



ANSI C12.32-2021

*American National Standard
for Electricity Meters for the Measurement of DC Energy*

Secretariat:

National Electrical Manufacturers Association

Approved March 4, 2021

American National Standards Institute, Inc.

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Foreword (This foreword is not part of American National Standard C12.32.)

This American National Standard provides a performance specification for a commercial, revenue-grade Direct Current (DC) Meter.

The increasing need for reliable and resilient energy is driving the development of distributed energy sources, including renewables. DC technologies, including solar photovoltaics, batteries, and hydrogen fuel cells, are at the forefront of these technology developments. Efficiency gains are on the rise as more solutions connect DC sources directly to DC loads, thus avoiding AC conversion losses. Power electronic solutions are prevalent and becoming the new normal. Commercial offerings and services, including data centers, communications towers, electric vehicles, commercial and residential Distributed Energy Resources (DER), and microgrids have been awaiting the arrival of this DC Meter Standard.

This first version of C12.32 has been created in response to a market need for the measurement of DC energy sources and loads. The advancement and growth of distributed and renewable energy is driving the initial use cases for DC Meters. Additional DC Meter applications are expected to quickly evolve as interest in efficient DC services continues to expand.

The DC Meter specification that follows began with a Use Case study initiated by the EMerge Alliance in 2016. In 2018, the EMerge Alliance decided that converting OIML R46 to DC characteristics would be the best path forward. A great deal of progress was made throughout 2019. Starting in 2020, the Working Group prioritized this endeavor and produced the Standard that you see before you today.

Thanks to the EMerge Alliance for their foresight and recognition of the need for a DC Metering Standard. Thanks also to the energy, creativity, and persistence of the ANSI and NEMA working group Members to complete this Standard.

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

National Electrical Manufacturers Association
Secretary, ANSI ASC C12
1300 North 17th Street
Suite 900
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:

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TESCO—The Eastern Specialty Company	Tom Lawton
UL LLC	Scott Hunter
Watthour Engineering Company, Inc.	Lea Wren
Xcel Energy	Dan Nordell

At the time the committee approved this Standard, the DC Working Group of C12.32 had the following Members:

Charlie Ploeger, Chair
Scott Weikel Vice Chair

Brian Patterson (EMerge Alliance—President)

David Lawrence (EMerge Alliance—DC Meter Chairman)

Andrew Dudding (Key Editor/Contributor)

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Avy Moise

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Greg Sheran

Howard Wang

John Smith

Kerry Barnette

Joel Canine

Lea Wren

Ron Zook

Curt Crittenden

Part 1 Metrological and Technical Requirements

1 Scope and References

1.1 Scope

This Standard establishes acceptable performance criteria for revenue grade direct current (DC) watthour meters and demand meters. Accuracy class designations, current, voltage, environmental tests, and electromagnetic compatibility (EMC) tests are covered.

This Standard is designed as a reference for those concerned with the design of DC electricity metering, such as utilities, third-party energy providers and aggregators, manufacturers, regulatory bodies, and operators/service providers.

This Standard applies to electricity metering equipment designed to measure voltage up to 1500 Vdc.

Safety testing is not included in this Standard.