

# Graphic Symbols and Designations for Electrical Diagrams

## Symbology

This Standard replaces and cancels its previous revision.

The CONTEC - Authoring Subcommittee provides guidance on the interpretation of this Standard when questions arise regarding its contents. The Department of PETROBRAS that uses this Standard is responsible for adopting and applying the sections, subsections and enumerates thereof.

**Technical Requirement:** A provision established as the most adequate and which shall be used strictly in accordance with this Standard. If a decision is taken not to follow the requirement ("non-conformity" to this Standard) it shall be based on well-founded economic and management reasons, and be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by imperative nature.

**Recommended Practice:** A provision that may be adopted under the conditions of this Standard, but which admits (and draws attention to) the possibility of there being a more adequate alternative (not written in this Standard) to the particular application. The alternative adopted shall be approved and registered by the Department of PETROBRAS that uses this Standard. It is characterized by verbs of a nonmandatory nature. It is indicated by the expression: **[Recommended Practice]**.

Copies of the registered "non-conformities" to this Standard that may contribute to the improvement thereof shall be submitted to the CONTEC - Authoring Subcommittee.

Proposed revisions to this Standard shall be submitted to the CONTEC - Authoring Subcommittee, indicating the alphanumeric identification and revision of the Standard, the section, subsection and enumerate to be revised, the proposed text, and technical/economic justification for revision. The proposals are evaluated during the work for alteration of this Standard.

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## Introduction

*PETROBRAS Technical Standards are prepared by Working Groups - WG (consisting specialized of Technical Collaborators from Company and its Subsidiaries), are commented by Company Units and its Subsidiaries, are approved by the Authoring Subcommittees - SCs (consisting of technicians from the same specialty, representing the various Company Units and its Subsidiaries), and ratified by the Executive Nucleus (consisting of representatives of the Company Units and its Subsidiaries). A PETROBRAS Technical Standard is subject to revision at any time by its Authoring Subcommittee and shall be reviewed every 5 years to be revalidated, revised or cancelled. PETROBRAS Technical Standards are prepared in accordance with PETROBRAS Technical Standard [N-1](#). For complete information about PETROBRAS Technical Standards see PETROBRAS Technical Standards Catalog.*

**CONTEC**  
Comissão de Normalização  
Técnica

**SC - 06**  
Electricity

## Foreword

This Standard is the English version (issued in 01/2013) of PETROBRAS N-898 REV. B 08/2010. In case of doubt, the Portuguese version, which is the valid document for all intents and purposes, shall be used.

## 1 Scope

1.1 This Standard establishes the graphic symbols and designations that shall be used for electrical control diagrams, single-line diagrams, multi-line diagrams, functional diagrams, logic diagrams, and digital diagrams.

1.2 This Standard is applicable to procedures started as of its date of issuance.

1.3 This Standard contains only Technical Requirements.

## 2 Normative References

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document applies.

PETROBRAS [N-1521](#) - Identificação de Equipamentos Industriais;

PETROBRAS [N-2040](#) - Elaboração, Apresentação e Gerenciamento de Documentos de Projetos de Eletricidade;

ABNT [NBR 5175](#) - Código Numérico das Funções dos Dispositivos de Manobra, Controle e Proteção de Sistemas de Potência;

ABNT [NBR 5280](#) - Símbolos Literais de Identificação de Elementos de Circuito;

ABNT [NBR 5444](#) - Símbolos Gráficos para Instalações Elétricas Prediais;

ABNT [NBR 6856](#) - Transformador de Corrente;

IEC [60617](#) - Graphical Symbols for Diagrams;

ANSI [IEEE Std C37.2](#) - Standard Electrical Power System Device Function Numbers and Contact Designations.

**NOTE** For documents referred in this Standard and for which only the Portuguese version is available, the PETROBRAS department that uses this Standard should be consulted for any information required for the specific application.

## 3 Terms and Definitions

For the purposes of this Standard, the terms and definitions indicated in 3.1 to 3.7 are adopted.

### 3.1

#### **single-line diagram**

a simplified electrical diagram in which the various conductors of a circuit are represented by a single line

**3.2****multi-line diagram**

detailed electrical diagram in which the various conductors of a circuit are represented separately

**3.3****wiring diagram**

detailed diagram of each installation of the circuit showing all wiring connectors and electrical components

**3.4****logic and digital diagram**

graphical representation of logic sequences that are used to represent commands, tasks, sequencing, programming instructions, variable flows, connection diagrams, and other information

**3.5****functional diagram**

graphical representation of the details of an electrical circuit, of the manner in which it operates and interacts with the other command, protection, and signaling devices and systems

**3.6****N.O.**

an acronym for "Normally Open"

**3.7****N.C.**

an acronym for "Normally Closed"

