

INTERNATIONAL STANDARD

NORME INTERNATIONALE

**Electricity metering – Payment systems –
Part 31: Particular requirements – Static payment meters for active energy
(classes 0,5, 1 and 2)**

**Équipements de comptage de l'électricité – Systèmes à paiement –
Partie 31: Exigences particulières – Compteurs statiques à paiement d'énergie
active (classes 0,5, 1 et 2)**



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CONTENTS

FOREWORD.....	5
INTRODUCTION.....	7
1 Scope.....	8
2 Normative references	9
3 Terms and definitions	9
3.1 General payment metering	9
3.2 Tokens.....	11
3.3 Token carriers.....	12
3.4 Tokens and token carriers.....	14
3.5 Switches of metering equipment	15
3.6 Timekeeping and tariff control.....	15
4 Nominal electrical values	17
5 Construction requirements.....	17
5.1 General.....	17
5.2 Clearance and creepage distances	17
5.3 Protection against penetration of dust and water.....	17
5.4 Display of measured values	17
5.4.1 General	17
5.4.2 Minimum display capability	17
5.4.3 Indicators	18
5.5 Storage of measured values	18
5.6 Output device	18
5.7 Marking of the meter	18
5.8 Token carrier interface.....	19
5.8.1 General	19
5.8.2 Token carrier acceptor.....	19
5.8.3 Keypad interface.....	19
6 Climatic conditions	19
6.1 General.....	19
6.2 Temperature range	19
6.2.1 General	19
6.2.2 Operation within the specified operating range	19
6.2.3 Operation within the limit range of operation.....	20
6.2.4 Storage and transport outside the limit range of operation	20
6.3 Relative humidity	20
6.4 Protection against penetration of dust and water.....	21
6.5 Tests of the effect of the climatic environments.....	21
7 Electrical requirements	21
7.1 General requirements	21
7.2 Influence of supply voltage.....	21
7.2.1 Voltage range(s).....	21
7.2.2 Voltage dips and short interruptions.....	22
7.2.3 Abnormal voltage conditions	23
7.3 Heating	23
7.4 Insulation	23

7.5	Long Term Over Voltage Withstand.....	24
7.6	Electromagnetic compatibility (EMC).....	24
7.6.1	General	24
7.6.2	General test conditions	24
7.6.3	Test of immunity to electrostatic discharges.....	24
7.6.4	Test of immunity to radiated RF electromagnetic fields	24
7.6.5	Test of immunity to electrical fast transients/bursts	25
7.6.6	Test of immunity to conducted disturbances, induced by RF fields	25
7.6.7	Surge immunity test	25
7.6.8	Test of immunity to damped oscillatory waves	25
7.6.9	Radio interference suppression	25
7.7	Power consumption.....	25
7.7.1	General	25
7.7.2	Voltage circuits	26
7.7.3	Current circuits	26
7.8	Influence of self-heating on accuracy	26
7.9	Electrical tests on supply control and load control switches (SCS and LCS).....	26
7.10	Auxiliary control switches (ACS)	26
7.11	Token carrier acceptor interface test.....	26
8	Accuracy requirements	26
9	Functional requirements	27
9.1	General.....	27
9.2	Robustness of meter accounting process	27
10	Type test	28
Annex A	(informative) Functional performance.....	30
A.1	Basic functionalities – prepayment mode	30
A.1.1	General	30
A.1.2	Prepayment mode – core functionalities	30
A.1.3	Core functional tests within voltage and temperature range limits	33
A.1.4	Functional tests within the limit range of operation with voltage	34
A.1.5	Functional tests within the limit range of operation with temperature.....	34
A.1.6	Prepayment mode – token handling and data integrity requirements	35
A.2	Additional functionalities	36
A.2.1	General	36
A.2.2	Requirements for other modes of operation	37
A.2.3	Collection of agreed debt.....	37
A.2.4	Time-of-use tariff facilities	37
A.3	System compliance requirements.....	38
Annex B	(informative) Reference model for a payment meter	39
B.1	General.....	39
B.2	Generalised payment meter instance	40
B.3	Functions in a single-part payment meter.....	42
B.3.1	General	42
B.3.2	Meter application process.....	42
B.3.3	Token_Carrier_to_Meter_Interface function	42
B.3.4	Accounting function	42
B.3.5	Metering function	42
B.3.6	Delivery function.....	43

B.3.7	Time functions	43
B.3.8	Test functions	43
B.3.9	Display functions	43
B.3.10	Recording functions	44
B.3.11	Security functions	44
Annex C (normative)	Requirements for payment meters with supply control switches	46
Annex D (normative)	Requirements of timekeeping	47
D.1	General	47
D.1.1	General	47
D.1.2	Real-time clock support facilities	47
D.1.3	Operation reserve	47
D.1.4	Primary batteries	48
D.1.5	Back up battery replacement	48
D.1.6	Real-time clock setting and synchronisation facilities	48
D.2	Synchronous clocks	48
D.3	Crystal-controlled clocks	48
D.4	Tests of timekeeping accuracy	49
D.4.1	General	49
D.4.2	General test conditions	49
D.4.3	Test of synchronous clocks in payment meters	49
D.4.4	Test of crystal-controlled clocks in payment meters	49
D.5	Effects of disturbances on timekeeping	50
D.5.1	General	50
D.5.2	Electromagnetic disturbances	50
D.5.3	Voltage dips and short interruptions	51
D.5.4	Harmonics in the voltage waveform	52
Bibliography		53
Figure B.1 – Generalised block diagram of a payment meter instance		40
Table 1 – Voltage ranges		21

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Static payment meters for active energy (classes 0,5, 1 and 2)****FOREWORD**

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IEC 62055-31 has been prepared by IEC technical committee 13: Electrical energy measurement and control. It is an International Standard.

This second edition cancels and replaces the first edition published in 2005. This edition constitutes a technical revision.

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

- a) Title modified.
- b) Removal of the contents of Annex C relating to the requirements for the supply control switch, and added reference to IEC 62052-31:2015 which contains the relevant requirements.

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

Draft	Report on voting
13/1864/FDIS	13/1866/RVD

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.

INTRODUCTION

Payment meters are used in situations where the supply of electrical energy to the load may be interrupted or its restoration enabled under the control of the payment meter in relation to a payment tariff agreed between the customer and the supplier. The payment meter is part of a system that uses token carriers to pass payment information as tokens between a vending network and the payment meters that include the meter accounting process.

The primary reason for this edition is to align it with the requirements introduced in IEC 62052-31:2015 metering safety standard.

The functions of a payment meter are to measure electrical energy consumed and to decrement the available credit value in accordance with the metered consumption, and possibly in accordance with the passing of time. This available credit value is incremented as the result of payments made to the electricity supplier, and the meter accounting process continuously calculates the balance of available credit held by the customer. When the available credit value has been decremented to a predetermined value that is related to the payment mode in use, a switch is used to interrupt the supply to the customer's load. However, additional features may be present in the payment meter, which prevent or delay the opening of the switch, or limit further consumption to a low load level. Such "social" features may include the provision of an emergency credit facility, the possibility of operation in a fixed-payment mode, and the inhibiting of interruptions for certain periods of time.

In return for the payment (usually in cash) and depending on the particular type of system, the customer may be issued with a single-use token on a disposable token carrier for the equivalent value, or a reusable token carrier may be credited with that value, or the token may be transmitted directly to the meter via a communications network (a so-called virtual token carrier). "One-way" and "two-way" data transfer systems may be used, and the token carriers may be: physical devices such as smart cards, or other electronic devices, or magnetic cards; virtual token carriers where the token information is transferred by a remote communications system; or numeric token carriers where sequences of digits are issued on a paper receipt and entered via a keypad on the meter.

IEC 62051:1999, Clause 17 provides some details of payment metering terminology.

ELECTRICITY METERING – PAYMENT SYSTEMS –

Part 31: Particular requirements – Static payment meters for active energy (classes 0,5, 1 and 2)

1 Scope

This part of IEC 62055 applies to newly manufactured, static watt-hour payment meters of accuracy classes 0,5, 1 and 2 for direct connection, for the measurement of alternating current electrical energy consumption of a frequency in the range 45 Hz to 65 Hz that include a supply control switch for the purpose of interruption or restoration of the electricity supply to the load in accordance with the current value of the available credit maintained in the payment meter. It does not apply to static watt-hour payment meters where the voltage across the connection terminals exceeds 1 000 V (line-to-line voltage for meters for polyphase systems).

It applies to payment meters for indoor application, operating under normal climatic conditions where the payment meter is mounted as for normal service (i.e. together with a specified matching socket where applicable).

Payment meters are implementations where all the main functional elements are incorporated in a single enclosure, together with any specified matching socket. There are also multi-device payment metering installations where the various main functional elements, such as the measuring element, the user interface unit, token carrier interface, and the supply control switch are implemented in more than one enclosure, involving additional interfaces.

Functional requirements that apply to payment meters are also defined in this document, and include informative basic functional requirements and tests for the prepayment mode of operation in Annex A. Allowances are made for the relatively wide range of features, options, alternatives, and implementations that may be found in practice. The diverse nature and functionality of payment meters prevent the comprehensive specification of detailed test methods for all of these requirements. However, in this case, the requirements are stated in such a way that tests can then be formulated to respect and validate the specific functionality of the payment meter being tested.

This document does not cover specific functionality or performance requirements for circuit protection, isolation or similar purposes that may be specified through reference to other specifications or standards. Safety requirements removed from Edition 1.0 have been replaced with references to the safety requirements now contained in IEC 62052-31:2015, the product safety standard for newly manufactured electricity meters. In-service safety testing (ISST) is not covered by IEC 62052-31:2015 and is left to national best practice usually as an extension of existing in-service testing (IST) of metrology stability.

This document does not cover software requirements. This document covers type-testing requirements only. For acceptance testing, the requirements given in IEC 62058-11:2008 and IEC 62058-31:2008 may be used.

Dependability aspects are addressed in the IEC 62059 series of standards. Additional reliability, availability, maintenance and life cycle aspects are provided by IEC TC 56.

This document does not cover conformity tests and system compliance tests that may be required in connection with legal or other requirements of some markets.

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 62052-11:2020, *Electricity metering equipment – General requirements, tests and test conditions – Part 11: Metering equipment*

IEC 62052-31:2015, *Electricity metering equipment (AC) – General requirements, tests and test conditions – Part 31: Product safety requirements and tests*

IEC 62053-21:2020, *Electricity metering equipment – Particular requirements – Part 21: Static meters for AC active energy (classes 0,5, 1 and 2)*

IEC 62054-21:2004, *Electricity metering (a.c.) – Tariff and load control – Part 21: Particular requirements for time switches*

IEC 62054-21:2004/AMD1:2017

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

IEC 62058-11:2008, *Electricity metering equipment (AC) – Acceptance inspection – Part 11: General acceptance inspection methods*

IEC 62058-31:2008, *Electricity metering equipment (AC) – Acceptance inspection – Part 31: Particular requirements for static meters for active energy (classes 0,2 S, 0,5 S, 1 and 2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 60050-300:2001, IEC 62051:1999, IEC 62052-11:2020, and IEC 62055-21:2005, as well as the following, apply.

NOTE Where there is a difference between definitions in IEC 62055-31 and those contained in other referenced IEC standards, then those defined in IEC 62055-31 take precedence.

3.1 General payment metering

3.1.1

AC withstand voltage

RMS value of sinusoidal power frequency voltage that the equipment can withstand during tests made under specified conditions and for a specified time

[SOURCE: IEC 60050-614:2016, 614-03-22, modified]