Proposal for New Project
DC Electricity Metering

Proposing Country: United States
History

• TC12 is Parent Technical Committee.
• Discussions under PG1 – revisions for R46: Electricity Meters
• Initial decision: Exclude from R46 revision
  
  1st PG meeting, May 2018

• May 2021 meeting: Subgroup formed for DC Metering
  Include as annex
  Revisit as a PG
  No progress from this point until June 2023.

• June 2023 meeting: Decision to form a new project.
  Too difficult to maintain AC & DC in same recommendation
Existing Standards

ANSI C12.32-2021 American National Standard for Electricity Meters for the Measurement of DC Energy

   ANSI also has a subcommittee on developing revenue grade DC transducers.

IEC 62053-41 Electricity metering equipment - Particular requirements - Part 41: Static meters for DC energy (classes 0.5 and 1)

EN 50470-4
Motivation

Existing
OIML G22 provides an option for EVSEs with separately type approved meters where specifications meet or exceed those requirements in the guide.

Emerging*
• Solar arrays
• Batteries
• Power Electronics
• EVs

Challenge:
Market is small.

* Information provided by David Lawrence, Duke Energy, Emerging Technology Office
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Challenge:
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Opportunity:
Jump start international harmonization.

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Advantages of DC Usage*

• Lack of conversion losses: In the US, 5-20% of power lost on AC/DC conversion
• Many new loads are DC: 85% of those found in buildings, including many new appliances.
• Improved energy efficiency of DC motors and DC lighting.
• Reduced wiring costs – reduced usage of copper.

* Information provided by David Lawrence, Duke Energy, Emerging Technology Office
Voltage by Use Case*

• 12-48VDC: Cell towers, lighting
• 125VDC: Utility substation battery
• 350VDC: Data center, residential home (DC), commercial building, EV charging
• 750VDC: DC bus neighborhood microgrid
• 1 000VDC: PV farm, DC bus microgrid, fast EV charging
• 1 500VDC: DC bus microgrid

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Scope

• Develop DC metering standard (recommendation)
• Metrological & technical requirements for revenue applications
• Performance criteria
• Requirements for type approval, verification and reverification