TECHNICAL REPORT

IEC TR 62055-21

First edition
2005-08

Electricity metering – Payment systems –

Part 21: Framework for standardization

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International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XE

For price, see current catalogue

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICITY METERING – PAYMENT SYSTEMS –

Part 21: Framework for standardization

FOREWORD

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Technical reports do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful by the maintenance team.

IEC 62055-21, which is a technical report, has been prepared by Technical Committee 13: Equipment of electrical energy measurement and load control.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
13/1318A/DTR	13/1325A/RVC

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62055 consists of the following parts, under the general title *Electricity metering – Payment systems:*

Part 21: Framework for Standardization

Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)

Part 41: Standard Transfer Specification – Application layer protocol for one-way token carrier systems

Part 51: Standard Transfer Specification – Physical layer protocol for one-way numeric and magnetic card token carriers

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

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  withdrawn,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

INTRODUCTION

There is widespread activity in the application and development of payment metering systems in IEC member countries. Whilst there are many similarities in equipment functionality and operation of electricity payment metering systems in these countries, there is divergence in the particular payment technology used as well as in the use of particular token carrier technologies. An example of this is the large number of solutions using disposable magnetic cards.

A need has been identified to describe the various systems and their elements in a coherent manner and to provide a framework for standardization of payment metering systems, their elements and interfaces.

This technical report thus seeks to meet the following objectives:

a) to present a systematic methodology to follow for use by suppliers to produce requirements specifications for system procurement;

b) to present a systematic methodology to follow for use by equipment manufacturers to produce specifications for systems and products;

c) to present a standard way in specifying system requirements or functionality in order that such specifications may be easily compared and evaluated by manufacturers and users;

d) to ensure that such specifications are produced in an “open” format to allow the interoperability of sub-system components.

It has to be noted that it is not the intention of this technical report that there should be only one standard for payment metering systems or sub-systems, but that it should provide guidelines for defining several such standards according to the specific needs of the industry as and when these are identified.

The standardization work of TC13 WG15 should follow the guidelines given in this technical report in order to present such standards in a coherent and systematic way that meets the above objectives.

The IEC 62055 series covers payment systems, encompassing the customer information systems, point of sales systems, token carriers, payment meters and the respective interfaces that exist between these entities.

ELECTRICITY METERING – PAYMENT SYSTEMS –

Part 21: Framework for standardization

1 Scope

This technical report sets out a framework for the integration of standards into a system specification for electricity payment metering systems. It addresses the payment metering system application process, generic processes, generic functions, data elements, system entities and interfaces that exist in present payment metering systems. The approach taken in the framework is sufficiently generic to payment metering systems so that it should be equally applicable to future systems.

NOTE 1 This technical report excludes the application of coin-operated meters in payment systems.

NOTE 2 This technical report specifically covers electricity metering payment systems. However, it is recognised that payment metering is an established requirement in other utility services and the general framework for standardization in this technical report can be applied to such other utility services.

NOTE 3 Contract functions are confined to single bi-lateral supply agreements between a supplier and a customer and specifically exclude related third party agreements such as may be found in the deregulated markets.

NOTE 4 Future aspects are considered in Clause 9.

2 References

IEC 60050-300: *International Electrotechnical Vocabulary (IEV) – Electrical and electronic measurements and measuring instruments – Part 311: General terms relating to measurements – Part 312: General terms relating to electrical measurements – Part 313: Types of electrical measuring instruments – Part 314: Specific terms according to the type of instrument*

IEC 62051:1999, *Electricity metering – Glossary of terms*

IEC 62055-31, *Electricity metering – Payment systems – Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)* [1]

IEC/PAS 62055-41:2003, *Electricity Metering – Payment metering systems – Part 41: Standard Transfer Specification*

— NRS 009-6-6: *Interface Standards – Standard Transfer Specification / Credit dispensing unit – Electricity dispenser – Categories of tokens and transaction data fields*

— NRS 009-6-7: *Interface Standards – Standard Transfer Specification / Credit dispensing unit – Electricity dispenser – Token encoding and data encryption and decryption*

— NRS 009-6-8: *Interface Standards – Standard Transfer Specification / Disposable magnetic token technology – Token encoding format and physical token definition*

— NRS 009-6-9: *Interface Standards – Standard Transfer Specification / Numeric token technology – Token encoding format and physical token definition*

— NRS 009-7: *Standard transfer specification / The management of cryptographic keys*

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[1] To be published.

IEC 62055-41, *Electricity Metering – Payment metering systems – Part 41: Standard Transfer Specification – Application layer for one-way token carrier systems* [1]

IEC 62055-51, *Electricity Metering – Payment metering systems – Part 51: Standard Transfer Specification – Physical layer for one-way numeric and magnetic card token carrier systems* [1]

IEC 62056-21:2001, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 21: Direct local data exchange*

IEC 62056-46:2002, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 46: Data link layer using HDLC protocol*

IEC 62056-47, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 47: COSEM transport layers for IPv4 networks*[2]

IEC 62056-53:2002, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 53: COSEM application layer*

IEC 62056-61:2002, *Electricity metering – Data exchange for meter reading, tariff and load control – Part 61: Object identification system (OBIS)*