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Power quality management -
Part 101: Power quality data application

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IEC TR IEC 63222-101 has been prepared by IEC technical committee 8: System aspects of electrical energy supply. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
8/1744/DTR	8/1750/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

A list of all parts in the IEC 63222 series, published under the general title *Power quality management*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

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– reconfirmed,
– withdrawn, or
– revised.

INTRODUCTION

With the development of modern industry, the integration of nonlinear loads, such as power-electronic-based equipment, electric locomotives, etc., causes direct or indirect power quality (PQ) issues.

The wide spread use of power quality monitoring instruments in recent years has accumulated massive PQ monitoring data hiding rich information for data applications in different fields. A typical case is the analysis of equipment operation condition, as many equipment failures present unique signatures in the voltage and current.

This technical report (TR) is prepared to support PQ management for PQ data application of system economical operation, potential risk early warning and consultation service. The mechanism and non-mechanism methodologies are introduced for various aspects of application scenarios including additional loss calculation, capacitor fault warning, harmonic source location, etc.,

PQ data application is based on the purposes and needs, the cases are limited in this document and cannot include all instances. The typical cases presented in this document are for fully understanding the application of power quality data.

1 Scope

This part of IEC 63222, which is a Technical Report, aims to provide guidelines for power quality data applications on different aspects in public power supply systems at voltage ranges from LV, MV and HV with 50 Hz or 60 Hz rated frequency.

It intends to provide a methodology for mining hidden knowledge and support power quality management based on PQ data analytics. Its primary goal is to serve different aspects of power system to promote the system maintaining its normal state and improve efficiency. It can also help avoid unexpected system events, equipment malfunction/maloperation, and production process interruption. The various methodologies and methods mentioned in this document are optional.

NOTE The boundaries between the various voltage levels can be different for different countries/regions. In the context of this document, the following terms for system voltage are used:

- low voltage (LV) refers to $U_N \leq 1$ kV
- medium voltage (MV) refers to 1 kV < $U_N \leq 35$ kV
- high voltage (HV) refers to 35 kV < $U_N \leq 230$ kV

2 Normative references

There are no normative references in this document.