SLOVENSKI STANDARD
SIST EN 61297:1998

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Industrial-process control systems - Classification of adaptive controllers for the purpose of evaluation (IEC 61297:1995)

Industrial-process control systems - Classification of adaptive controllers for the purpose of evaluation

Industrielle Prozeßleitsysteme - Klassifikation von adaptiven Reglern

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Systèmes de commande des processus industriels - Classification des régulateurs adaptatifs en vue de leur évaluation

Ta slovenski standard je istoveten z: **EN 61297:1995**

ICS:

25.040.40	Merjenje in krmiljenje industrijskih postopkov	Industrial process measurement and control
33.200	Daljinsko krmiljenje, daljinske meritve (telemetrija)	Telecontrol. Telemetering

SIST EN 61297:1998 **en**

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English version

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(IEC 1297:1995)

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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.

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CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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Foreword

The text of document 65B/226/DIS, future edition 1 of IEC 1297, prepared by SC 65B, Devices, of IEC TC 65, Industrial-process measurement and control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61297 on 1995-09-20.

The following dates were fixed:

– latest date by which the EN has to be implemented
   at national level by publication of an identical
   national standard or by endorsement   (dop) 1996-07-01

– latest date by which the national standards conflicting
   with the EN have to be withdrawn   (dow) 1996-07-01

Endorsement notice

The text of the International Standard IEC 1297:1995 was approved by CENELEC as a European Standard without any modification.

NORME
INTERNATIONALE

INTERNATIONAL
STANDARD

Systèmes de commande des processus
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Classification des régulateurs adaptatifs
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Industrial-process control systems –

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the purpose of evaluation

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INDUSTRIAL-PROCESS CONTROL SYSTEMS – CLASSIFICATION OF ADAPTIVE CONTROLLERS FOR THE PURPOSE OF EVALUATION

FOREWORD

1) The IEC (International Electrotechnical Commission) is a worldwide 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.

International Standard IEC 1297 has been prepared by sub-committee 65B: Devices, of IEC technical committee 65: Industrial-process measurement and control.

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

DIS	Report on voting
65B/226/DIS	65B/243/RVD

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

INDUSTRIAL-PROCESS CONTROL SYSTEMS – CLASSIFICATION OF ADAPTIVE CONTROLLERS FOR THE PURPOSE OF EVALUATION

1 Scope

This International Standard classifies and defines the terms to be used in describing the different types of adaptive controller. The classifications described are logically a complete series, although it is quite possible that no controller will be available in some of the categories described. However, many controllers will be classified under more than one category described in this standard.

2 Classification of methods of adaptation

2.1 *Main categories*

Adaptive controllers are classified into two main categories, by virtue of the type of adaptation which their design incorporates. These are defined below in 2.2 and 2.3, and shown in figure 1.

This classification is based on the practical concept of whether the controller is able to optimize itself automatically, or whether the operator has to set in the optimization strategy based on his experience of the process characteristics.
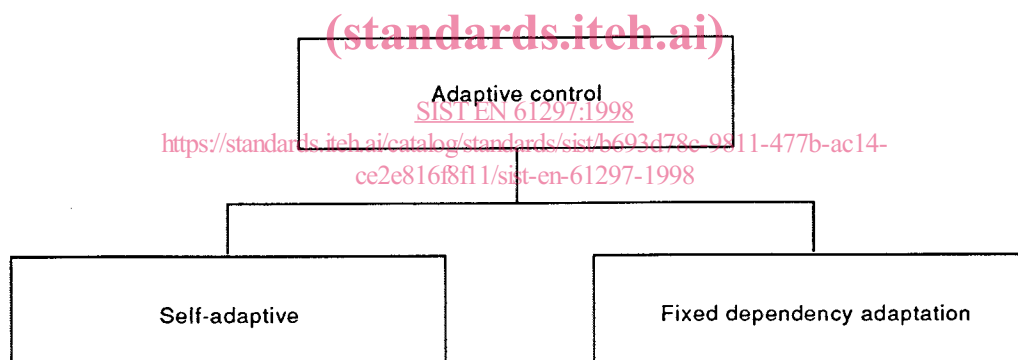

Figure 1 – Classification of adaptation methods

2.2 *Self-adaptive controllers*

Controllers are described as self-adaptive when some of their control characteristics can be adjusted automatically, either on demand or continuously, in order to achieve a specified response of the control loop.

2.3 *Fixed dependency adaptive controllers*

The adaptation is described as fixed dependency adaptation when the optimization of the controller is based on prescribed changes in the controller characteristics based on the measured process characteristics (process model).

3 Terminology for self-adaptive controllers

The names given to the different types of self-adaptive controllers relate to the manner in which the adaptation is implemented. This depends on whether it is the controller para- meters, the controller structure, or the input signals to the controller which are influenced by the adaptation (see figure 2).
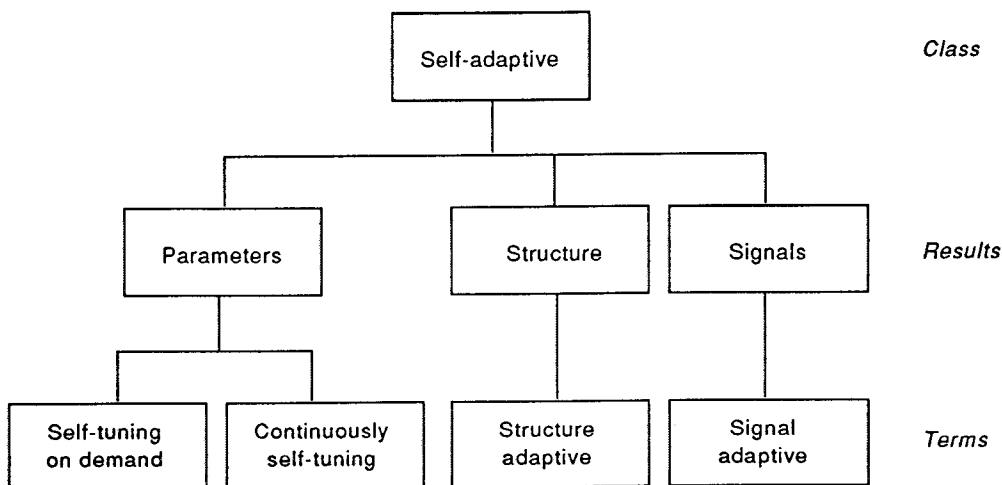

Figure 2 – Terms for self-adaptive controllers

3.1   self-tuning on demand: A controller is of this type when the adaptation to optimize the controller parameters is initiated on demand from the operator.

3.2   continuously self-tuning: A controller is of this type when the adaptation to optimize the controller parameters is a continuous process.

3.3   structure adaptive controllers: A controller is of this type when the structure of the controller is modified by the adaptation process, for example P-PI-switchover.

3.4   signal adaptive controller: A controller is of this type when the adaptation process influences the input signal to the controller, for example by modifying the characteristics of some input filters.

NOTE – Many self-adaptive controllers are of the "self-tuning on demand" or "continuously self-tuning" types.