



**SLOVENSKI STANDARD**  
**SIST EN 61175:1997**

**01-december-1997**

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**Designations for signals and connections (IEC 1175:1993)**

Designations for signals and connections

Bezeichnungen für Signale und Verbindungen

Désignations des signaux et connexions

**Ta slovenski standard je istoveten z: EN 61175:1993**

[SIST EN 61175:1997](https://standards.iteh.ai/catalog/standards/sist/af93b09f-a48d-45a0-8114-7a8b9a8a1c75/sist-en-61175-1997)

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**ICS:**

29.020	Elektrotehnika na splošno	Electrical engineering in general
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EUROPEAN STANDARD

EN 61175

NORME EUROPEENNE

EUROPÄISCHE NORM

August 1993

UDC 621.3:001.4

Descriptors: Signal, signal designation, connections

## ENGLISH VERSION

Designations for signals and connections  
(IEC 1175:1993)Désignations des signaux  
et connexions  
(CEI 1175:1993)Bezeichnungen für Signale  
und Verbindungen  
(IEC 1175:1993)

This European Standard was approved by CENELEC on 1993-03-09. 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

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Ref. No. EN 61175:1993 E

FOREWORD

The text of document 3B(CO)48, as prepared by Sub-Committee 3B: Documentation, of IEC Technical Committee 3: Documentation and graphical symbols, was submitted to the IEC-CENELEC parallel vote in March 1992.

The reference document was approved by CENELEC as EN 61175 on 9 March 1993.

The following dates were fixed:

- latest date of publication of an identical national standard (dop) 1994-07-01
- latest date of withdrawal of conflicting national standards (dow) 1994-07-01

Annexes designated "normative" are part of the body of the standard. Annexes designated "informative" are given only for information. In this standard, annex A is informative and annex ZA is normative.

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ENDORSEMENT NOTICE

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The text of the International Standard IEC 61175:1993 was approved by CENELEC as a European Standard without any modification.



## ANNEX ZA (normative)

OTHER INTERNATIONAL PUBLICATIONS QUOTED IN THIS STANDARD  
WITH THE REFERENCES OF THE RELEVANT EUROPEAN PUBLICATIONS

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

NOTE : When the international publication has been modified by CENELEC common modifications, indicated by (mod), the relevant EN/HD applies.

IEC Publication -----	Date -----	Title -----	EN/HD -----	Date -----
27	series	Letter symbols to be used in electrical technology	HD 245	series
445	1988	Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system	EN 60445	1990
617-12	1991	Graphical symbols for diagrams Part 12: Binary logic elements	-	-
747	series	Semiconductor devices - Discrete devices	-	-
750	1983	Item designation in electrotechnology	-	-

## Other publications

ISO 31-1	1978	Quantities and units of space and time
ISO 31-5	1979	Quantities and units of electricity and magnetism
ISO/IEC 646	1991	Information technology ISO 7-bit coded character set for information processing interchange
ISO 3511-1	1977	Process measurement control functions and instrumentation Symbolic representation - Part 1: Basic requirements
ISO/IEC 4873	1991	Information technology ISO 8-bit code for information interchange - Structure and rules for implementation
ISO 8859-1	1987	Information processing - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet N° 1

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INTERNATIONALE  
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CEI  
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Première édition  
First edition  
1993-07

Désignations des signaux et connexions

Designations for signals and connections

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International Electrotechnical Commission  
Международная Электротехническая Комиссия

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## CONTENTS

	Page
FOREWORD	5
Clause	5
<b>1 Scope</b>	<b>7</b>
<b>2 Normative references</b>	<b>7</b>
<b>3 General</b>	<b>7</b>
3.1 Structure of a signal designation	9
3.2 Recommended characters	9
3.3 Length	11
<b>4 Application of item designation</b>	<b>11</b>
<b>5 Signal name</b>	<b>17</b>
5.1 General	17
5.2 Basic signal name	19
5.2.1 Power and other constant-level connections	21
5.2.2 Analogue signals	23
5.2.3 Binary logic signals	27
5.3 Signal version identifier	37
5.4 Signal level indication	37
Annexes	
<b>A Letter codes and mnemonics for use in signal names</b>	<b>45</b>
A.1 Letter codes for variables	45
A.2 Special letter codes for electrical variables	47
A.3 Letter codes used as modifiers	47
A.4 Identification of terminations of certain designated conductors	49
A.5 Mnemonics for use in descriptive signal names	49

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

## Designations for signals and connections

## FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a world-wide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC 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.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that state.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national or regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

International Standard IEC 1175 has been prepared by sub-committee 3B: Documentation, of IEC technical committee 3: Documentation and graphical symbols.

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

SIST EN 61175:1997	
DIS	Report on Voting
3B(CO)48	3B(CO)52

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

Annex A is for information only.

## Designations for signals and connections

### 1 Scope

This standard establishes rules for the composition of designations and names that identify signals and connections in electrotechnical and related fields.

### 2 Normative references

The following normative documents contain provisions that, 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 listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 27,	<i>Letter symbols to be used in electrical technology</i>
IEC 445: 1988,	<i>Identification of equipment terminals and of terminations of certain designated conductors, including general rules for an alphanumeric system</i>
IEC 617-12: 1991,	<i>Graphical symbols for diagrams - Part 12: Binary logic elements</i>
IEC 747,	<i>Semiconductor devices. Discrete devices.</i>
IEC 750: 1983,	<i>Item designation in electrotechnology</i>
ISO 31-1: 1978,	<i>Quantities and units of space and time</i>
ISO 31-5: 1979,	<i>Quantities and units of electricity and magnetism</i>
ISO/IEC 646: 1991,	<i>Information technology ISO 7-bit coded character set for information processing interchange</i>
ISO 3511-1: 1977,	<i>Process measurement control functions and instrumentation - Symbolic representation - Part 1: Basic requirements</i>
ISO/IEC 4873: 1991,	<i>Information technology ISO 8-bit code for information interchange - Structure and rules for implementation</i>
ISO 8859-1: 1987,	<i>Information processing - 8-bit single-byte coded graphic character sets - Part 1: Latin alphabet No. 1</i>

### 3 General

A signal designation shall identify uniquely a simple functional or electrical connection among a set of points (for example terminals, junctions) within a collection of items, assemblies, equipments, plants, installations, or other systems being documented.

For the purposes of this standard, the term "*signal designation*" includes designations for power and other constant-level connections.

### 3.1 Structure of a signal designation

A signal designation contains a *signal name* and, if necessary, a preceding *item designation*. The signal name, in turn, contains a *basic signal name* followed, if necessary, by a *signal version identifier*. For binary logic signals on circuit diagrams using direct logic polarity indication, the signal name also contains a *signal level indication* following the remainder of the signal name.

These parts of the signal designation are shown as follows:

$$\boxed{i} ; \boxed{b} : \boxed{v} ( \boxed{l} )$$

where

$\boxed{i}$	is the item designation (see clause 4)
;	is the item designation separator
$\boxed{b}$	is the basic signal name (see 5.2)
:	is the signal version separator
$\boxed{v}$	is the signal version identifier (see 5.3)
( )	is the signal level separator (only one method shown, see 5.4)
$\boxed{l}$	is the signal level indication (see 5.4)

Parts *b* through *l* together form the signal name.

Examples of signal designations.

=A1A2 ; CNTEN1 : A (H)

START (H)

ON

=T1 ; 23 0V\_L1

### 3.2 Recommended characters

Signal designations should be composed from standard character sets, excluding lowercase letters. Different mnemonics, abbreviations, identifiers, suffixes, etc., within a signal name may be separated by a single space or by an underline ( \_ ) to increase readability. To maintain compatibility with computer processing, character sets should be restricted to those characters in the ISO/IEC 646 7-bit character set, basic code table, excluding control characters and national replacement characters<sup>1</sup>. If the computer and communication systems that are to be used are restricted to those that can process 8-bit character sets, ISO 8859-1 is recommended for supplementary characters.

<sup>1</sup> National replacement characters are character codes to which individual National Committees may assign graphic characters other than those tentatively assigned in ISO/IEC 646.

The recommended characters include the following :

- capital letters A through Z;
- digits 0 through 9;
- negation characters: macron ( ¯ )<sup>1,2</sup>, logic negation ( ¬ )<sup>1,2</sup>, or, where 7-bit characters must be used, tilde ( ~ )<sup>3</sup>. ( For negation methods, see 5.2.3.1.);
- spacing characters: underline ( \_ ) or space;
- item designation separator: semicolon ( ; );
- signal version separator: colon ( : );
- algebraic operators: hyphen/minus ( - ), plus ( + );
- Boolean operators: raised dot ( ^ )<sup>1</sup>;
- special characters: ! " % & ' ( ) \* , . / < = > ?

### 3.3 Length

Computer processing and space requirements in documentation usually place practical limits on the length of signal designations. This should be taken into account when composing these designations.

The signal name portion of the signal designation (see clause 5) should be restricted to 24 characters or fewer.

## 4 Application of item designation

A signal designation may begin with an item designation. This shall be separated by a semicolon ( ; ) from the remainder of the signal designation, i.e., the signal name.

The item designation portion of the signal designation is used to identify a particular item, assembly, equipment, plant, or installation in a collection of items, etc., within which the signal name portion of the signal designation becomes unique. For example, see figure 1.

Item designations shall be constructed according to the rules of IEC 750.

**NOTE** - When a signal designation is shown on a document, the item designation part of the signal designation may be abbreviated, if no confusion is likely, by omitting the part of the item designation that is applicable to the whole document or to

<sup>1</sup> Included in ISO 8859-1. Not part of ISO/IEC 646.

<sup>2</sup> May occupy the same position as tilde ( ~ ) in some character sets.

<sup>3</sup> National replacement character in ISO/IEC 646.

the document page (for example, a common part shown in the title block).<sup>1</sup>

Likewise, the item designation part of the signal designation may be abbreviated by omitting the part that is common to all items shown within a boundary frame in a diagram or within a section in a signal list. See figure 1.

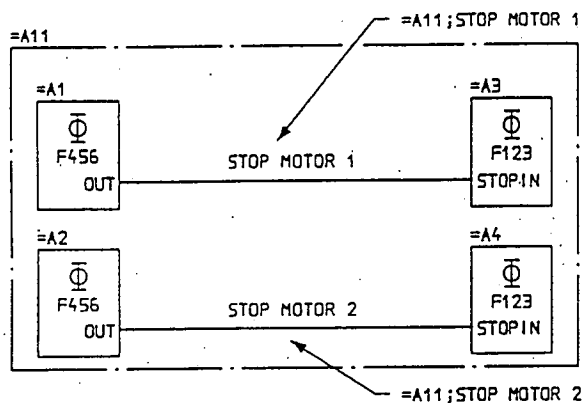


Figure 1a

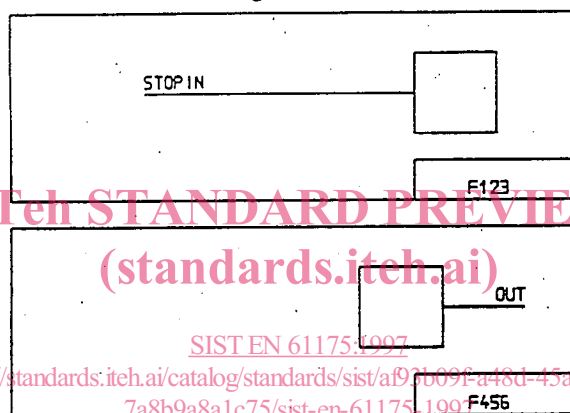


Figure 1b

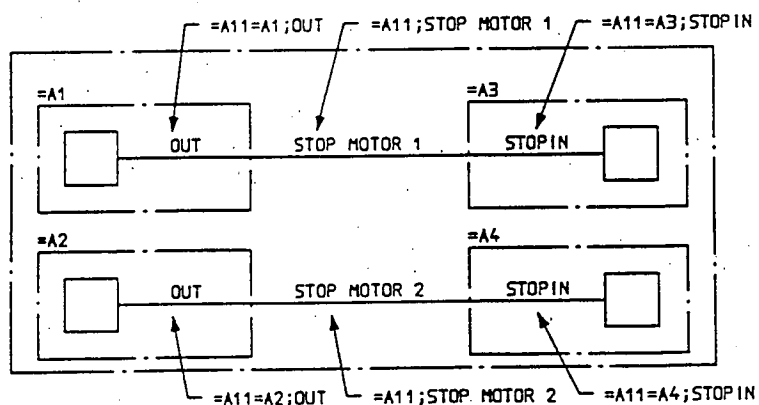
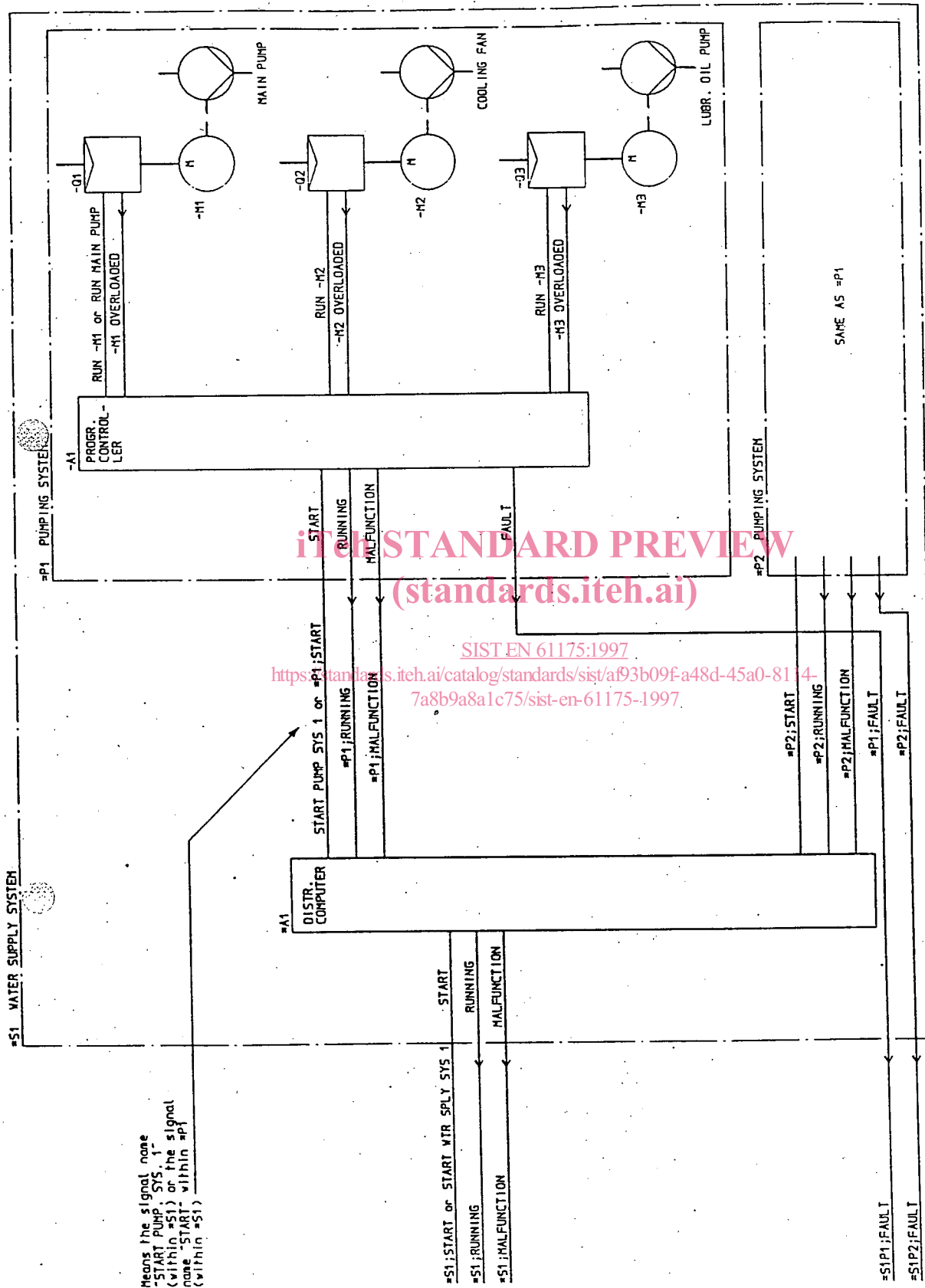


Figure 1c

Figure 1 - Signal designations in a hierarchy

Figure 1a shows a portion of a diagram that uses two instances each of two pre-engineered circuits (F123 and F456). Figure 1b shows, in part, the diagrams for F123 and F456. Figure 1c shows a more detailed ("exploded") form of figure 1a. Each signal can be uniquely identified by any of the three complete signal designations shown.

<sup>1</sup> Detailed guidance on this subject is under consideration in the context of IEC 1082 and the revision of IEC 750.



Means the signal name  
 "START PUMP, SYS 1"  
 (within #S1) or the signal  
 name "START" within #P1  
 (within #S1)

Figure 2 - Item designations used to denote the item within which the signal name is defined versus those used to denote the source, destination or target item of the signal

Figure 2 shows the difference between signal designations (such as =P1;FAULT) containing item designations that indicate the item within which the signal name portion of the signal designation is defined, and signal designations (such as RUN-M1) that include in the signal name portion the item designation of a source, destination, or target item for the signal.

## 5 Signal name

### 5.1 General

A signal name shall identify uniquely a simple functional or electrical connection among a set of points (for example, terminals, junctions) within the boundaries of one item, assembly, equipment, plant, installation, or other system being documented.

A signal name contains a *basic signal name* (see 5.2) and may contain a *signal version identifier* (see 5.3) and/or a *signal level indication* (see 5.4).

Identical signal names shall not be applied to different signals no matter how similar the functions. The following rules apply:

- a) Similar signals in similar circuits shall have different signal names. Suitable suffixes may be added to the basic signal name (see 5.2) to distinguish the different circuits. For example, in figure 3 two motor-control circuits each have a signal that stops their respective motors. These different signals are named STOP1 and STOP2.

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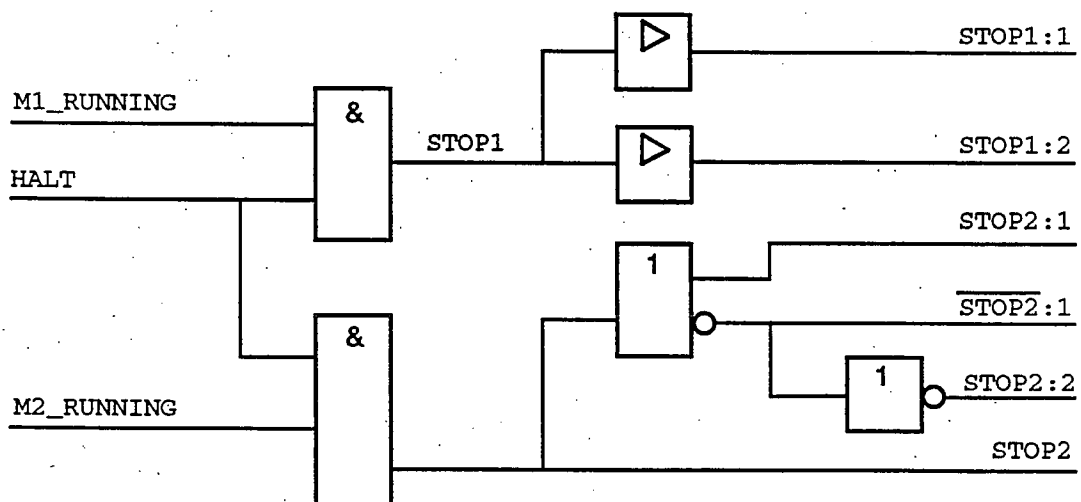


Figure 3 - Similar signals (STOP1 and STOP2) and signal versions

- b) A signal name shall be altered whenever a signal is amplified, inverted, gated with another signal, delayed, chopped, stored, or changed in any way. This change may take the form of a change in the basic signal name (see 5.2) or of the addition of a signal version identifier to the basic signal name (see 5.3).