NEMA Standards Publication

ANSI C78.180-2003 (R2016)

American National Standard for Electric Lamps—Specifications for Fluorescent Lamp Starters

currently in preview, click buy full versi

National Electrical Manufacturers Association

ANSI C78.180-2003 (R2016)

American National Standard for Electric Lamps—Specifications for Fluorescent Lamp Starters

Secretariat

National Electrical Manufacturers Association

Approved: June 30, 2016

American National Standards Institute, Inc.

currently in preview, click buy full versi

NOTICE AND DISCLAIMER

The information in this publication was considered technically sound by the consensus of persons engaged in the development and approval of the document at the time it was developed. Consensus does not necessarily mean that there is unanimous agreement among every person participating in the development of this document.

ANSI standards and guideline publications, of which the document contained herein is one, are developed through a voluntary consensus standards development process. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While NEMA administers the process to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate, or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards and guideline publications.

NEMA disclaims liability for any personal injury, property, or other damages of any nature whatsoever, whether special, indirect, consequential, or compensatory, directly or indirectly resulting from the publication, use of, application, or reliance on this document. NEMA disclaims and makes no guaranty or warranty, expressed or implied, as to the accuracy or completeness of any information published herein, and disclaims and makes no warranty that the information in this document will fulfill any of your particular purposes or needs. NEMA does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide.

In publishing and making this document available, NEMA is not undertaking to render professional or other services for or on behalf of any person or entity, nor is NEMA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment or, as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances. Information and other standards on the topic covered by this publication may be available from other sources, which the user may wish to consult for additional views or information not covered by this publication.

NEMA has no power, nor does it undertake to police or enforce compliance with the contents of this document. NEMA does not certify, test, or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of compliance with any health- or safety-related information in this document shall not be attributable to NEMA and is solely the responsibility of the certifier or maker of the statement.

Currently in preview, click buy full version

© 2016 National Electrical Manufacturers Association

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires verification by The American National Standards Institute, Inc. (ANSI) that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer. An American National Standard implies a consensus of those substantially concerned with its scope and provisions. Consensus is established when, in the judgment of the ANSI Board of Standards Review, substantial agreement has been reached by directly, and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward their resolution.

The existence of an American National Standard does not in any respect preclude anyone, whether s/he has approved the standard or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. It is intended as a guide to aid the manufacturer, the consumer, and the general public.

The American National Standards Institute, Inc., does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute, Inc. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on this title page.

CAUTION NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute, Inc., require that action be taken periodically to reaffirm, revise, or withdraw this standard. Purchasers of American National Standards may receive current information on all standards by calling or writing the American National Standards Institute, Inc.

Published by

National Electrical Manufacturers Association
1300 North 17th Street, Suite 900
Rosslyn, Virginia 22209

© 2016 National Electrical Manufacturers Association
All rights, including translation into other languages, reserved under the Universal Copyright Convention, the Berne Convention for the Protection of Literary and Artistic Works, and the International and Pan American copyright conventions.

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without prior written permission of the publisher.

Printed in the United States of America

Currently in preview, click buy full version

Foreword (This foreword is not part of American National Standard C78.180)

Suggestions for improvement of this standard should be submitted to the Secretariat C78, American National Lighting Group of the National Electrical Manufacturers Association, 1300 North 17th Street, Suite 900, Rosslyn, VA 22209.

This standard was processed and approved by Accredited Standards Committee on Electric Lamps. Committee approval of the standard does not necessarily imply that all committee members voted for that approval.

currently in preview, click buy full versi

© 2016 National Electrical Manufacturers Association

CONTENTS

Forward ii
1 Scope 1
2 Normative References 1
3 Definitions 1
3.1 General 1
3.2 Glow Switch Starters 1
3.3 Thermal Starters 1
4 Starter Identification 2
4.1 Marking 2
4.2 Types of Starters 2
4.3 Nomenclature 2
5 Supply Voltage Characteristics 4
6 Ambient Conditions for Testing 4
6.1 Temperature 4
6.2 Humidity 4
7 Test Lamps 4
7.1 Type 4
7.2 Seasoning and Selection of Lamps for Starting-Time Tests 4
7.3 Lamps for Lamp Starting Endurance Tests 5
7.4 Lamps for Deactivated Lamp Endurance Tests 5
8 Test Ballasts 5
8.1 Ballasts for Starting Tests 5
8.2 Ballasts for Endurance Tests 5
9 Instruments 5
9.1 Instrument Characteristics 5
9.2 Circuit Grounding 5
10 Starting Aids 6
11 Starter Performance 6
11.1 Method of Test 6
11.2 Starting and Preheat Time 7
11.3 Test of Lockout Mechanism 8
11.4 Voltage Characteristics of Voltage-Operated Starters 9
11.5 Current Characteristics of Four-Pin Current-Operated Starters 11
11.6 Radio Interference Suppression 11
11.7 Starting Tests at Elevated Temperatures 11
11.8 Endurance 11
11.9 Starter Safety 13
12 Dimensions 13
13 Recommended Temperature Limits 14
14 Testing of Starters Intended for Operation on Direct Current 14
15 Conditions of Acceptance 14

Currently in preview, click buy full version

© 2016 National Electrical Manufacturers Association

<This page left intentionally blank.>

currently in preview, click buy full versi

© 2016 National Electrical Manufacturers Association

1 Scope

This standard is intended to cover performance of glow switch starters used with preheat-type fluorescent and similar discharge lamps. It does not include starters that are an integral part of a lamp or manually operated switches that may be used for lamp starting.

2 Normative References

The following publications contain provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the publications indicated below.

ANSI C78.81-2003	*Electric Lamps—Double-based Fluorescent Lamps—Dimensional and Electrical Characteristics*
ANSI C78.901-2001	*Electric lamps—Fluorescent—Single-based types—Dimensional and Electrical Characteristics*
ANSI C82.1-1997	*Line frequency fluorescent lamp ballasts*
UL 542	*Standard for Lampholders, Starters, and Starter Holders for Fluorescent Lamps*

3 Definitions

3.1 General

Starters are devices which initially connect the cathodes, usually in series, of fluorescent or similar discharge lamps directly across the ballast-supply circuit so as to provide cathode preheating. When the starter contacts open, the voltage transient—due to interrupting the current through the ballast—is applied across the lamp to establish an arc. Starters also include a capacitor for the suppression of radio interference during lamp starting and lamp operation. They may also include a circuit-opening device, arranged to disconnect the preheat circuit if the lamp fails to light normally.

3.2 Glow Switch Starters

This type has normally open contacts, in a gaseous atmosphere. One or both is a bimetal strip(s). On starting, the full supply voltage is applied across the open contacts, producing a glow discharge. Heat from the discharge actuates the bimetal strip(s), the contacts close (extinguishing the glow), and cathode preheating begins. When the bimetal strip(s) cool sufficiently, the contacts open. The resulting interruption of the current through the ballast produces a transient which usually starts the lamp. Should the lamp fail to start, the above process repeats.

3.3 Thermal Starters

This type has normally closed contacts, one or both of which is a bimetal strip(s). Also, it has a heating coil in series with the ballast and lamp cathodes. When the supply voltage is first applied to the circuit, cathode preheating begins immediately. The heating coil actuates the bimetal strip(s), causing the normally closed contacts to open after an adequate preheat time, and the lamp starts. During lamp operation, a small amount of energy is consumed by thermal starters—by a heating coil which keeps the contacts from reclosing. This type of starter is no longer commonly available and is not covered in this standard.

Currently in preview, click buy full version

© 2016 National Electrical Manufacturers Association