

# 1623™

## IEEE Guide for the Functional Specification of Medium Voltage (1 kV—35 kV) Electronic Shunt Devices for Dynamic Voltage Compensation

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**IEEE Power Engineering Society**

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**IEEE Power Engineering Society**

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**Abstract:** This document provides general guidelines for the preparation of a functional specification for solid-state electronic shunt devices used mainly for compensation of voltage fluctuation. The guide covers devices rated to medium voltage (1 kV–35 kV). This device contains in general: an inverter, rectifier or DC converter, energy storage device, and coupling transformer. The device typically is connected in parallel with the network using a coupling transformer.

**Keywords:** coupling transformer, energy storage, inverter, parallel compensation, power electronics, power quality, sensitive loads, voltage control

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# Introduction

**This introduction is not part of IEEE Std 1623-2004, IEEE Guide for the Functional Specification of Medium Voltage (1 kV–35 kV) Electronic Shunt Devices for Dynamic Voltage Compensation.**

Several utilities are experimenting with electronic devices to reduce voltage fluctuations. Industrial customers with sensitive loads are installing different electronic devices to mitigate voltage fluctuations. A significant number of these devices are installed every year. Most of these devices are bought using specifications provided by various manufacturers. Technical literature describes the operation of specific devices and provides results of computer simulations to prove the effectiveness of the devices. However, no document defines the technical data that has to be collected and used for the specification of a new device.

The working group collected specifications from different manufacturers and utilities. These documents have been combined together to define a comprehensive method for the specification of future devices. This guide is not a tutorial. The application of its content to prepare a specification requires technical knowledge and understanding. Each user should modify the material to meet with user specific conditions. This guide does not include all topics necessary for every application and does not address the commercial aspect of the specifications.

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