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Power quality management –
Part 2: Power Quality Monitoring System

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POWER QUALITY MANAGEMENT –

Part 2: Power quality monitoring system

FOREWORD

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IEC TS 63222-2 has been prepared by IEC technical committee 8: System aspects of electrical energy supply. It is a Technical Specification.

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

Draft	Report on voting
8/1658/DTS	8/1674/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 http://www.iec.ch/standardsdev/publications.

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.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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POWER QUALITY MANAGEMENT –

Part 2: Power Quality Monitoring System

1 Scope

This part of IEC 63222 defines technical requirements for designing a power quality monitoring system for public power supply networks. It is applicable for LV, MV and HV public power supply networks.

The design procedure of a power quality monitoring system (PQMS) generally includes the following four steps:

- Step 1: purpose and application analysis

  Analyse power quality monitoring (PQM) demand and define the purpose of PQM.

- Step 2: preliminary study

  Collect background information such as network configuration, the parameters of instrument transformers, e.g. the output levels and performance capabilities, attributes of loads or distributed generations (DG), communication conditions, budgets, and other restrictive conditions, and select the parameters to be monitored and monitoring sites according to corresponding principles.

- Step 3: system structure design

  Design the overall structure of the monitoring system according to the monitoring purpose based on the analysis of the advantages and disadvantages of various system structures.

- Step 4: detailed design of functional modules

  Design the function modules of data collection, communication, data storage, data processing and analysis in detail according to the functional requirements.

This document defines the main purposes of PQM and gives recommendations for preliminary study, such as how to select monitoring sites and monitoring parameters and whether the instrument transformer is suitable for monitoring. This document also classifies the PQMS structure and specifies the functional requirements of the modules such as data collection, communication, data storage, data processing and analysis.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 61000-2-2:2002*, Electromagnetic compatibility (EMC) – Part 2-2: Environment − Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*

IEC TR 61000-3-6, *Electromagnetic compatibility (EMC) – Part 3-6: Limits – Assessment of harmonic emission limits for the connection of distorting installations to MV, HV and EHV power systems*

IEC TR 61000-3-7:2008, *Electromagnetic compatibility (EMC) – Part 3-7: Limits − Assessment of emission limits for the connection of fluctuating load installations to MV, HV and EHV power systems*

IEC TR 61000-3-13, *Electromagnetic compatibility (EMC) – Part 3-13: Limits − Assessment of emission limits for the connection of unbalanced installations to MV, HV and EHV power systems*

IEC 61000-4-7, *Electromagnetic compatibility (EMC) – Part 4-7: Testing and measurement techniques − General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto*

IEC 61000-4-30:2015, *Electromagnetic compatibility (EMC) – Part 4-30: Testing and measurement techniques − Power quality measurement methods*

IEC TR 61850-90-17:2017, *Communication networks and systems for power utility automation - Part 90-17: Using IEC 61850 to transmit power quality data*

IEC 61869-6:2016, *Instrument transformers – Part 6: Additional general requirements for low power instrument transformers*

IEC 61869-11, *Instrument transformers – Part 11: Additional requirements for low power passive voltage transformers*

IEC TR 61869-103, *Instrument transformers – Part 103: The use of instrument transformers for power quality measurement*

IEC 62443 (all parts), *Industrial communication networks − Network and system security*

IEC 62586-1:2017, *Power quality measurement in power supply systems – Part 1: Power quality Instruments (PQI)*

IEC 62586-2, *Power quality measurement in power supply systems – Part 2: Functional tests and uncertainty requirements*

IEC TS 62749:2020, *Assessment of power quality − Characteristics of electricity supplied by public networks*