



**ANSI/NEMA SM 31000-1-2021**  
**(Formerly ESM1-1)**

## *Electrical Submeter—General Requirements*

Secretariat:

**National Electrical Manufacturers Association**

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**American National Standards Institute, Inc.**

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## Foreword

In the preparation of this Standard, input from users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product subdivision by contacting the:

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# **1 General**

## **1.1 Scope**

This part, SM 31000-1, specifies general requirements of the SM 31000 Standard, which covers metrological requirements and associated testing for electrical energy submeters. The Standard applies to direct meters or metering systems comprising meters and associated sensors. These meters provide details of energy use for energy monitoring or revenue submetering.

The Standard does not apply to primary utility-owned meters.

The Standard applies to AC and DC kilowatt-hour meters, demand meters, load survey meters, power quality meters, single- and four-quadrant meters, etc.

The Standard applies to indoor and outdoor applications, portable, permanently installed, and embedded meters.

The Standard applies to AC meters rated at not more than 1000 V that measure active energy, apparent energy, and reactive energy (capacitive, inductive, and/or total), including received, delivered, and/or net, and also those measuring current, voltage, active power, apparent power, reactive power (capacitive, inductive, and/or total), power factor, phase angle, polarity, and frequency when measured in addition to energy.

The Standard also applies to DC meters rated not more than 1500 V that measure energy received, delivered, and/or net and also those that include additional measurement of power, current, and voltage.

The SM 31000 Standard is broken into the following parts:

- a. SM 31000-1 General Requirements
- b. SM 31000-2 AC Active Energy Accuracy
- c. SM 31000-3 Revenue Submetering Requirements
- d. SM 31000-4 Additional Measurements Accuracy
- e. SM 31000-5 DC Energy Accuracy
- f. SM 31000-6 Power Quality Measurements and Accuracy
- g. SM 31000-7 Current Sensor Accuracy
- h. SM 31000-8 Demand Metering
- i. SM 31000-9 Field Testing