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IEEE Guide for Common Format for Naming Intelligent Electronic Devices (COMDEV)

IEEE Power and Energy Society

Sponsored by the
Power System Relaying and Control Committee (PSRC)

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Abstract: A common convention for naming physical and virtual intelligent electronic devices (IEDs) is provided in this guide. The various environments where device names are needed and how a common naming convention would be beneficial is discussed.

Keywords: channel name, device name, IED name, IEEE C37.248™, virtual device

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Introduction

This introduction is not part of IEEE Std C37.248™-2017, IEEE Guide for Common Format for Naming Intelligent Electronic Devices (COMDEV).

While configuring an IED, the user has to compose and enter a number of electronic names or designations that uniquely identify the IED and each channel within it. The same is also required when manually composing COMTRADE files for use in simulation and modeling applications. Current standards such as IEEE Std C37.111™, IEEE Std C37.118™, IEEE Std C37.232™, and IEC 61850 require such designations but define them as "unformatted fields," which means it is up to the user to compose and specify these fields without having the benefit of a standard, recommended practice, or guide. Such fields may include, and are not limited to, company, substation and IED names, installed locations, channel names, phase identifiers, monitored circuits, voltage classes, and so forth.

The above-mentioned fields are essential for fault and disturbance analysis and are especially so for automated applications. For example, without knowing the voltage class it is difficult to determine whether the data are calibrated based on peak or based on rms. Also, without accurate and informative names, it is impossible for an automated application to associate voltage and current phases together to calculate a fault location or a missing phase. Users and utilities are often faced with the problem of having to invent their own naming conventions and they do so usually to suit their own purposes. Considering the large and growing number of users today, it is clear why there are too many types of naming conventions in circulation.

A common naming convention for specifying IED designations would help solve many of the problems that are associated with analysis, coordination, and automation. The common convention will, in turn, have a positive impact on maintenance, protection, operations, and on engineering applications. Developing a device name for use throughout the design documentation package is an important function of device names as well. This convention could be used on the single-line, panel layout, bill of material, etc. This naming convention could also benefit manufacturers of IEDs and software tools. To that extent, the main objective of this guide is to address and report on the issues related to specifying IED designations. The guide explains the need for having a common naming convention and provides a brief, high level survey of current practices. The guide also provides a common naming convention for naming IEDs. The convention references standard IEEE device names as listed in IEEE Std C37.2™.

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IEEE Guide for Common Format for Naming Intelligent Electronic Devices (COMDEV)

1. Overview

1.1 Scope

This guide provides a common convention for naming physical and virtual intelligent electronic devices (IEDs). It discusses the various environments where device names are needed and how a common naming convention would be beneficial.

1.2 Purpose

The purpose of this guide is to provide a convention for naming physical and virtual IEDs that provides consistency to the point that automated systems and persons unfamiliar with the particular electrical system could determine what entities the IEDs are monitoring or reporting.

1.3 Need for guide

Current standards such as IEC 60255-24/IEEE Std C37.111™[1], Measuring relays and protection equipment – Part 24: Common format for transient data exchange (COMTRADE) for power systems; IEEE Std C37.118™, IEEE Standard for Synchrophasor Measurements for Power Systems [B7]; IEEE Std C37.232™, IEEE Standard for Common Format for Naming Time Sequence Data Files (COMNAME); IEC 81346 Reference Designation System, and IEC 61850 Communication Networks and Systems for Power Utility Automation [B3] require naming devices but define them as "unformatted fields," which means it is up to the user to compose and specify these fields without having the benefit of a guide. Having consistent and understood device names are essential for fault and disturbance analysis and are especially so for automated applications. Users and utilities are often faced with the problem of having to invent their own naming conventions, and they do so usually to suit their own purposes. Considering the large and growing number of users today, it is clear that there are now too many types of naming conventions in circulation. A common naming convention for specifying IED designations would help solve many of the problems that are associated with analysis, coordination, and automation. The common convention will, in turn, have a positive impact on maintenance, protection, operations, and engineering applications.

[1]Information on references can be found in Clause 2.