NEMA Standards Publication

ANSI C12.20-2010

American National Standard for Electricity Meters - 0.2 and 0.5 Accuracy Classes

National Electrical Manufacturers Association

ANSI C12.20-2010

American National Standard

for Electricity Meters—
0.2 and 0.5 Accuracy Classes

ANSI C12.20-2010
Revision of ANSI C12.20-2002

American National Standard

for Electricity Meters—
0.2 and 0.5 Accuracy Classes

NOTICE OF ADOPTION

ANSI C12.20 was adopted and is approved for use by the Department of Defense (DoD). The National Electrical Manufacturers Association has furnished the clearance required by existing regulations. Copies of the document are stocked at the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094, for issue to DoD activities only. All other requestors must obtain copies from NEMA.

Secretariat:

National Electrical Manufacturers Association

Approved August 31, 2010

American National Standards Institute, Inc.

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.

NEMA 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 and establishes rules 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, express 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.

AMERICAN NATIONAL STANDARD

Approval of an American National Standard requires verification by ANSI that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer.

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 use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether he has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards.

The American National Standards Institute 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. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

Caution Notice: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute 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.

Published by

National Electrical Manufacturers Association
1300 North 17th Street, Rosslyn, VA 22209

Printed in the United States of America

This page intentionally left blank.

Contents

Foreword (This Foreword is not part of American National Standard C12.20-2010.)

This American National Standard establishes acceptable performance criteria for electricity meters. Accuracy class designations, current class designations, voltage and frequency ratings, test current values, service connection arrangements, pertinent dimensions, form designations, and environmental tests are covered.

The existing C12.20 Standard has been revised with the intent to bring it up to date in an industry that is changing dramatically because of both technology and regulatory matters. This American National Standard establishes acceptable performance criteria for electricity meters.

The existing standard was broadened to allow three phase current and voltage sources as an optional test method to the existing single phase, series, parallel method.

In memoriam to Glenn Mayfield and Ed Malemezian: both had a passion for standards and members of SC16 felt fortunate to know and learn from them.

Suggestions for improvement to this standard are welcome. They should be sent to:

National Electrical Manufacturers Association
Vice President, Technical Services
1300 North 17th Street
Suite 1752
Rosslyn, VA 22209

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee for Electricity Metering, C12. At the time the committee approved this standard, the C12 Committee had the following members:

Herman Millican, Chairperson ANS C12/SC16
Tom Nelson, Chairperson ANS C12
Paul Orr, Secretary

ANS C12 Main Committee

Organization Represented:	*Name of Representative:*	*Organization Represented:*	*Name of Representative:*
General Interest			
Austin Energy	H. Millican	Center for Neighborhood Technology	L. Kotewa
EnerNex Corporation	A. Snyder	Future DOS R&D Inc.	A. Moise
NIST	T. Nelson	Tucker Engineering	R. Tucker
Underwriters Laboratories Inc.	R. Breschini		
Producer			
Elster Electricity	S. Weikel	GE Energy	C. Crittenden
Itron, Inc.	B. Cain	Landis+Gyr Inc.	J. Voisine
Schweitzer Engineering Laboratories	B. Hughes	Technology for Energy Corp.	W. Hardy
Sensus	G. Steiner	Watthour Engineering Co.	L. Wren
Trillant Networks	M. Veillette		

User

Baltimore Gas & Electric	J. Thurber	Duke Energy	T. Morgan
Florida Power and Light	J. DeMars	Pacific Gas & Electric	D.Y. Nguyen
Georgia Power	L. Barto		
Public Service Electric & Gas	D. Ellis	Xcel Energy EMC	D. Nordell

ANS C12 C12.16 Subcommittee

Organization Represented:	*Name of Representative:*
Ameren Services	West, J.
Austin Energy	Millican, H.
Baltimore Gas & Electric	Thurber, J.
Central Hudson Gas & Electric Co	Lokys, R.
Duke Energy	Morgan, T.
Ed Malemezian Consulting, Inc.	Malemezian, E.*
Elster Electricity	Weikel, S.
EnerNex Corporation	Snyder, A.
Florida Power & Light	McEvoy, J.
Florida Power & Light	DeMars, J.
General Electric	Crittenden, C.
Georgia Power	Barto, L.
Itron, Inc.	Cain, B.
Landis+Gyr	Anderson, M.
Landis+Gyr	Voisine, J
NIST	Nelson, T.
NIST	Thompson, A.
Oncor	Johnson, B.
Pacific Gas & Electric	Nguyen, D. Y.
Pacific Gas & Electric	Yan, A
Powermetrix	Hardy, W.
Public Service Electric & Gas	Ellis, D.
Radian Research Inc.	Everidge, T.
Radian Research Inc.	Mayfield, G.*
Schweitzer Engineering Laboratories	Hughes, R
Sensus Metering Systems	Steiner, G.
Watthour Engineering Co.	Weimer, C.
Xcel Energy EMC	Nordell, D.

*Deceased

AMERICAN NATIONAL STANDARD **ANSI C12.20-2010**

For Electricity Meters—0.2 and 0.5 Accuracy Classes

1 SCOPE

This standard establishes the physical aspects and acceptable performance criteria for 0.2 and 0.5 accuracy class electricity meters meeting Blondel's Theorem. Where differences exist between the requirements of this Standard and C12.1 and C12.10, the requirements of this Standard shall prevail.

2 DEFINITIONS

See clause 2 of ANSI C12.1-2008.

3 REFERENCES

ANSI C12.1 *American National Standard for Electric Meters, Code for Electricity Metering*
ANSI C12.10 *American National Standard for Physical Aspects of Watthour Meters—Safety Standard*

Where the date of the referenced document is not shown, the latest published version of the document applies.

4 REQUIREMENTS

4.1 Mounting

Mounting arrangements may include detachable socket, type "S," bottom-connected, type "A," or any other arrangement agreed upon between the manufacturer and user.

4.2 Voltage and frequency

Typical voltage ratings are 120, 240, 277, and 480 volts with a frequency rating of 50 or 60 Hz.

4.3 Current classes and test amperes

The current classes and test amperes shall be as listed in Table 1.

Table 1 – Current classes and test amperes

Current Class	Test Amperes
2	0.25
10	2.5
20	2.5
100	15
200	30
320	50

NOTE—Other values of test amperes may be used as recommended by the manufacturer.