and control of final circuits by means of one or more socket-outlets operating at a voltage lower than the incoming supply system voltage.

NOTE 1. Designated as EOA/1 for single-phase, and EOA/3 for three-phase.

NOTE 2. The extension-outlet assembly is similar to the socket-outlet assembly but has no facilities for electrical overcurrent protection.

3.6 separated extra-low voltage (SELV) system

An extra-low voltage system which is electrically separated from earth and from other systems in such a way that a single fault cannot give rise to the risk of electric shock.

NOTE 1. Definition adapted from BS 7671 : [\[A1\] 2008+A1:2011. \[A1\]](#)

NOTE 2. Extra-low voltage is defined in BS 7671 : [\[A1\] 2008+A1:2011 \[A1\]](#) as a voltage normally not exceeding 50 V a.c. (r.m.s. value) or 120 V ripple free d.c., whether between conductors or to earth. This is a nominal voltage (i.e. the voltage by which an installation, or part of an installation is designated). The actual voltage of the installation may differ from the nominal value by a quantity within normal tolerances.

3.7 ambient temperature

The temperature of the medium surrounding an assembly.

NOTE. For the assemblies covered in this standard, the cooling medium is air, and the ambient temperature should not be confused with the temperature of the air inside the assembly, which may influence the design of items fitted within the enclosure.

4 Service conditions

When tested in accordance with

[\[A1\] BS EN 61558-1 \[A1\]](#), transformer assemblies shall be capable of continuous operation at an ambient temperature within the range of $-20\text{ }^{\circ}\text{C}$ to $+30\text{ }^{\circ}\text{C}$ in any condition of loading up to the rating of the complete assembly.

The design shall be such that the assemblies are capable of operating continuously in conditions of 85 % relative humidity at $20\text{ }^{\circ}\text{C}$.

5 General

5.1 Mechanical design of the enclosure

The mechanical strength of the enclosure shall conform to **Table 1** Clause 8 of BS EN 61439-4. **Table 1**

Access doors or panels to the interior of the enclosure shall be provided with a seal on the periphery to ensure satisfactory mating with the main body of the enclosure when closed.

The enclosure shall have an IP rating of not less than IP44 in accordance with BS EN 60529, with all doors and covers in place.

The top of the enclosure shall be so designed that rain-water cannot be retained on its surface.

NOTE. A sloping top or a domed top has been found to be suitable. The top may be demountable.

Except for the EOAs specified in **9.1** and **9.2** and for portable tool transformers specified in **7.2** having a rating lower than 3 kVA the top shall extend at least 76 mm beyond the main body of the enclosure.

The material used in the manufacture of the enclosure shall be metallic or of a non-combustible or flame retardant plastics material.

5.2 Transit facilities

Means shall be provided to give protection to any projecting control operating handles and all sides of the assembly when the assembly is in transit.

Means shall be provided for the lifting and manoeuvring into position of assemblies on site.

Lifting handles, lugs and eyebolts if fitted, shall together be capable of supporting twice the mass of the assembly. Steel eyebolts, if fitted, shall conform to **Table 1** BS EN ISO 3266. **Table 1**

NOTE. It is recommended that transformer assemblies should be fitted with at least two handles, lugs or eyebolts.

5.3 Earthing and bonding

The earth tubes of all socket-outlets, the star point of three-phase transformer secondary windings and the centre-tap of single-phase transformer secondary windings shall be connected to the metal frame of the assembly and to the protective conductor.

Provision shall be made so that on installation all cable armourings and earth continuity conductors can be readily bonded together and to the metal frame of the assembly. An external earth terminal shall be provided for this purpose unless all connections are by socket outlet(s) and/or appliance inlet(s). The terminal shall be marked in accordance with **Table 1** BS EN 60445. **Table 1**

5.4 Access to live parts

Access to live parts and wiring shall be gained only by use of a tool or a key or unless the parts are isolated from the supply.

Output circuits which are intended to be connected by means of terminals shall be provided with a means of isolation, and arranged such that the terminals are accessible without exposing any other live terminals. Output terminals other than socket outlets shall be provided with an ingress protection not less than IP2X, in accordance with BS EN 60529, when the outer covers of the assembly are removed.

All combinations of switches and fuses shall be arranged to ensure that the switch will isolate the fuse from the supply.

Access to fuses, if fitted, in the assembly shall be gained only by the use of a tool or key.

5.5 Circuit-breakers

Each circuit-breaker shall be clearly and permanently marked to associate it with the socket-outlet or output circuit that it controls, and a means of indicating the description of the actual circuit shall be provided, e.g. a blank label.

Means shall be provided for ensuring that individual circuit-breakers cannot be inadvertently switched to the ON position.

In any one assembly the direction of motion of the operating levers to the ON position shall be the same. All circuit breakers used on output circuits, shall disconnect all circuit conductors simultaneously. If the input circuit breaker is to be used as a means of isolation it shall disconnect all circuit conductors.

5.6 Cable entry and anchoring

Facilities shall be provided for anchoring and terminating incoming and outgoing cables so as to prevent any strain on a cable being applied to any conductor terminations. Knots in cables shall not be used as a method of cable anchoring.

5.7 Ratings

Any assembly except a single-phase socket-outlet assembly (see **8.1**) shall be fitted with a protective device which limits the current of the output circuits, unless the sum of the individual current ratings of the protective devices on the output circuits in any phase does not exceed the rating assigned to the assembly.

NOTE. When selecting protective devices over a range of current ratings, it is advantageous to select those with the same fixing dimensions.