



SLOVENSKI STANDARD
SIST EN 60654-1:1998

01-november-1998

Industrial-process measurement and control equipment - Operating conditions - Part 1: Climatic conditions (IEC 60654-1:1993)

Industrial-process measurement and control equipment - Operating conditions -- Part 1: Climatic conditions

Leittechnische Einrichtungen für industrielle Prozesse - Umgebungsbedingungen -- Teil 1: Klimatische Einflüsse

Matériels de mesure et de commande dans les processus industriels - Conditions de fonctionnement -- Partie 1: Conditions climatiques

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Ta slovenski standard je istoveten z: EN 60654-1:1993

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
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EUROPEAN STANDARD

EN 60654-1

NORME EUROPEENNE

EUROPÄISCHE NORM

June 1993

UDC 681.51:53.083:551.5

Supersedes HD 413.1 S1:1981

Descriptors: Industrial-process, measurement, control, operating conditions, temperature, humidity, barometric pressure

ENGLISH VERSION

Industrial-process measurement and control
equipment - Operating conditions
Part 1: Climatic conditions
(IEC 654-1:1993)

Matériels de mesure et de
commande dans les processus
industriels - Conditions de
fonctionnement
Partie 1: Conditions climatiques
(CEI 654-1:1993)

Leittechnische Einrichtungen
für industrielle Prozesse
Umgebungsbedingungen
Teil 1: Klimatische Einflüsse
(IEC 654-1:1993)

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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

FOREWORD

The text of document 65A(CO)31, as prepared by sub-committee 65A: System aspects, of IEC technical committee 65: Industrial-process measurement and control, was submitted to the IEC-CENELEC parallel vote in February 1992.

The reference document was approved by CENELEC as EN 60654-1 on 9 March 1993.

This European Standard replaces HD 413.1 S1:1981.

The following dates were fixed:

- latest date of publication of
an identical national standard (dop) 1994-02-01
- latest date of withdrawal of
conflicting national standards (dow) 1994-02-01

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

The text of the International Standard IEC 654-1:1993 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

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 ----
721-3-1 A1	1987 1991	Classification of environmental conditions - Part 3: Classification of groups of environmental parameters and their severities - Storage	EN 60721-3-1	1993
721-3-2 A1	1985 1991	Transportation	EN 60721-3-2	1993
721-3-3 A1	1987 1991	Stationary use at weatherprotected locations	EN 60721-3-3	1993
721-3-4 A1	1987 1991	Stationary use at non-weatherprotected locations	EN 60721-3-4	1993

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NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
654-1

Deuxième édition
Second edition
1993-02

Matériels de mesure et de commande
dans les processus industriels –
Conditions de fonctionnement –

Partie 1:
Conditions climatiques
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Industrial-process measurement and
control equipment – Operating conditions –
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Part 1:
Climatic conditions

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International Electrotechnical Commission
Международная Электротехническая Комиссия

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CONTENTS

	Page
FOREWORD	5
Clause	
1 Scope	9
2 Normative references	11
3 General	11
4 Location classes with respect to climatic conditions	13
4.1 Air-conditioned locations (Class A)	15
4.2 Heated and/or cooled enclosed locations (Class B)	15
4.3 Sheltered locations (Class C)	15
4.4 Outdoor locations (Class D)	17
4.5 Climatic condition parameters	19
Annex A – Climatograms for location classes	20
Figures	
A.1 Location Class A1 Presentation 1	20
A.2 Location Class A1 Presentation 2	21
A.3 Location Class B1 Presentation 1	22
A.4 Location Class B1 Presentation 2	23
A.5 Location Class B2 Presentation 1	24
A.6 Location Class B2 Presentation 2	25
A.7 Location Class B3 Presentation 1	26
A.8 Location Class B3 Presentation 2	27
A.9 Location Class C1 Presentation 1	28
A.10 Location Class C1 Presentation 2	29
A.11 Location Class C2 Presentation 1	30
A.12 Location Class C2 Presentation 2	31
A.13 Location Class C3 Presentation 1	32
A.14 Location Class C3 Presentation 2	33
A.15 Location Class D1 Presentation 1	34
A.16 Location Class D1 Presentation 2	35
A.17 Location Class D2 Presentation 1	36
A.18 Location Class D2 Presentation 2	37

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SIST EN 60654-1:1998

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL EQUIPMENT –
OPERATING CONDITIONS –

Part 1: Climatic conditions

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 cooperation 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 sense.
- 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 and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

This International Standard IEC 654-1 has been prepared by sub-committee 65A: System aspects, of IEC technical committee 65: Industrial-process measurement and control.

This second edition cancels and replaces the first edition published in 1979, which was in general in agreement with IEC 721. However some parameter values differed: these divergences created problems for users as well as manufactureres.

During the process of revision it was deemed advisable to keep the Classes A, B, C, described in the first edition of IEC 654-1, but to align the (limit) values of the environmental parameters with those of Classes (3K1, 3K2, 3K3, 3K4, 3K5, 3K6, 3K7, 4K2, 4K3) in IEC 721 (except for the low air pressure, where the more realistic value of 86 kPa, taken from IEC Guide 106, was used).

In addition in the first edition of IEC 654-1, for Classes A, B and C (corresponding to indoor locations) temperature was defined as the ambient air temperature, where as for Class D (corresponding to outdoor locations) the high temperature was defined as the surface temperature of the equipment. This was not very consistent, the more so as for Class D, no reference to IEC 721-3 could then be made. This revised edition defines the high temperatures as air temperatures instead of surface temperatures of the equipment.

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

DIS	Report on Voting
65A(CO)31	65A(CO)36

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

Annex A is for information only.

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INDUSTRIAL-PROCESS MEASUREMENT AND CONTROL EQUIPMENT – OPERATING CONDITIONS –

Part 1: Climatic conditions

1 Scope

The purpose of this part of IEC 654 is to provide users and suppliers of industrial-process measurement and control systems and parts of such systems with a uniform listing of the selected environmental conditions to which equipment may be exposed in specified locations.

This part lists environmental climatic conditions e.g. air temperature, humidity and air pressure in specified locations to which land-based and offshore industrial-process measurement and control systems may be exposed during operation, during periods when they are installed but inactive and during storage or transportation. Maintenance and repair conditions are not considered.

Environmental conditions directly related to fire and explosion hazards and conditions related to ionized radiation are likewise not considered. Effects of the specific environmental conditions on personnel are not within the scope of this part.

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The influence quantities considered in this part are limited to those which may directly affect the performance of process measurement and control systems. Only environmental conditions as such are considered.

This part establishes location classes with severity levels or sets of severity levels for the environmental conditions listed. Other environmental conditions are covered in other parts of the standard.

The limit values of this part are defined and specified in IEC 721-3-3 and IEC 721-3-4.

It is intended to serve as a basis for the preparation of comprehensive specifications for environmental conditions by the user and by the supplier.

One of the purposes of this part is to avoid problems which might result from neglecting considerations of specific environmental conditions affecting the performance of systems and parts of systems.

An additional purpose of this part is to aid in the choice of severity levels for use in the development of evaluation specifications of industrial-process measurement and control equipment.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 654. At the time of publication of this standard, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 654 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 721-3-1: 1987, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Storage*
Amendment 1 (1991)

IEC 721-3-2: 1985, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Transportation*
Amendment 1 (1991)

IEC 721-3-3: 1987, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Stationary use at weather-protected location*
Amendment 1 (1991)

IEC 721-3-4: 1987, *Classification of environmental conditions – Part 3: Classification of groups of environmental parameters and their severities – Stationary use at non-weatherprotected locations*
Amendment 1 (1991)

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3 General

A limited number of location classes with respect to climatic conditions is given in clause 4.

The established classes may be applied also for storage and/or transportation (e.g. Class B2 for operation may be combined with Class C2 for transportation). Otherwise, it is recommended to refer to the appropriate classes of IEC 721-3-1 and IEC 721-3-2.

Parameter severity values of the various operating conditions are shown by limit values rather than by means of average values. These values cover usual ranges of environmental conditions and are considered as having a low probability of being exceeded. It is recognized that extreme or special environmental conditions may exist where values are greater and/or less than the stated values. To accommodate this situation, "special" categories for environmental conditions are provided. Specifications for equipment to operate under "special" conditions are a matter for negotiation between user and supplier but it is recommended to use values taken from IEC 721-3-1, IEC 721-3-2, IEC 721-3-3 and IEC 721-3-4.