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Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment – Part 2: Assessment methodology

Mesure, commande et automation dans les processus industriels – Appréciation des propriétés d'un système en vue de son évaluation – Partie 2: Méthodologie à appliquer pour l'évaluation



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IEC Central Office
3, rue de Varembe
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
Fax: +41 22 919 03 00
info@iec.ch
www.iec.ch

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**Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment –
Part 2: Assessment methodology**

**Mesure, commande et automation dans les processus industriels – Appréciation des propriétés d'un système en vue de son évaluation –
Partie 2: Méthodologie à appliquer pour l'évaluation**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**INDUSTRIAL-PROCESS MEASUREMENT, CONTROL AND AUTOMATION –
EVALUATION OF SYSTEM PROPERTIES
FOR THE PURPOSE OF SYSTEM ASSESSMENT –****Part 2: Assessment methodology**

FOREWORD

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International Standard IEC 61069-2 has been prepared by subcommittee 65A: System aspects, of IEC technical committee 65: Industrial-process measurement, control and automation.

This second edition cancels and replaces the first edition published in 1993. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) Reorganization of the material of IEC 61069-2:1993 to make the overall set of standards more organized and consistent;
- b) IEC TS 62603-1:2014 has been incorporated into this edition.

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

FDIS	Report on voting
65A/790/FDIS	65A/799/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.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 61069 series, published under the general title *Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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INTRODUCTION

IEC 61069 deals with the method which should be used to assess system properties of a basic control system (BCS). IEC 61069 consists of the following parts:

- Part 1: Terminology and basic concepts
- Part 2: Assessment methodology
- Part 3: Assessment of system functionality
- Part 4: Assessment of system performance
- Part 5: Assessment of system dependability
- Part 6: Assessment of system operability
- Part 7: Assessment of system safety
- Part 8: Assessment of other system properties

Assessment of a system is the judgement, based on evidence, of the suitability of the system for a specific mission or class of missions.

To obtain total evidence would require complete evaluation (for example under all influencing factors) of all system properties relevant to the particular mission or class of missions.

Since this is rarely practical, the rationale on which an assessment of a system should be based is:

- the identification of the importance of each of the relevant system properties;
- the planning for evaluation of the relevant system properties with a cost-effective dedication of effort to the various system properties.

In conducting an assessment of a system, it is crucial to bear in mind the need to gain a maximum increase in confidence in the suitability of a system within practical cost and time constraints.

An assessment can only be carried out if a mission has been stated (or given), or if any mission can be hypothesized. In the absence of a mission, no assessment can be made; however, evaluations can still be specified and carried out for use in assessments performed by others. In such cases, the standard can be used as a guide for planning an evaluation and it provides methods for performing evaluations, since evaluations are an integral part of assessment.

In preparing the assessment, it may be discovered that the definition of the system is too narrow. For example, a facility with two or more revisions of the control systems sharing resources, e.g. a network, should consider issues of co-existence and inter-operability. In this case, the system to be investigated should not be limited to the “new” BCS; it should include both. That is, it should change the boundaries of the system to include enough of the other system to address these concerns.

The part structure and the relationship among the parts of IEC 61069 are shown in Figure 1.

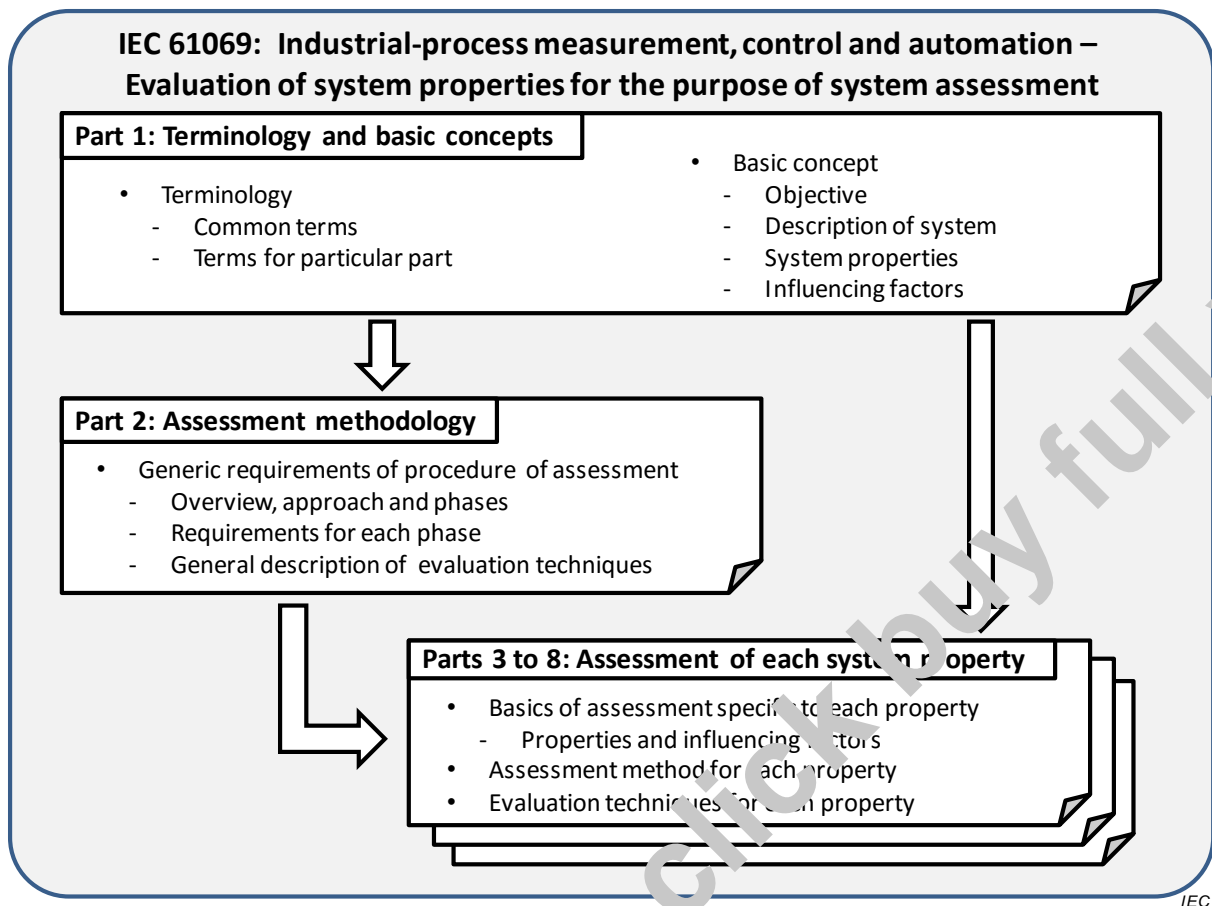


Figure 1 – General layout of IEC 61069

INDUSTRIAL-PROCESS MEASUREMENT, CONTROL AND AUTOMATION – EVALUATION OF SYSTEM PROPERTIES FOR THE PURPOSE OF SYSTEM ASSESSMENT –

Part 2: Assessment methodology

1 Scope

This part of IEC 61069 specifies the methodology in the assessment of a basic control system (BCS) based on the basic concepts of IEC 61069-1.

It describes the method for analysing, weighing the relative importance of the various system properties and influencing factors, and determining an assessment program.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61069-1:—1, *Industrial-process measurement, control and automation – Evaluation of system properties for the purpose of system assessment – Part 1: Terminology and basic concepts*

3 Terms, definitions, abbreviated terms, acronyms, conventions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 61069-1 apply.

3.2 Abbreviated terms, acronyms, conventions and symbols

For the purposes of this document, the abbreviated terms, acronyms, conventions and symbols given in IEC 61069-1 apply.

4 Assessment approach

BCSs are sufficiently complex, so that a totally comprehensive assessment inevitably requires an expenditure of effort and time that is neither practical nor cost-effective. It is therefore important to analyse and specify the objectives of the assessment carefully, before an assessment program is planned.

The mission of the system or class of missions is broken down into tasks.

The task(s) which the system needs to perform should be defined in terms of the selected BCS, its system properties, and the required functions. This enables the functions required for the system to fulfil its mission(s) to be specified precisely.

¹ Second edition to be published simultaneously with this part of IEC 61069.