

Industrial-process measurement and control — Evaluation of system properties for the purpose of system assessment —

Part 3: Assessment of system functionality

The European Standard EN 61069-3:1996 has the status of a
British Standard

ICS 25.040.40:35.240.50

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee GEL/65, Measurement and control, to Subcommittee GEL/65/1, System considerations, upon which the following bodies were represented:

- BLWA Ltd. (The Association of the Laboratory Supply Industry)
- British Computer Society
- British Nuclear Fuels plc
- Department of Health
- Electricity Association
- Energy Industries Council
- Engineering Equipment and Materials Users' Association
- ERA Technology Ltd.
- GAMBICA (BEAMA Ltd.)
- Health and Safety Executive
- Institute of Measurement and Control
- Institution of Electrical Engineers
- Institution of Gas Engineers
- Motor Industry Research Association
- Sira Limited
- Co-opted member

This British Standard, having been prepared under the direction of the Electrotechnical Sector Board, was published under the authority of the Standards Board and comes into effect on 15 March 1997

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The following BSI references relate to the work on this standard:
Committee reference GEL/65/1
Draft for comment 93/211200 DC

ISBN 0 580 26932 9

Amendments issued since publication

Amd. No.	Date	Comments

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National foreword

This British Standard has been prepared by Subcommittee GEL/65/1 and is the English language version of EN 61069-3:1996 *Industrial-process measurement and control. Evaluation of system properties for the purpose of system assessment — Part 3: Assessment of system functionality*, published by the European Committee for Electrotechnical Standardization (CENELEC). It is identical with IEC 1069-3:1996, published by the International Electrotechnical Commission (IEC).

Annexes A, B, C, are for information only.

BS EN 61069 comprises a series of Parts, which when complete will consist of the following:

- *Part 1: General considerations and methodology*;
- *Part 2: Assessment methodology*;
- *Part 3: Assessment of system functionality*;
- *Part 4: Assessment of system performance¹⁾*;
- *Part 5: Assessment of system dependability*;
- *Part 6: Assessment of system operability¹⁾*;
- *Part 7: Assessment of system safety¹⁾*;
- *Part 8: Assessment of non-task related system properties¹⁾*.

Cross-references

Publication referred to	Corresponding British Standard
	BS EN 61069 <i>Industrial-process measurement and control. Evaluation of system properties for the purpose of system assessment</i>
EN 61069-1:1993 (IEC 1069-1:1991)	BS EN 61069-1:1993 <i>General considerations and methodology</i>
EN 61069-2:1993 (IEC 1069-2:1993)	BS EN 61069-2:1994 <i>Assessment methodology</i>

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 22, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

¹⁾ In preparation.

ICS 25.040.40; 35.240.50

Descriptors: Industrial-process, measurement, control, evaluation of system properties, system assessment, functionality assessment

English version

Industrial-process measurement and control Evaluation of system properties for the purpose of system assessment Part 3: Assessment of system functionality

(IEC 1069-3:1996)

Mesure et commande dans les
processus industriels
Appréciation des propriétés d'un
système en vue de son évaluation
Partie 3: Evaluation de la fonctionnalité
d'un système
(CEI 1069-3:1996)

Leittechnik für industrielle Prozesse
Ermittlung der Systemeigenschaften
zum Zweck der Eignungsbeurteilung
eines Systems
Teil 3: Eignungsbeurteilung der
Systemfunktionalität
(IEC 1069-3:1996)

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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 for Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B - 1050 Brussels

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Foreword

The text of document 65A/188/FDIS, future edition 1 of IEC 1069-3, prepared by SC 65A, System aspects, of IEC TC 65, Industrial-process measurement and control, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 61069-3 on 1996-07-02.

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) 1997-04-01
- latest date by which the national standards conflicting with the EN have to be withdrawn (dow) 1997-04-01

Annexes designated “normative” are part of the body of the standard.

Annexes designated “informative” are given for information only.

In this standard, annex ZA is normative and annexes A, B and C are informative. Annex ZA has been added by CENELEC.

The relation of this part to the other parts of EN 61069 and the relative place of this part within the standard is shown in Figure 1.

- *Part 1: provides the overall guidance and as such is intended as a stand-alone publication;*
- *Part 2: details the assessment methodology;*
- *Parts 3 to 8: provide guidance on the assessment of specific groups of properties.*

The division of properties in parts 3 to 8 have been chosen so as to group together related properties.

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Introduction

This part of IEC 1069 deals with the method which should be used to assess the functionality of industrial-process-measurement and control systems. Assessment of a system is the judgement, based on evidence, of a system's suitability for a specific mission or class of missions.

To obtain total evidence would require a complete (i.e. under all influencing conditions) evaluation of all system properties relevant to the specific mission or class of missions.

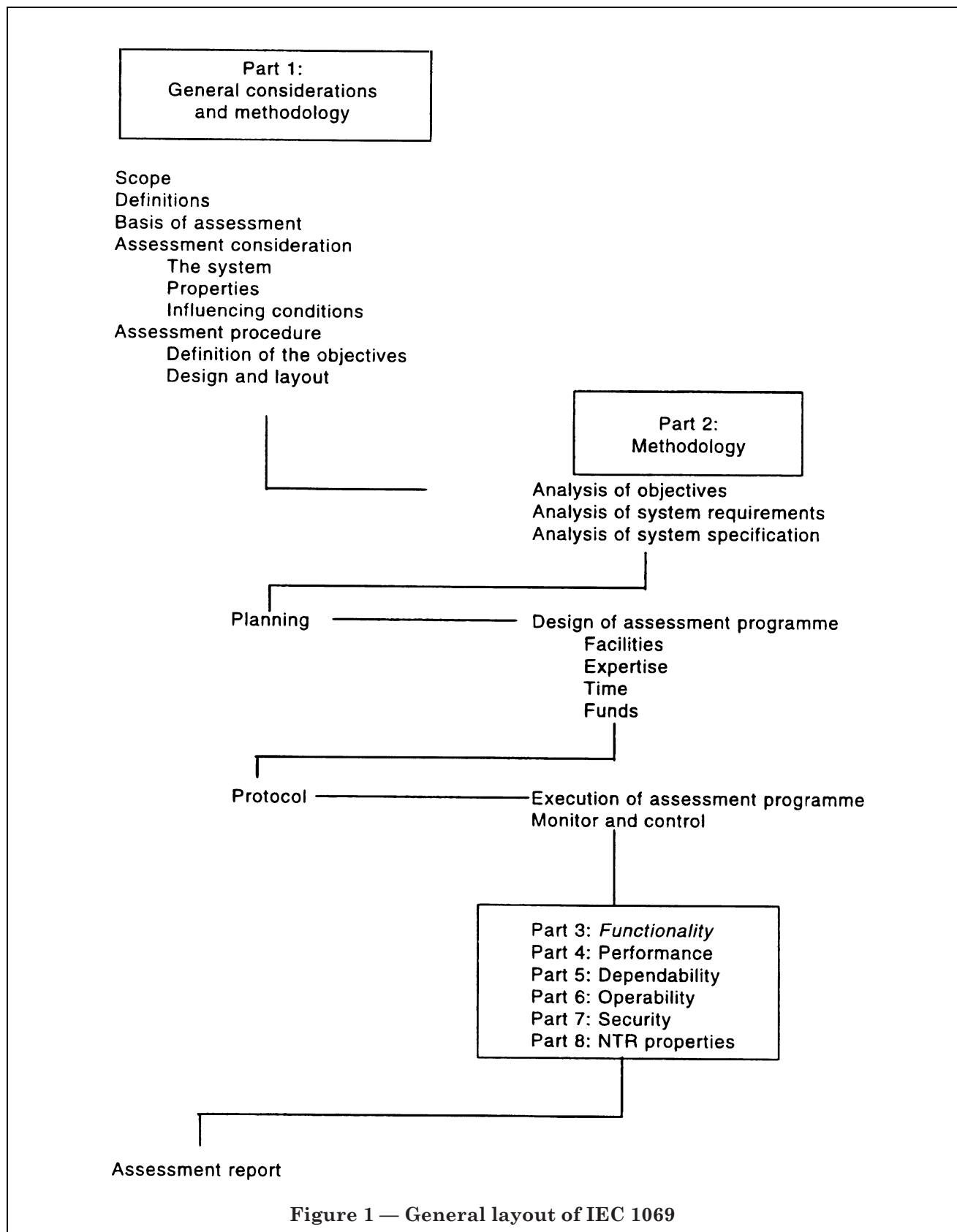
Since this is rarely practical, the rationale on which an assessment of a system should be based is:

- to identify the criticality of each of the relevant system properties;
- to plan for evaluation of the relevant system properties with a cost-effective dedication of effort to the various 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 (as defined in IEC 1069-1) can still be specified and be 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 procedures for performing evaluations, since evaluations are an integral part of assessment.



1 Scope

This part of IEC 1069 describes in detail the method to be used to systematically assess the functionality of an industrial-process measurement and control system.

The assessment methodology detailed in IEC 1069-2 is applied to obtain the functionality assessment programme.

The subsidiary functionality properties are analysed, and criteria to be taken into account when assessing functionality are described.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of IEC 1069. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties making agreements based on this part of IEC 1069 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 1069-1:1991, *Industrial-process measurement and control — Evaluation of system properties for the purpose of system assessment — Part 1: General considerations and methodology*.

IEC 1069-2:1993, *Industrial process measurement and control — Evaluation of system properties for the purpose of system assessment — Part 2: Assessment methodology*.

3 Definitions

For the purpose of this part of IEC 1069 the following definitions apply:

3.1

functionality

the extent to which the system provides, and facilitates assembly of, functions to perform industrial process measurement and control tasks

3.2

coverage

the extent to which the system provides functions to perform industrial-process measurement and control tasks

3.3

configurability

the extent to which the system facilitates selection, setting up and arrangement of its modules to perform industrial-process measurement and control tasks

3.4

flexibility

the extent to which the system can be adapted

4 Functionality properties

4.1 General

A system is able to perform the required industrial-process measurement and control tasks if the functions provided by the system cover these tasks. The extent to which this is the case can be expressed as the property coverage.

For a system designed for a set of rigid and fixed tasks, coverage can describe fully the functionality of a system.

The tasks required, however, can differ for different applications of the system or the tasks can change or be extended over time due to changes in the industrial process or arrangements in control strategy. To cope with this, the system should provide means for configuring the selection and arrangement of modules, and should have an architecture which provides flexibility for additions and modifications.

To fully assess the functionality of a system it is therefore necessary to identify and assess the subsidiary properties that determine functionality.

The relation between functionality and its subsidiary properties is shown in Figure 2.

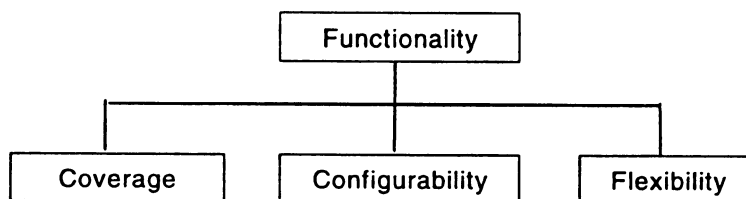


Figure 2 — Functionality hierarchy