

IEC TS 62933-2-3

Edition 1.0 2025-05

TECHNICAL SPECIFICATION

Electric Energy Storage (EES) Systems – de redes Part 2-3: Unit parameters and testing methods – Performance assessment test during site operation

Document Preview

IEC TS 62933-2-3:2025

https://standards.iteh.ai/catalog/standards/iec/1c7b875b-d11d-44c6-be13-8a55d839b08c/iec-ts-62933-2-3-2024

ICS 13.020.30 ISBN 978-2-8327-0392-2



THIS PUBLICATION IS COPYRIGHT PROTECTED Copyright © 2025 IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Secretariat Tel.: +41 22 919 02 11

3, rue de Varembé info@iec.ch CH-1211 Geneva 20 www.iec.ch

Switzerland

About the IEC

The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications

The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search -

webstore.iec.ch/advsearchform

The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee, ...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublishedStay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

IEC Products & Services Portal - products.iec.ch

Discover our powerful search engine and read freely all the publications previews, graphical symbols and the glossary. With a subscription you will always have access to up to date content tailored to your needs.

Electropedia - www.electropedia.org

The world's leading online dictionary on electrotechnology, containing more than 22 500 terminological entries in English and French, with equivalent terms in 25 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

Preview

<u> IEC TS 62933-2-3:2025</u>

CONTENTS

F	OREWO	RD	5
1	Scop	e	7
2	Norm	native references	7
3	Term	s, definitions, abbreviated terms and symbols	7
	3.1	Terms and definitions	
	3.2	Abbreviated terms	
	3.3	Symbols	
4	Gene	eral requirements of the operational performance testing	
	4.1	Purpose	
	4.2	Stakeholders	
	4.3	Principles of assessment intervals and data sampling	
	4.4	Data requirements	
	4.5	Operational performance testing methods	11
5	Oper	ational performance testing items	
	5.1	General	12
	5.2	General operational performance testing items	
	5.2.1		
	5.2.2		
	5.2.3	TIEN SIMMARIE	
	5.2.4		
	5.3	Energy-related operational performance testing items	12
	5.3.1		
	5.3.2	Equivalent operation factor of an EES system	12
	5.4	Efficiency-related operational performance testing items	
	5.4.1		13
	5.4.2	teh.ai Energy loss rate of an EES system 1d-44c6-be13-8a55d839b08c/ie	c-ts-629331 3 -3-2
	5.4.3	Duty cycle roundtrip efficiency	13
	5.5	Reliability-related operational performance testing items	13
	5.5.1	Planned outage factor of an EES system	13
	5.5.2	,	
	5.5.3	Availability factor of an EES system	13
	5.6	Grid-connected operational performance testing items	13
	5.6.1		
	5.6.2	•	
	5.6.3	•	
	5.6.4	, , , ,	
	5.6.5	, , ,	
	5.6.6	1 1 7	
	5.7	Operational performance testing items in specific applications	
	5.7.1	, , , , , , , , , , , , , , , , , , , ,	
	5.7.2	1 , 3	
	5.7.3		
	5.7.4	1 3	
	5.7.5	1 , 3	
	5.7.6		
	5.7.7	3	
	5.7.8	Islanded grid mode	16

	5.7.9	Backup power mode	16
6	Oper	ational performance testing methods of EES systems	16
	6.1	General	16
	6.2	General operational performance testing method	
	6.2.1	Genaral	
	6.2.2		
	6.2.3		
	6.2.4		
	6.2.5		
	6.3	Energy-related operational performance testing method	
	6.3.1	General	
	6.3.2		
	6.3.3	•	
	6.4	Efficiency-related operational performance testing method	
	6.4.1	General	
	6.4.2		
	6.4.3	,	
	6.4.4	Duty cycle roundtrip efficiency	
	6.5	Reliability-related operational performance testing method	
	6.5.1	General	
	6.5.2	i'l'ab Ctaradarda	
	6.5.3	•	
	6.5.4	Availability factor of an EES system	25
	6.6	Grid-connected operational performance testing method	
	6.6.1	GeneralOC	
	6.6.2		
	6.6.3	•	
		<u> </u>	
	6.6.5	Secondary frequency control	
	6.6.6	Grid-connected operation power quality test	
	6.7	Operational performance testing method in specific application	
	6.7.1	Genaral	
	6.7.1	Frequency regulation mode	
	6.7.3		
	6.7.4		
	6.7.5		
	6.7.6	, , ,	
	6.7.7	31	
	6.7.8	· · · · · · · · · · · · · · · · · · ·	
	6.7.9	Backup power mode	
Δr		informative) performance indicators of primary concern to major	
		ers	37
		hy	
Di	bilograp		
- -			
	_	Example of classification of EES systems	
Fi	gure 2 –	The prioritization and test procedures of the test methods	11
Fi	gure 3 –	- EES system architecture with one POC type	17
Fi	gure 4 –	- EES system architecture with two POC types	17

Figure 5 – Example of active power test curve in charging state of an EES system	27
Figure 6 – Active power control response time of an EES system	28
Table 1 – Example of typical and not exclusive applications classification	15
Table 2 – Qualified frequency range of islanded mode	36
Table A.1 – Performance indicators of primary concern to major stakeholders	37

iTeh Standards (https://standards.iteh.ai) Document Preview

<u> IEC TS 62933-2-3:2025</u>

https://standards.iteh.ai/catalog/standards/iec/1c7b875h-d11d-44c6-be13-8a55d839b08c/iec-ts-62933-2-3-2025

INTERNATIONAL ELECTROTECHNICAL COMMISSION

ELECTRICAL ENERGY STORAGE (EES) SYSTEMS –

Part 2-3: Unit parameters and testing methods -Performance assessment tests during site operation

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- https://s7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and $\frac{3-2025}{1000}$ members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
 - 8) Attention is drawn to the Normative references maycited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
 - 9) IEC draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). IEC takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, IEC had not received notice of (a) patent(s), which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at https://patents.iec.ch. IEC shall not be held responsible for identifying any or all such patent rights.

IEC 62933-2-3 has been prepared by IEC technical committee TC 120: Electrical Energy Storage (EES) systems. It is a Technical Specification.

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

Draft	Report on voting
120/392/DTS	120/413/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.