SAA/SNZ HB3:1996

Handbook

Electrical and electronic drawing practice for students

Electrical and electronic drawing practice for students

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
1 The Crescent,
Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Standards House,
155 The Terrace,
Wellington 6001 New Zealand

ISBN 0 7337 0246 5

INTRODUCTION

Electrical and electronic drawings communicate precise information on a specialized subject. They use the language of technical drawings which is a combination of symbols, conventions and a uniform approach to preparing and reading drawings. A technical drawing is a specification. As the term 'specification' implies, the drawing deals with specifics—information that is precise, unambiguous and presented efficiently.

This Handbook was prepared to help students and educators to acquire skills in electrical and electronic drawing and to understand the approach to drawing. It also provides an introduction to the relevant Standards.

The Handbook was prepared by the Joint Standards Australia/Standards New Zealand Committee TE/13 on Symbols, Units and Quantities for Electrotechnology. Particular recognition is accorded to the outstanding contribution of Mr Vaughan Williamson of the School of Electrical Engineering, Illawarra Institute of Technology, N.S.W., who brought together existing and original material to form this edition of the Handbook. The input of all contributors and reviewers of the document is appreciated.

The Handbook draws heavily from the AS/NZS 1103 series of Standards titled *Preparation of documents used in electrotechnology.* Other Standards which are referenced are also listed below. As the contents of the Handbook is a summary of the Standards and other information, there is a limitation to the amount of detail which can be presented. For a more detailed understanding of the subject, reference should be made to the source documents listed below.

Acknowledgment is made for the material drawn from the following documents:

International Standard		*Australian/New Zealand equivalent*	
Designation	*Title*	*Designation*	*Title*
IEC 1082 (series)	Preparation of documents used in electrotechnology	AS/NZS 1103* (series)	Preparation of documents used in electrotechnology
IEC 617 (series)	Graphical symbols for diagrams	AS 1102 and AS/NZS 1102 (series)	Graphical symbols for electrotechnology
IEC 445	Identification of equipment terminals and of terminations of certain designated conductors, including general rules of an alphanumeric system	—	
BS 5583	Specification for low voltage switchgear and controlgear for industrial use.	—	
IEC 750	Item designation in electrotechnology	AS 3702	Item designation in electrotechnology

Appendix A provides a description of Standards and other reference material which are related to electrical and electronic drawing.

THIS HANDBOOK SHOULD ONLY BE USED FOR STUDENT INSTRUCTION.

STANDARDS AUSTRALIA AND STANDARDS NEW ZEALAND CANNOT ACCEPT ANY LIABILITY FOR ANY CONSEQUENCES THAT MAY ARISE FROM THE USE OF THIS HANDBOOK IN LIEU OF THE STANDARDS FROM WHICH EXTRACTS HAVE BEEN TAKEN.

* In the course of preparation.

CONTENTS

Page

Page

Originated as SAA HB3—1982.
Previous edition 1986.
Jointly revised and designated SAA/SNZ HB3:1996.

CHAPTER 1

TYPES OF ELECTRICAL DRAWINGS

1.1 TYPES OF DRAWINGS—GENERAL

A technical drawing is a document presenting information in a graphical manner which may include text.

An individual drafting officer may not be required to prepare all types of electrical drawings, but may be required to refer to other types of drawings. The main types of electrical drawings are summarized below.

1.2 TYPES OF DRAWINGS AND RELATED DOCUMENTS

1.2.1 General

Australian/New Zealand Standard Series AS/NZS 1103 contains definitions of typical documents encountered in an electrical drawing office. These are as follows:

1.2.2 Function-oriented documents

Function-oriented documents show functional behaviour. Examples of these are:

(a) *Overview diagram*

A relatively simple diagram, often using single line representation, showing the main interrelations or connections among the items within a system, subsystem, installation, part, equipment, software or similar. (See Figures 1.1 and 1.2.)

(b) *Block diagram*

An overview diagram using block symbols predominantly.

(c) *Network map*

An overview diagram showing a network on a map, for example, generating and transforming stations and power lines, telecommunication equipment and transmission lines. (See Figure 1.3.)

(d) *Function diagram*

A diagram showing details of the theoretical or ideal operation of a system, subsystem, installation, part, equipment, software or similar by means of theoretical or ideal circuits without necessarily taking into account the means used for implementation. (See Figure 1.4.)

(e) *Logic-function diagram*

A function diagram that predominantly uses symbols for binary logic elements.

(f) *Equivalent-circuit diagram*

A function diagram showing equivalent circuits, used as an aid for the analysis and calculation of characteristics or behaviour.

(g) *Function chart*

A chart describing the functions and behaviour of a control system, using steps and transitions.

(h) *Sequence chart (or table)*

A chart (or table) showing the succession of operations or status of the units of a system, the operations or status of the individual units being listed in one direction and the process steps or time being plotted at a right angle to that. (See Figure 1.5.)

HB 3:1996 Electrical and electronic drawing practice for students