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**FIPS PUB 68-2**

Supersedes FIPS PUB 68-1  
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# FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATION

1987 AUGUST 28

U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards



## BASIC

**CATEGORY: SOFTWARE STANDARD**

**CATEGORY: PROGRAMMING LANGUAGE**

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1987

FIPS PUB 68-2

**U.S. DEPARTMENT OF COMMERCE, C. William Verity, *Secretary***  
**NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Director***

## **Foreword**

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards, guidelines, and documents adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance, and coordination of Government efforts in the development of standards, guidelines and documents in these areas.

Comments concerning Federal Information Processing Standards Publications are welcomed and should be addressed to the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Gaithersburg, MD 20899.

James H. Burrows, *Director*  
Institute for Computer Sciences and Technology

## **Abstract**

This publication announces the adoption of American National Standard for BASIC, ANSI X3.113-1987, as a Federal Information Processing Standard (FIPS). This FIPS supersedes FIPS PUB 68-1, Minimal BASIC, and reflects major changes, improvements, and additions to the BASIC specifications. The American National Standard for BASIC, ANSI X3.113-1987, specifies the form and establishes the interpretation of programs expressed in the BASIC programming language. The purpose of the standard is to promote portability of BASIC programs for use on a variety of data processing systems. FIPS BASIC is suitable for use in relatively simple applications, especially those with a high degree of user interaction. The features of BASIC support use by nonprofessional programmers, i.e., those whose primary skill is not programming, who may need to write their own programs.

**Key words:** BASIC; data processing; Federal Information Processing Standards Publication; interactive programming; programming language; software; standards; time-sharing.

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**Federal Information  
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**1987 August 28**

**Announcing the Standard for  
BASIC**

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1987



Federal Information Processing Standards Publications (FIPS PUBS) are issued by the National Bureau of Standards pursuant to Section 111 (f) (2) of the Federal Property and Administrative Services Act of 1949, as amended, Public Law 89-306 (79 Stat. 1127), Executive Order 11717 (38 FR 12315, dated May 11, 1973), and Part 6 of Title 15 Code of Federal Regulations (CFR).

1. **Name of Standard.** BASIC (FIPS PUB 68-2).
2. **Category of Standard.** Software Standard, Programming Language.
3. **Explanation.** This publication announces the adoption of American National Standard for BASIC, ANSI X3.113-1987, as a Federal Information Processing Standard (FIPS). This FIPS supersedes FIPS PUB 68-1, Minimal BASIC, and reflects major changes, improvements, and additions to the BASIC specifications. The American National Standard for BASIC, ANSI X3.113-1987, specifies the form and establishes the interpretation of programs expressed in the BASIC programming language. The purpose of the standard is to promote portability of BASIC programs for use on a variety of data processing systems. The standard is for use by implementors as the reference authority in developing compilers, interpreters, or other forms of high level language processors; and by other computer professionals who need to know the precise syntactic and semantic rules adopted by ANSI.
4. **Approving Authority.** Secretary of Commerce.
5. **Maintenance Agency.** U.S. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).
6. **Cross Index.** American National Standard ANSI X3.113-1987, BASIC.
7. **Related Documents.**
  - a. Federal Information Resources Management Regulation 201-8.1, Federal ADP and Telecommunications Standards.
  - b. Federal Information Processing Standards Publication 29 (current version), Interpretation Procedures for Federal Information Processing Standard Programming Languages.
  - c. NBS Special Publication 500-117, Selection and Use of General-Purpose Programming Languages.
8. **Objectives.** Federal standards for high level programming languages permit Federal departments and agencies to exercise more effective control over the production, management, and use of the Government's information resources. The primary objectives of Federal programming language standards are:
  - to encourage more effective utilization and management of programmers by insuring that programming skills acquired on one job are transportable to other jobs, thereby reducing the cost of programmer re-training;
  - to reduce the cost of program development by achieving the increased programmer productivity that is inherent in the use of high level programming languages;
  - to reduce the overall software costs by making it easier and less expensive to maintain programs and to transfer programs among different computer systems, including replacement systems;
  - to protect the existing software assets of the Federal Government by insuring to the maximal feasible extent that Federal programming language standards are technically sound and that subsequent revisions are compatible with the installed base.

Government-wide attainment of the above objectives depends upon the widespread availability and use of comprehensive and precise standard language specifications.

#### 9. Applicability.

a. Federal standards for high level programming languages should be used for computer applications and programs that are either developed or acquired for Government use. FIPS BASIC is one of the high level programming language standards provided for use by all Federal departments and agencies. FIPS BASIC is suitable for use in relatively simple applications, especially those with a high degree of user interaction. The features of BASIC support use by nonprofessional programmers, i.e., those whose primary skill is not programming, who may need to write their own programs.

b. The use of FIPS high level programming languages is strongly recommended when one or more of the following situations exists:

- It is anticipated that the life of a program will be longer than the life of the presently utilized equipment.
- The application or program is under constant review for updating of the specifications, and changes may result frequently.
- The application is being designed and programmed centrally for a decentralized system that employs computers of different makes, models, and configurations.
- The program will or might be run on equipment other than that for which the program is initially written.
- The program is to be understood and maintained by programmers other than the original ones.
- The advantages of improved program design, debugging, documentation, and intelligibility can be obtained through the use of this high level language regardless of interchange potential.
- The program is or is likely to be used by organizations outside the Federal Government (i.e., State and local governments, and others).

c. Nonstandard language features should be used only when the needed operation or function cannot reasonably be implemented with the standard features alone. Although nonstandard language features can be very useful, it should be recognized that their use may make the interchange of programs and future conversion to a revised standard or replacement processor more difficult and costly.

d. It is recognized that programmatic requirements may be more economically and efficiently satisfied through the use of application-oriented software packages. The use of any facility should be considered in the context of system life, system cost, data integrity, and the potential for data sharing.

e. Programmatic requirements may be also more economically and efficiently satisfied by the use of automatic program generators. However, if the final output of a program generator is a BASIC source program, then the resulting program should conform to the conditions and specifications of FIPS BASIC.

**10. Specifications.** FIPS BASIC specifications are the language specifications contained in American National Standard for BASIC, ANSI X3.113-1987.

The ANSI X3.113-1987 document defines the syntax and semantics of the BASIC language by specifying requirements for a conforming processor and program, the formats of data (including range and precision of numbers, and length of character strings) which can be manipulated by a BASIC program, and the syntactic errors and run-time exceptions which must be detected by a conforming implementation.

The standard does not specify a minimum for the size or complexity of programs which must be acceptable to an implementation.

**11. Implementation.** The implementation of FIPS BASIC involves three areas of consideration: acquisition of BASIC processors, interpretation of FIPS BASIC, and validation of BASIC processors.

**11.1 Acquisition of BASIC Processors.** This publication is effective March 1, 1988. BASIC processors acquired for Federal Government use after this date should implement this standard. Conformance to FIPS BASIC should be considered whether BASIC processors are developed internally, acquired as part of an ADP system procurement, acquired by separate procurement, used under an ADP leasing arrangement, or specified for use in contracts for programming services.

A transition time period provides time for industry to produce BASIC processors conforming to the standard. The transition period begins on the effective date and continues for one (1) year thereafter. The following apply during the transition period:

a. The provisions of FIPS PUB 68-1 apply to processors ordered before the effective date of this publication but delivered subsequent to the effective date.

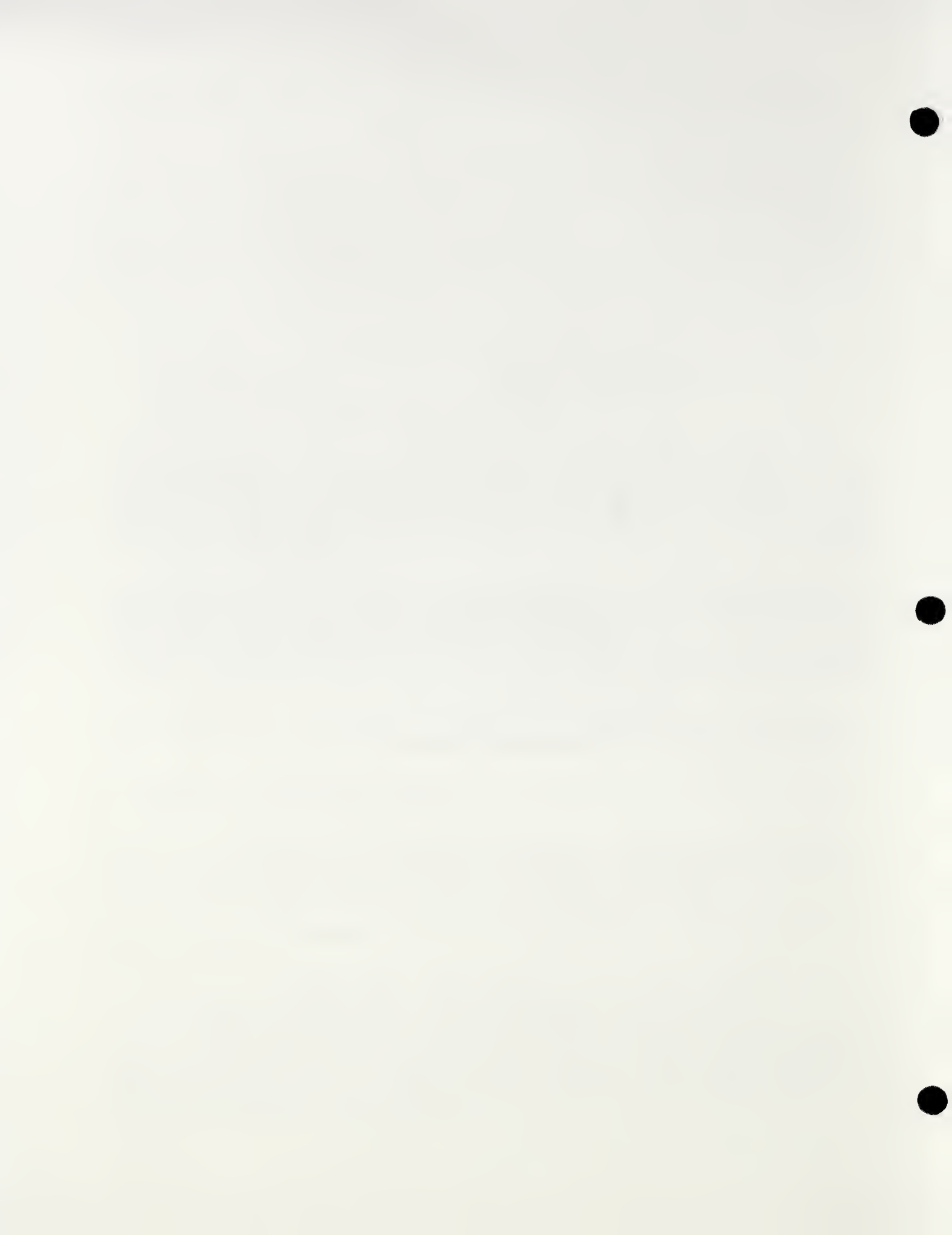
b. The provisions of this publication apply to orders placed after the effective date; however, a processor conforming to FIPS PUB 68-1 may be acquired for interim use until the conforming processor is available.

**11.2 Interpretation of FIPS BASIC.** NBS provides for the resolution of questions regarding FIPS BASIC specifications and requirements, and issues official interpretations as needed. All questions about the interpretation of FIPS BASIC should be addressed to:

Director  
Institute for Computer Sciences and Technology  
Attn: BASIC Interpretation  
National Bureau of Standards  
Gaithersburg, MD 20899

**11.3 Validation of BASIC Processors.** The National Bureau of Standards, Institute for Computer Sciences and Technology, provides a service for the purpose of validating the conformance of processors to FIPS languages offered for Federal procurement. This service is offered on a reimbursable basis. Further information about the validation service can be obtained from the National Bureau of Standards, Institute for Computer Sciences and Technology, Software Standards Validation Group, Gaithersburg, MD 20899, (301) 975-3247.

**12. Where to Obtain Copies.** Copies of this publication are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. (Sale of the included specifications document is by arrangement with the American National Standards Institute.) When ordering, refer to Federal Information Processing Standards Publication 68-2 (FIPSPUB68-2), and title. Payment may be made by check, money order, or deposit account.



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