



PROCESS
INDUSTRY
PRACTICES

April 2018

Electrical

PIP ELEGL01
Overall Electrical One-Line Diagram Guideline

PURPOSE AND USE OF PROCESS INDUSTRY PRACTICES

In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

This Practice is subject to revision at any time.

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1. Scope

This Practice is a guideline for developing Overall Electrical One-Line Diagrams (OEOLDs) by engineers and designers. It covers the generation of new OEOLDs and may not apply to the revision of existing OEOLDs.

This Practice applies to one-line diagrams that fit the definition of an OEOLD in Section 3. This Practice uses *ANSI/IEEE 315 - IEEE Graphic Symbols for Electrical and Electronics Diagrams* and *IEEE C57.12.80 - IEEE Standard Terminology for Power and Distribution Transformer symbols*.

The main purpose of an OEOLD is to provide an initial view of the electrical system for use in early design discussions. Then, the OEOLD can be updated as the project develops and kept current to provide a reference document that shows a high level view of the overall electrical system.

As a secondary purpose and function the symbols provided for use in a OEOLD are intended to provide basic information. The basic information is shown in visible fields by default. Many OEOLD symbols have hidden or invisible fields that provide extra information or details. The invisible or hidden fields can be changed to be visible based on owner requirements.

This Practice can be applied to CAD systems used for developing OEOLDs, and is not supplier, hardware, or software specific. Electronic native files for the text, symbols, and cover sheets are available from PIP for use in CAD systems and have been developed in AutoCAD 2015. While the symbols can also be developed in Microstation DGN files, the functionality from AutoCAD may not be available in Microstation. Development of project-specific legend sheets is recommended using the PIP native files as a starting point. Additions and/or deletions are permitted to meet project requirements. Drawing borders and title blocks can be altered to be project specific.

The guidelines in this Practice provide a balance between showing all data on OEOLDs and making OEOLDs legible and easy to read. Although this Practice describes major components in the electrical system, specific applications may require additional or alternative components. Determinations concerning fitness for purpose and matters of application of the Practice to a particular project or engineering situation should not be made solely on the information contained in this Practice.

The OEOLD symbols included in the Appendices of this Practice are not intended to recommend specific design details or requirements. An example OEOLD is included to provide an illustration of how the elements of this Practice are combined into an OEOLD.

2. References

Applicable parts of the following industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of issue or revision of this guideline shall be used, except as otherwise noted. Short titles are used herein where appropriate.

Industry Codes and Standards

- Institute of Electrical and Electronic Engineers (IEEE)
 - IEEE Std C57.12.80 - *IEEE Standard Terminology for Power and Distribution Transformers*
 - IEEE 315 – *IEEE Graphic Symbols for Electrical and Electronics Diagrams (Including Reference Designation Letters)*