



SLOVENSKI STANDARD
SIST HD 557.S1:2002

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Binary direct voltage signals for process measurement and control systems

Binary direct voltage signals for process measurement and control systems

Binäres Gleichspannungssignal für Meß-, Regel- und Steuersysteme der industriellen Prozeßtechnik

Signaux logiques de mesure et de commande dans les processus industriels

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ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
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**BINARY DIRECT VOLTAGE SIGNALS FOR PROCESS
MEASUREMENT AND CONTROL SYSTEMS**

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de commande dans les processus
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Binäres Gleichspannungssignal
für Meß-, Regel-, und
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Prozeßtechnik

BODY OF THE HD

The Harmonization Document consists of:

- IEC 946 (1988) ed 1; IEC/SC 65A, not appended

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This Harmonization Document was approved by CENELEC on 1990-06-11.

The English and French versions of this Harmonization Document are provided by the text of the IEC publication and the German version is the official translation of the IEC text.

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to publish their new harmonized national standard by or before 1991-06-15

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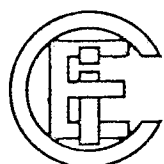
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Binary direct voltage signals for process measurement and control systems

Handwritten text on the left margin: *Сделано в соответствии с требованиями ГОСТ 17810-71*

INTERNATIONAL ELECTROTECHNICAL COMMISSION

 BINARY DIRECT VOLTAGE SIGNALS FOR PROCESS
 MEASUREMENT AND CONTROL SYSTEMS

FOREWORD

- 1) 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.
- 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 IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC 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 65A: System Considerations, of IEC Technical Committee No. 65: Industrial-process Measurement and Control.

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

Six Months' Rule	Report on Voting
65A(C0)16	65A(C0)18

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

BINARY DIRECT VOLTAGE SIGNALS FOR PROCESS MEASUREMENT AND CONTROL SYSTEMS

1. Scope

This standard is applicable to non-multiplexed two wire binary direct voltage signals of nominal 24 V level that are used in industrial-process measurement and control systems to transmit information between elements of systems.

This standard does not apply to signals that are used entirely within an element.

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2. Definitions

2.1 *Elements of industrial-process measurement and control systems*

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Functional units which transduce, process or transmit measured values of controlling, controlled and reference variables.

2.2 *Binary direct voltage signal*

A direct voltage signal, which varies in a discrete manner corresponding to two states, used in industrial-process measurement and control systems to transmit information corresponding to two logical states.

The binary direct voltage signal which appears at the input/output terminals of an element has two logical states which are represented by the signal voltages U_H for the high level and U_L for the low level. Each of these signal voltages has a range defined by an upper and a lower limit.

2.3 Current sourcing circuit

Within the range of U_H the output of an element supplies current to the inputs or other loads driven by it.

2.4 Nominal load factor

The nominal load factor indicates the load capacity of an output or the load imposed by the respective input.

It is used for engineering purposes and is expressed as a multiple of the nominal load unit. The abbreviation for inputs is F_i and for outputs F_o .

2.5 Leakage current

In the case of a current sourcing circuit the leakage current is defined as the value of the current flowing from an output, within the range of U_L .

2.6 State transition time

The time required for the transition from one voltage range to the other in case of a change between logic states.

2.7 Minimum signal duration

The shortest time of a binary input signal, which is sufficient to initiate the transition from one voltage range to the other.

2.8 Signal common

A number of signal circuits may have a common direct electrical connection. This is the signal common, which may or may not be connected to earth.

2.9 Power supply

The supply that provides the necessary d.c. power to enable a system element to generate the binary direct voltage signal.

3. Specification

3.1 *Type of circuits*

System elements shall have current sourcing circuits.

3.2 *Ranges of binary direct voltage signals of nominal 24 V level*

The ranges of binary direct voltage signals shall be as given in Table I.

TABLE I

Ranges of binary direct voltage signals

	Low level U_L (V)		High level U_H (V)	
	Lower limit	Upper limit	Lower limit	Upper limit
Output	0	2	16	30
Input	-3	5	13	33

The limits include all a.c. voltage components and are valid for a load resistance of 20 k Ω .

Note. - For signals from sensors or signals from power outputs, other values may apply.

3.3 *Nominal load factors*

For the calculation of the nominal load factor of input F_i , the current voltage characteristic of the input will be replaced by a linear characteristic in such a way that, even under worst operation conditions, the actual input current within the entire range of U_H will be lower than the current required according to the substitute linear characteristic (see Figure 1).