

Guide for

Expression of the performance of pulse generators

[IEC title: Expression of the performance of pulse generators]

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- British Industrial Measuring and Control Apparatus Manufacturers' Association
- Department of Industry (British Calibration Service)
- Department of Industry (National Physical Laboratory)
- Technical expert

This British Standard, having been prepared under the direction of the Electronic Equipment Standards Committee, was published under the authority of the Executive Board and comes into effect on 31 December 1979

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National foreword

This British Standard is identical with IEC Publication 624 “*Expression of the performance of pulse generators*” published in 1978 by the International Electrotechnical Commission (IEC). This British Standard is published under the direction of the Electronic Equipment Standards Committee.

The preface is an extract from the preface of IEC Publication 624 and has been included because it contains information relevant to the main text.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication, without deviation, as a British Standard. Some terminology and certain conventions are not identical with those used in British Standards.

Cross-references

International Standard ^a	Corresponding British Standard
IEC 359:1971	BS 4889:1973 <i>Method for specifying the performance of electronic measuring equipment</i> (Technically equivalent)
IEC 469	BS 5698 <i>Guide to pulse techniques and apparatus</i>
IEC 469-1:1974	Part 1:1979: <i>Pulse terms and definitions</i> (Identical)
IEC 469-2:1974	Part 2:1979: <i>Pulse measurement and analysis, general considerations</i> (Identical)

^a Undated in the text.

Additional information. The last sentence of 9.2.10, whilst being a correct statement, is not as informative as it might be and, whilst in the simplest mode, the two pulses may be nominally identical, the user of the standard should bear in mind that in other cases the outputs may be controlled independently as to pulse duration, amplitude, first and last transition durations, etc.

The definitions in 6.5.3 and 6.6.2 b) are understood to be likely to require amendment after publication of Chapter 301 of the International Electrotechnical Vocabulary (I.E.V.).

Attention is drawn to the fact that some of the definitions adopted for the purposes of this standard in section 2 differ significantly from definitions in BS 5233:1975 “*Glossary of terms used in metrology*”.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 14, 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.

Preface

At first reading, this standard may appear to differ significantly from previous IEC publications on electronic measuring equipment. This is not the case; the differences are superficial and stem from the wide diversity in form, functional capability, and means for control which are found in pulse generators.

The object of this preface is to state the following assumptions:

- The standard is intended to be used by a pulse generator manufacturer who, to conform, must make a complete statement of performance. A user, depending on his point of view or salient interests, may wish to verify performance to varying degrees, ranging from one performance characteristic to a verification that is as complete as the manufacturer's.
- The manufacturer has read and is familiar with the entire standard.
- Finally, the manufacturer has a new pulse generator which he wishes to characterize in accordance with this standard. He wishes to proceed in an efficient manner which will ensure clarity and completeness.

Table I in Section 5 is, in effect, a plan or guide for the handling of each performance characteristic and it may be helpful to refer to Table I for the sequence of operations given below. Bearing in mind that the following is merely an example, subject to many variations, the manufacturer would carry out the following steps:

- 1) Make a list of all performance characteristics which are found in the pulse generator. Here, reference to Section 3 (which lists categories of performance characteristics) may be helpful, bearing in mind that the categories listed in Section 3 are merely representative and are not exhaustive.
- 2) Next to each performance characteristic in the list from Item 1) above, list the type of control which is provided for that performance characteristic (types of control are listed in the left-hand column of Table I and are specified in Section 4).
- 3) Repeat Item 2) above, for each performance characteristic which is subject to multiple control (see Clause 19).
- 4) Repeat Item 2) and possibly Item 3) above, for each performance characteristic which is subject to dual control (see Clause 20).

NOTE At this point, all pairings of performance characteristics with types of control will have been exhaustively listed.

5) To each pairing of performance characteristic with type of control in the list, add the type(s) of error(s) which will be specified for each pairing (types of error are listed in the top row of Table I and are defined in Section 2).

NOTE At this point, each performance characteristic is grouped with at least one type of control and at least one type of error to be specified. Multiple combinations involving one performance characteristic and different types of control and/or different types of error may also exist. In any event, each such grouping, at least conceptually, is dealt with separately.

6) For each grouping of performance characteristic with type of control and type of error:

- a) the nature of the specification which shall be made will be found in Section 5;
- b) the applicable general test conditions will be found in Section 6; and
- c) the applicable specific test conditions will be found in Section 6;

all at the sub-clauses listed in Table I.

Nothing in the above shall be construed to modify the requirements of the standard itself and, useful though it is, Table I should be used only as a guide. The user should bear in mind:

- a) that the sequence described above applies also to accessories and modular pulse generators (Sub-clauses 5.2 and 5.3);
- b) the pulse generator nomenclature defined in Clause 9; and
- c) the requirements for the specification of dual-controlled quantities in Clause 27.

Section 1. General

1 Scope

This standard applies to the specification of pulse generators and to accessories used with generators. Specifically excluded from the scope of this standard are generators with continuous or pulsed sinusoidal outputs, television pattern generators, complex function generators, and generators for insulation resistance testing.

2 Object

Within its scope, this standard establishes:

- 1) the definitions related to generators;
- 2) the terminology for describing the functional performance of generators;
- 3) a listing of performance characteristics on which a statement of the performance of generators may be based;
- 4) the criteria for evaluating the performance of generators; and