

**IEEE Std C62.45™-2002**  
(Revision of IEEE Std C62.45-1992)

# **C62.45™**

## **IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits**

**IEEE Power Engineering Society**

Sponsored by the  
Surge Protective Devices Committee



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**Surge Protective Devices Committee  
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Power Engineering Society**

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**Abstract:** The scope of this recommended practice is the performance of surge testing on electrical and electronic equipment connected to low-voltage ac power circuits, specifically using the recommended test waveforms defined in IEEE Std C62.41.2™-2002. Nevertheless, these recommendations are applicable to any surge testing, regardless of the specific surges that may be applied.

**Keywords:** low-voltage ac power circuit, surge testing, surge withstand level

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## Introduction

(This introduction is not part of IEEE Std C62.45-2002, IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits.)

This recommended practice is the result of ten years of use as a guide, and it incorporates only minor additions or updates of the original 1987 document, which was revised in 1992. These earlier versions were published independently, and not concurrently with their intended companion, IEEE Std C62.41-1991, with the result that a “catch-up” situation was created as each document was separately updated.

With the approval of the Surge-Protective Devices Committee, the companion IEEE Std C62.41-1991 was split into two separate documents, IEEE Std C62.41.1-2002 and IEEE Std C62.41.2-2002. Together with the present recommended practice, the two IEEE Std C62.41.1-2002 and IEEE Std C62.41.2-2002 present a “Trilogy” concerning the occurrence, characterization, and testing of surges in low-voltage ac power circuits, to be published concurrently and thus avoid the previous ambiguities of the catch-up update.

### CAUTION

**Surge testing of electrical equipment presents potentially hazardous situations for both personnel and equipment. Safety directives promulgated by the laboratory where testing takes place must be observed. Additional precautions are suggested in 4.8 and 6.4.**

## Participants

At the time this recommended practice was completed, the Working Group on Surge Characterization on Low-Voltage Circuits had the following membership:

**Hans Steinhoff, Chair**

**James Funke, Co-Chair**

**Raymond Hill, Secretary**

**Francis D. Martzloff, Technical Editor**

Rickard Bentinger  
William Bush  
Ernie Gallo  
Andrea Turner  
Jim Harrison

Michael Hopkins  
Deborah Jennings-Conner  
Philip Jones  
Wilhem H. Kapp  
Joseph L. Koepfinger

Richard Odenberg  
Alan W. Rebeck  
Michael Stringfellow  
Matt Wakeham  
S. Frank Waterer  
Don Worden

*Other individuals who contributed review and comments in developing this recommended practice are:*

P. J. Barker  
T. R. Conrad  
C. Dhooge  
D. Dorr  
H. E. Foelker  
W. Graf  
G. L. Goedde

P. Hasse  
T. S. Key  
G. Kohn  
J. Levine  
A. Mansoor  
D. Messina  
J. E. Nanevicz  
R. W. Northrop

K. O. Phipps  
V. A. Rakov  
A. Rousseau  
E. F. Vance  
S. Van Vreede  
S. G. Whisenant  
W. J. Zischank

The following members of the balloting committee voted on this standard. Balloters may have voted for approval, disapproval, or abstention.

Rickard Bentinger	Andrew Robert Hileman	Michael Parente
James J. Burke	David W. Jackson	Percy E. Pool
James Case	Philip J. Jones	Radhakrishna V. Rebbapragada
Chrys Chrysanthou	Wilhelm H. Kapp	Alan W. Rebeck
Bryan R. Cole	Ed Knapp	Tim E. Royster
Bill Curry	Joseph L. Koepfinger	Lawrence Salberg
Douglas C. Dawson	Benny H. Lee	Mark S. Simon
E. P. Dick	Carl E. Lindquist	Hans Steinhoff
Clifford C. Erven	William A. Maguire	Antony J. Surtees
Ernie Gallo	Francois D. Martzloff	Donald B. Turner
Gary Goedde	L. Bruce McClung	S. Frank Waterer
Peter A. Goodwin	Nigel P. McQuin	James W. Wilson
Jim Harrison	Gary L. Michel	Jonathan J. Woodworth
Steven P. Hensley	Richard Odenberg	Donald M. Word
	Joseph C. Osterhout	

At the time this document went to ballot, the Accredited Standards Committee on Surge Protectors, C62, had the following membership:

**Joseph L. Koepfinger, Chair**  
**S. Choinski, Secretary**  
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<i>Organization Represented</i>	<i>Name of Representative</i>
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IEEE .....	M. G. Comber
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.....	J. L. Koepfinger
.....	R. Odenberg
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.....	D. W. Lenk
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.....	J. J. Woodworth
Association of American Railroads (AARR) .....	W. Etter
Power Line Power Administration (BPA) .....	G. E. Lee
Canadian Standards .....	D. M. Smith
International Electrical Testing Association (NETA) .....	A. Peterson
.....	M. R. Jordan
IST .....	F. D. Martzloff
Rural Electrification Administration (REA) .....	E. Cameron
Telecommunications Information Systems (TCIS) .....	C. Chrysanthou
Underwriters Laboratories .....	D. Jennings-Conner
Individuals .....	J. Osterhout
.....	S. G. Whisenant
.....	H. J. Steinhoff

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Raymond Hapeman  
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Lowell G. Johnson  
Joseph L. Koepfinger\*  
Peter H. Lips

Nader Mehravari  
Daleep C. Mohla  
William J. Moylan  
Malcolm V. Thaden  
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Howard L. Wolfman  
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\*Member Emeritus

Also included is the following nonvoting IEEE-SA Standards Board liaison:

Alan Cookson, *NIST Representative*  
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*IEEE Standards Project Editor*

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# IEEE Recommended Practice on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits

## 1. Overview

This recommended practice is divided into 11 clauses. Clause 1 provides an overview of this recommended practice, including its scope and its context with respect to other IEEE standards directly related to the subject. Clause 2 lists references to other standards that are useful in implementing the recommendation of the present document. Clause 3 provides definitions of common English words, but with a specific meaning in the context of this recommended practice. No new technical definitions have been generated in connection with this recommended practice. Clause 4 provides the necessary information for the planning of surge testing, a prerequisite to the performance of tests. In Clause 5, information is provided on the equipment to be used in performing the tests. Clause 6 provides general recommendations on test procedures, with further details in Clause 7 and Clause 8. Clause 9 provides a description of Standard Surge Test Waveforms. Clause 10 provides a similar description of Additional Surge Test Waveforms. Clause 11 provides guidance on evaluating results and offers some concluding remarks.

This recommended practice also contains four informative annexes. Annex A provides information on Surge-Protection Devices (SPDs) Class I test parameters. Annex B provides additional information on surge-related issues. Annex C provides practical hints on surge testing. Annex D provides the listing of citations.

### 1.1 Scope

The scope of this recommended practice is the performance of surge testing on electrical and electronic equipment connected to low-voltage ac power circuits, specifically using the recommended test waveforms defined in IEEE Std C62.41.2™-2002.<sup>1</sup> Nevertheless, these recommendations are applicable to any surge testing, regardless of the specific surges that may be applied.

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<sup>1</sup>Information on references can be found in Clause 2.