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TECHNICAL SPECIFICATION

colour inside

Demand-side power quality management



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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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DEMAND-SIDE POWER QUALITY MANAGEMENT

FOREWORD

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IEC TS 63191 has been prepared by IEC technical committee 85: Measuring equipment for electrical and electromagnetic quantities. It is a Technical Specification.

This first edition cancels and replaces IEC TR 63191, published in 2018. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) a new informative Annex A describing a tool to report the ability to assess the power quality of an electrical installation.

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

Draft	Report on voting
85/893/DTS	85/902/RVDTS

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 Specification is English.

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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INTRODUCTION

The effective management of power quality on the demand side (power consumer) is an essential activity to ensure the proper operation of the electrical equipment operating on the consumer site.

While the level of power quality present at the point of supply is generally monitored and managed by the power provider (utility), the actual level of power disturbances present on the consumer site can be significantly worse and can negatively impact the operation of the electrical equipment. The interaction between these loads and the voltage supply is often the cause of degraded power quality on the demand side.

One effective step in the prevention of the hindrances caused by inadequate power quality is the assessment of the level of power quality disturbance present on the demand side. However, proper measurements require adequate planning and understanding of the measurement systems and their results.

This document provides guidance on how to establish, implement, exploit, maintain and improve a demand-side power quality monitoring system. This document will also facilitate the tailoring of power quality monitoring concepts to the specific site where it will be deployed.

Disturbances in the electrical energy can have an important impact on the equipment, processes, organization's activities. Some electrical installations (industrial sites, data centres, hospitals, etc.) are particularly impacted by the poor quality of electrical energy.

The quality of the electrical energy has different origins, impacts and measurement indicators on the supply side and on the demand side – see Figure 1 presenting an overview of the electrical network from generation (supply side) to consumer (demand side).

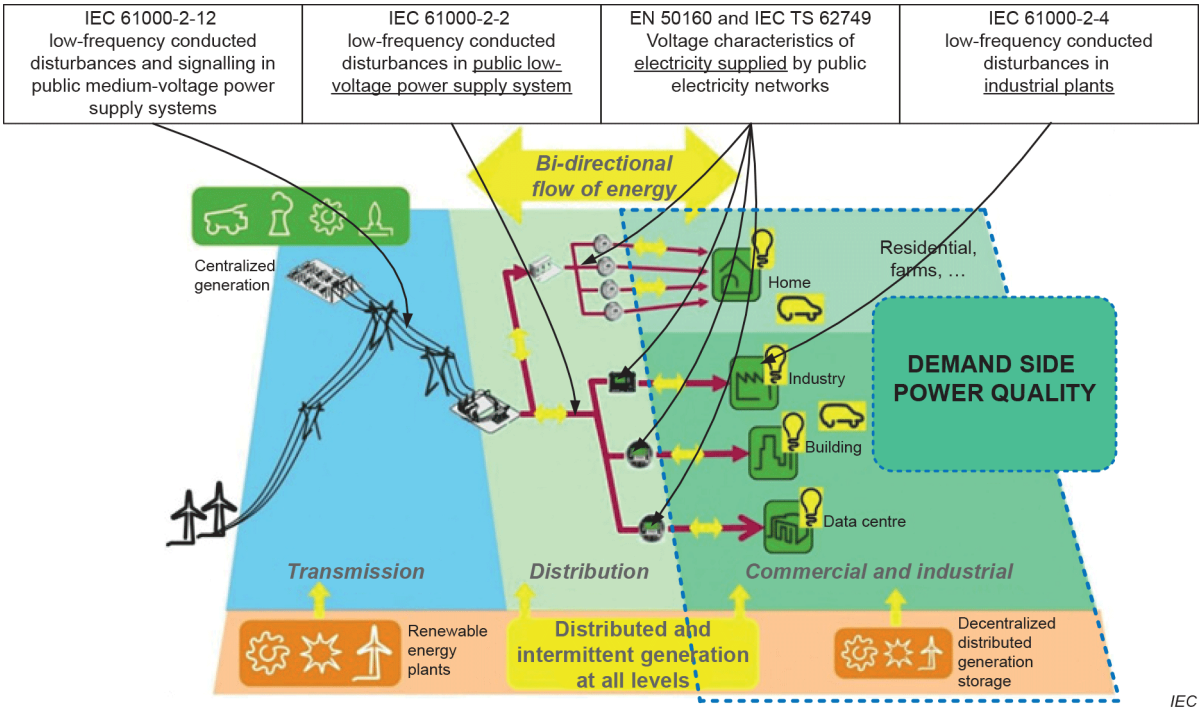


Figure 1 – Overview of electrical distribution system from supply side to demand side, with related standards

While documents such as IEC TS 62749 and EN 50160 define the voltage characteristics provided by a public network (called power quality of the grid), this document gives guidance on qualifying the power quality in internal networks (called demand-side power quality).

In this document, power quality on the demand side, related to buildings, industrial and data centre applications is referred to as demand-side power quality (DSPQ).

See Annex A for a tool to report the ability to assess the power quality.

See Annex E for a general statement on demand-side power quality.

See Annex F for a discussion about grid evolution.

See Annex G for a list of standards related to demand-side power quality.

See Annex H for definition of electrical parameters.

It is assumed that users of this document possess a minimum knowledge of power quality phenomena.

DEMAND-SIDE POWER QUALITY MANAGEMENT

1 Scope

This document specifies recommendations about power quality measurement and assessment within installations.

NOTE 1 Most standards address power quality at the delivery point between energy providers and customers.

This document outlines the various phases needed for the establishment of a demand-side power quality measurement plan for buildings and industry installations.

NOTE 2 The demand side refers to the electrical installation, beyond the PCC (point of common coupling), which is under the jurisdiction of facility managers.

Such a power quality measurement plan will enable the optimization of the energy availability and efficiency, improve the assets lifetime and facilitate the resolutions of power quality problems. A power quality measurement plan encompasses the following phases:

- definition of the context, objectives and constraints;
- assessment of the initial power quality situation;
- definition of an action plan for the improvement of the power quality situation;
- implementation of the power quality measuring system;
- exploitation of the measurement system for the improvement of the power quality situation;
- maintenance of the measurement system.

This document will also help facility managers tailor their measurement plan to the specific needs of the electrical system under their control. It addresses all the disturbances present in such networks, but does not cover the disturbances present in public electrical distribution networks (supply side) as they are governed by specific documents such as EN 50160 and IEC TS 62749.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
demand side
part of the grid where electric energy is consumed by end-use customers within their electric distribution system