IEC 62055-42

Edition 1.0 2022-07

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Electricity metering – Payment systems – Part 42: Transaction Reference Numbers (TRN)

Comptage de l'électricité – Systèmes de paiement – Partie 42: Numéros de référence des transactions (TRN)

IEC 62055-42:2022-07(en-fr)

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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ELECTRICITY METERING – PAYMENT SYSTEMS –

Part 42: Transaction Reference Numbers (TRN)

FOREWORD

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The text of this International Standard is based on the following documents:

Draft	Report on voting
13/1843/CDV	13/1860/RVC

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 International Standard 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/standardsdev/publications.

A list of all parts in the IEC 62055 series, published under the general title *Electricity metering – Payment systems*, 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- withdrawn,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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INTRODUCTION

The IEC 62055 series recognizes and takes into account the concept of layered interoperability for use within the smart metering and smart grid domains.

It also ensures system element interoperability above the semantic layer to include business function and business process interoperability layers within an electricity metering system, thus ensuring overall compatibility at all these levels.

This document is based on the principles the IEC 62055 standards are built on and sets the rules for future extensions to guarantee consistency, thus providing a common vocabulary for use by utilities to express requirements in tenders and also by vendors to have a unified understanding for interpretation of the tender requirements.

This document forms part of the IEC 62055 series and shares some references with IEC 62055-41, in that both standards represent TransferCredit tokens utilising 20-digit token carriers. However, IEC 62055-41 and IEC 62055-42 differ greatly in their encoding, security mechanism and intended use cases. Whereas IEC 62055-41 is meant for predominantly offline systems, IEC 62055-42 is intended for mostly online systems where the decimal token carrier is used as a back-up mechanism for vending while meters are intermittently offline.

The IEC 62055 series has been developed by IEC TC13 specifically for electricity metering systems, but it is equally applicable in the domain of other utility services such as water and gas.

ELECTRICITY METERING – PAYMENT SYSTEMS –

Part 42: Transaction Reference Numbers (TRN)

1 Scope

This document specifies a token generation mechanism and token structure for smart prepayment functionality in markets where IEC 62055-41 compliant systems are not used, and where a different security mechanism is required by project-specific or national requirements. This document specifies token structure, authentication and an anti-replay mechanism, token operating model, and protocol.

This document is informed by the STS Association key management services, and by the key management mechanisms used within the DLMS/COSEM security model within IEC 62056-6-2. Reference is made to the international STS token standards (IEC 62055-41, IEC 62055-51 and IEC 62055-52) for payment metering systems, and interworking has been considered where appropriate in terms of token carrier ranges in the decimal domain. IEC 62055-41 tokens and those described in this document are not interoperable, however their domains are designed to be mutually exclusive to ensure the two kinds of tokens do not interfere with each other.

Metering application processing and functionality, HAN interface commands and attributes, WAN interface commands and attributes are outside the scope of this document; however, reference is made to other standards in this regard.

The mechanism for auditing and retrieving data from the meter relating to tariffication, meter readings, profile data and other legal metrology information is outside the scope of this document; however, this is defined as part of any overall metering solution. Such interfaces for retrieving data from a meter may be defined using suitable protocols such as DLMS/COSEM as defined in the IEC 62056 series.

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 60050-300:2001, *International Electrotechnical Vocabulary (IEV) – Part 300: 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 60050-300:2001/AMD1:2015
IEC 60050-300:2001/AMD2:2016
IEC 60050-300:2001/AMD3:2017
IEC 60050-300:2001/AMD4:2020

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

IEC TR 62055-21:2005, *Electricity metering – Payment systems – Part 21: Framework for standardization*

IEC 62055-31:2005, *Electricity metering – Payment systems – Part 31: Particular requirements – Static payment meters for active energy (classes 1 and 2)*