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INTERNATIONAL ELECTROTECHNICAL COMMISSION

IEC STANDARD

Publication 158-1 C
1982

Troisième complément à la Publication 158-1 (1970)

Appareillage de commande à basse tension

Première partie: Contacteurs

Third supplement to Publication 158-1 (1970)

Low-voltage controlgear

Part 1: Contactors

Mots clés: contacteurs pourvus de protection contre la surcharge; relais.

Key words: contactors provided with overload protection; relays.

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

Third supplement to Publication 158-1 (1970)

LOW-VOLTAGE CONTROLGEAR

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FOREWORD

1) The formal decisions or agreements of the I E C on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.

2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.

3) In order to promote international unification, the I E C expresses the wish that all National Committees should adopt the text of the I E C recommendation for their national rules in so far as national conditions will permit. Any divergence between the I E C recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 17B: Low-voltage Switchgear and Controlgear, of I E C Technical Committee No. 17: Switchgear and Controlgear.

It forms the third supplement to Publication 158-1 (1970).

A first draft was discussed at the meeting held in Moscow in 1977 and a second draft was discussed at the meeting held in Sofia in 1978. As a result of this meeting, a draft, Document 17B(Central Office)107, was submitted to the National Committees for approval under the Six Months' Rule in July 1979.

Amendments, Document 17B(Central Office)112, were submitted to the National Committees for approval under the Two Months' Procedure in October 1980.

The National Committees of the following countries voted explicitly in favour of publication:

Argentina
Australia
Austria
Belgium
Bulgaria
Canada
China
Denmark
Egypt
Finland
France
Germany
Hungary
Japan
Italy
Israel
Korea (Democratic People's Republic of)
Netherlands
Poland
Romania
Spain
South Africa (Republic of)
Sweden
Turkey
United Kingdom
United States of America
Yugoslavia

Other I E C publications quoted in this standard:

Publications Nos. 50(441): International Electrotechnical Vocabulary (I.E.V.), Chapter 441: Switchgear and Controlgear.

157-1: Low-voltage Switchgear and Controlgear, Part 1: Circuit-breakers.

158-1: Low-voltage Controlgear, Part 1: Contactors.

292-1: Low-voltage Motor Starters, Part 1: Direct-on-line (Full Voltage) A.C. Starters.

337-1: Control Switches (Low-voltage Switching Devices for Control and Auxiliary Circuits, including Contactor Relays), Part 1: General Requirements.

337-2: Part 2: Special Requirements for Specific Types of Control Switches. Section One: Push-buttons and Related Control Switches.

408: Low-voltage Air-break Switches, Air-break Disconnectors, Air-break Switch-disconnectors and Fuse-combination Units.

445: Identification of Apparatus Terminals and General Rules for a Uniform System of Terminal Marking, Using an Alphanumeric Notation.

Third supplement to Publication 158-1 (1970)

LOW-VOLTAGE CONTROLGEAR

Part 1: Contactors

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1. Scope

This standard applies to components of low-voltage switchgear and controlgear such as contactors (according to IEC Publication 158-1: Low-voltage Controlgear, Part 1: Contactors) and associated overload relays (according to I E C Publication 292-1: Low-voltage Motor Starters, Part 1: Direct-on-line (Full Voltage) A.C. Starters).

The identification of the terminals of circuit-breakers (according to I E C Publication 157-1: Low-voltage Switchgear and Controlgear, Part 1: Circuit-breakers), switches and disconnectors (according to I E C Publication 408: Low-voltage Air-break Switches, Air-break Disconnectors, Air-break Switch-disconnectors and Fuse-combination Units), control switches (according to I E C Publications 337-1: Control Switches (Low-voltage Switching Devices for Control and Auxiliary Circuits, including Contactor Relays), Part 1: General Requirements, and 337-2: Part 2: Special Requirements for Specific Types of Control Switches. Section One: Push-buttons and Related Control Switches) for example contactor relays, is specifically excluded from this standard.

2. Object

The object of this standard is to specify the methods used for identifying the terminals of contactors (see I E C Publication 158-1) and associated overload relays (see I E C Publication 292-1) when delivered as separate components.

These identifying methods are used, either on the devices themselves or in the associated literature (for example: directions for use, diagrams, nomenclature, etc.).

3. Methods of identifying terminals

The purpose of identifying terminals of contactors and associated overload relays is to provide information regarding the function of each terminal or its location with respect to other terminals or for other use.

The identification of terminals, where necessary, shall be effected by the use of one or more of the following methods, as recommended by I E C Publication 445: Identification of Apparatus Terminals and General Rules for a Uniform System of Terminal Marking Using an Alphanumeric Notation:

a) the physical location of the terminals, in accordance with a recognized system;

b) a colour code in accordance with a recognized system;

c) terminal markings, in accordance with Clauses 4 and 5 of this standard.

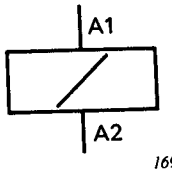
Alternatively, terminals may be identified on the wiring diagram supplied with the device.

In the case of identification by a colour code, the correspondence between the colours used and alphanumeric markings shall be indicated in the associated literature, in accordance with the rules in force (I E C Publication YYY, *under consideration*).

4. Marking and identification of terminals of contactors

4.1 *Marking and identification of terminals of coils*

In the case of identification by alphanumeric markings, both terminals of a coil for an electromagnetic contactor shall be marked A1 and A2.



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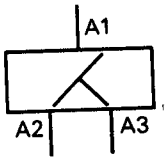
For a coil with tappings, the terminals of the tappings shall be marked in sequential order A3, A4, etc.

Examples:



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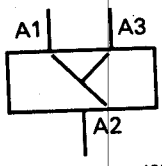

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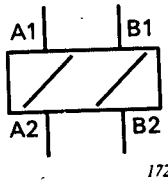
Note. —As a consequence of this, both incoming and outgoing terminals may have even or odd numbers.

For a coil having two windings, the terminals of the first winding shall be marked A1, A2 and of the second winding B1, B2.



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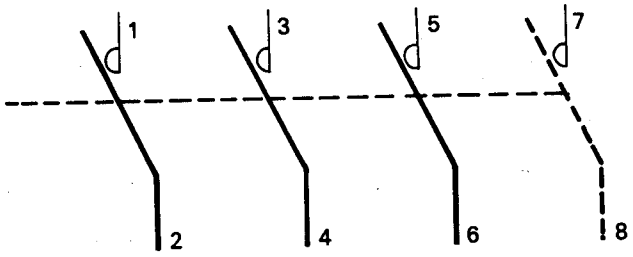
4.2 *Marking and identification of terminals of main circuits*

The terminals of the main circuits shall be marked by single figure numbers (Alternative 1, in accordance with IEC Publication 445) or by an alphanumeric system (Alternative 2, corresponding to North American practice).



Alternative 1

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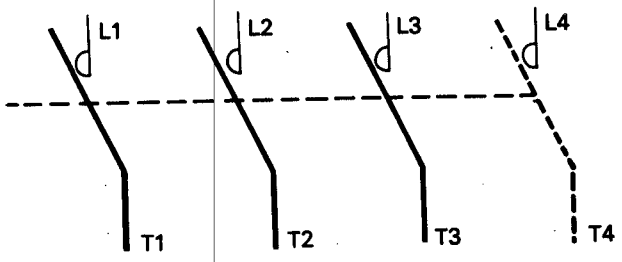

Alternative 2

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Alternatively, terminals may be identified according to Alternative 1 or to Alternative 2 on the wiring diagram supplied with the device.

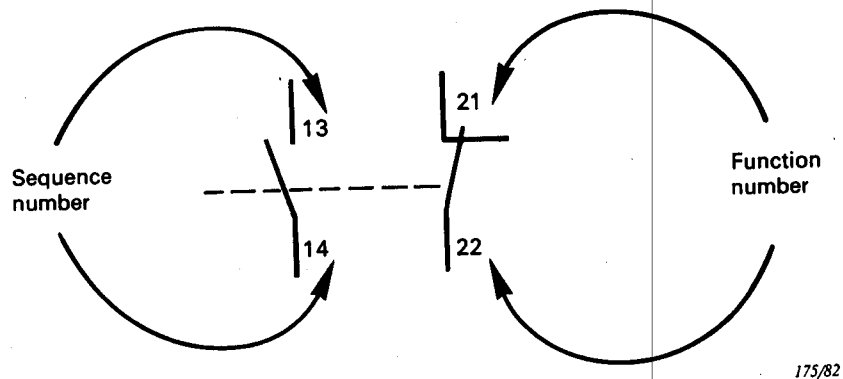
4.3 *Marking and identification of terminals of auxiliary circuits*

The terminals of auxiliary circuits shall be marked or identified on the diagrams by two-figure numbers:

— the unit number is a function number;

— the figure of the tens is a sequence number.

The following examples illustrate such a marking system:



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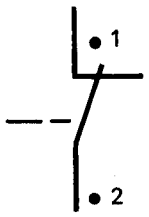
4.3.1 *Function number*

Function numbers 1, 2 are allocated to circuits with break contacts and function numbers 3, 4 to circuits with make contacts.

Note. — The definitions for make contacts and break contacts are given in IEC Publication 50(441): International Electrotechnical Vocabulary (I.E.V.), Chapter 441: Switchgear and Controlgear.

Examples:



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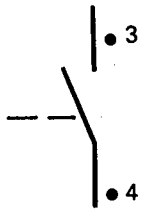

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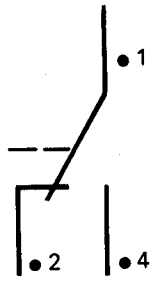
Note. — The dots on the above example take the place of the sequence numbers which must be added appropriate to the application.

The terminals of circuits with change-over contact elements shall be marked by the function numbers 1, 2 and 4.



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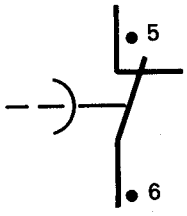
Function numbers 5 and 6 (for break contacts), 7 and 8 (for make contacts) are allocated to terminals of auxiliary circuits containing auxiliary contacts with special functions.

Examples:



Break contact
delayed on closing

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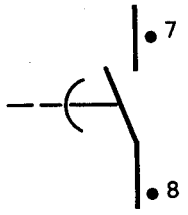

Make contact
delayed on closing

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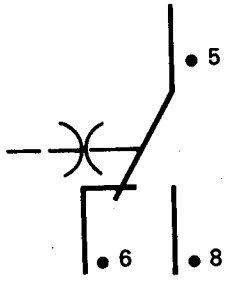
The terminals of circuits with change-over contact elements with special functions shall be marked by the function numbers 5, 6 and 8.

Example:



Change-over contact
delayed in both
directions

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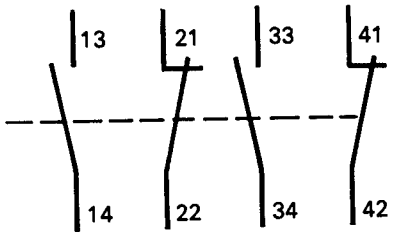
4.3.2 *Sequence number*

Terminals belonging to the same contact element shall be marked by the same sequence number.

All contact elements having the same function shall have different sequence numbers:

Examples:



Four contact elements

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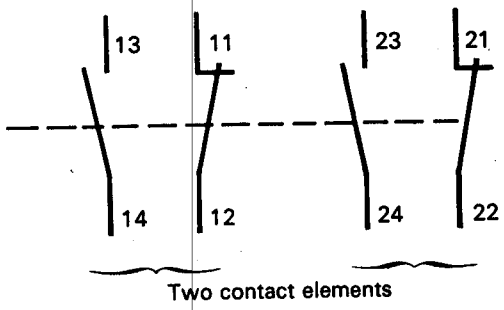

Two contact elements

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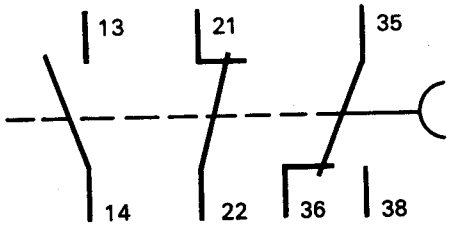

Three contact elements

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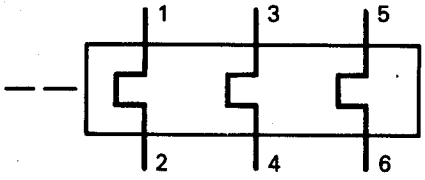
5. Marking and identification of terminals of overload relays

The terminals of the main circuits of overload relays shall be marked in the same manner as the terminals of the main circuits of contactors (see Sub-clause 4.2).

The terminals of the auxiliary circuits of overload relays shall be marked in the same manner as the terminals of the auxiliary circuits of contactors with specified function (see Sub-clause 4.3).

The sequence number shall be 9; if a second sequence number is required, it shall be numbered 0.

Examples:



Alternative 1

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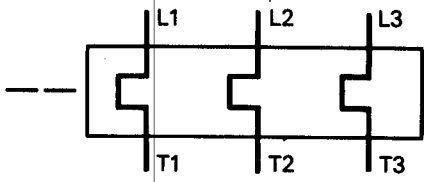

Alternative 2

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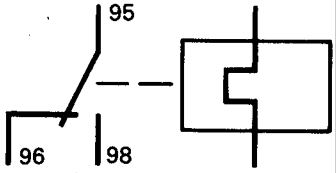

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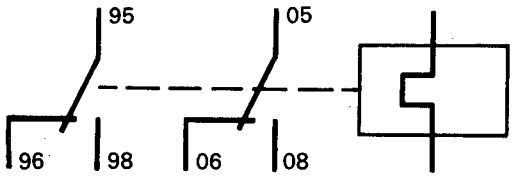

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Alternatively, terminals may be identified according to one of both above alternatives on the wiring diagram supplied with the device.