



**ENTERGY POWER DELIVERY STANDARDS
DESIGN BASIS
GUIDELINE**

Title: Meter Socket Adapter Guideline	No. & Rev: DRAFT	Effective: DRAFT
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1.0 INTRODUCTION

1.1 Purpose

This guideline establishes the requirements for meter socket adapters at Entergy.

1.2 Scope

This guideline incorporates the industry standard requirements and Entergy's requirements for meter socket adapters installed on Entergy's watthour meters. This guideline is applicable to four types of meter socket adapters: 1) transfer switches, 2) power source adapters, 3) distributed energy resource (DER) connectors, and 4) surge arresters.

1.3 Changes in this Revision

This revision is a new document.

1.4 Effective Date

To be incorporated in Entergy's Customer Installation Standards for Electric Service, upon acceptance.

1.5 Training & Awareness Requirements

This guideline principally impacts Power Delivery Design Basis and Customer Service. These groups should review this guideline and provide comments as needed.

1.6 Review Cycle

This guideline shall be reviewed and updated every three years.

2.0 DEFINITIONS, TERMINOLOGY

Distributed Energy Resource (DER) Connector A meter socket adapter provided with provisions for the interconnection of distributed energy systems, such as interactive inverters, energy storage systems, or bi-directional types of electric vehicle chargers.

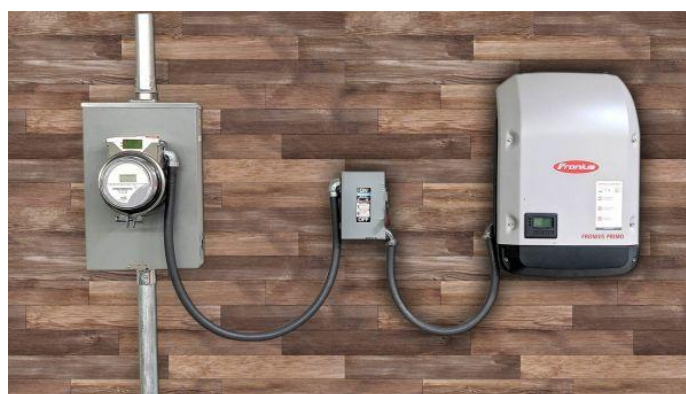


Figure 1: Meter socket adapter connected to a solar inverter

Energy Management Equipment The equipment is intended to control electrical loads by responding to sensors or transducers monitoring power consumption, by sequencing, and by cycling the loads through the use of preprogrammed data logic circuits, or any combination thereof.

Meter Socket Adapter An enclosed construction with blades and jaws intended for installation between a meter socket and the utility watt-hour meter.



Figure 2: Meter Socket Adapter and Meter Socket

Power Source Adapter A meter socket adapter used as a line side or load side tap to provide AC power in various applications.



Figure 3: Meter socket providing power to a load (such as an EV charger)

Transfer Switch A meter socket adapter utilized as a transfer of meter position.



Figure 4: Transfer switch connected to a generator

Surge Arrester A meter socket adapter providing surge protection at the service entrance.



Figure 5: Surge Protector behind utility meter

3.0 REFERENCE STANDARDS & DOCUMENTS

3.1 Entergy Standards Associated with this guideline

- 3.1.1 Entergy DR07-01 Rev. 22: Distributed Energy Resource Standards for Distribution Interconnection (07/08/2024)
- 3.1.2 Entergy Customer Installation Standards for Electric Service (09/04/2018)

3.2 Industry Standards

- 3.2.1 NEMA US 80016-2022 Meter Socket Adapters
- 3.2.2 IEC 62052-11 Electricity metering equipment (AC) – General requirements, tests and test conditions

3.3 ANSI/UL Standards Used in this guideline

- 3.3.1 ANSI C12 Code for Electricity Metering
 - 3.3.2 UL414 Meter Sockets
- UL414 references these standards:
- UL50 Enclosures for Electrical Equipment, Non-Environmental Considerations
 - UL83 Thermoplastic-insulated wires and cables
 - UL94 Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
 - UL224 Extruded Insulating Tubing
 - UL486A-486B Wire Connectors
 - UL489
 - UL746A Polymeric Materials – Short Term Property Evaluations
 - UL746B Polymeric Materials – Long Term Property Evaluations
 - UL746C Polymeric Materials – Use in Electrical Equipment Evaluations
 - UL746D Polymeric Materials – Fabricated Parts
 - UL746E Polymeric Materials – Industrial Laminates, Filament Wound Tubing, Vulcanized Fibre, and Materials Used in Printed-Wiring Boards
 - UL891 Switchboards
 - UL1059 Terminal Blocks

- UL1332 Organic Coatings for Steel Enclosures for Outdoor Use Electrical Equipment

3.3.3 UL916 Standard for Safety Energy Management Equipment

3.3.4 UL1008M Transfer Switch Equipment

3.3.5 UL1449 Surge Protective Devices

3.3.6 UL2735 Electric Utility Meters

3.3.7 UL2900 Cyber Security Requirements for Network Connectable Products

4.0 SAFETY

Safety is an important facet of all decisions in Power Delivery. Each person working on Entergy's system of Standards shall consider the implications to safety for all personnel, including those installing and maintaining the equipment. Information, which will help users make safe decisions, shall be documented in the system of Standards.

5.0 REQUIREMENTS FOR METER SOCKET ADAPTERS

Meter socket adapters used as transfer switches, DER connectors, power source adapters, or surge arresters shall meet the following requirements:

- 1) ANSI/NEMA C12.7 Requirements for Watthour Meter Sockets
- 2) ANSI/NEMA C12.10 Electromechanical Watthour Meters

Adherence to both Standards ensures coordination between the meter, the socket, and the adapter.

Additional requirements per meter socket adapter type continue in Sections 5.1 to 5.4 below:

5.1 Transfer Switch

A transfer switch is an electrical switch that switches a load between two sources. Some transfer switches are manual requiring a physical manipulation of the switch. Other transfer switches are automatic and engage when they sense one of the sources has lost or gained power.

In addition to the requirements in Section 5.0, a meter socket adapter used as a transfer switch shall be certified and meet the following standards:

- 1) UL414
- 2) UL1008M

Transfer switches with additional functionality, other than the base assembly of enclosure, blades, and jaws, shall also meet the following additional certification requirements:

5.1.1 Transfer Switch with Communications

A transfer switch equipped with communications protocols (wifi, radio, etc.), shall be certified and meet requirements in UL2900.

5.1.2 Transfer Switch with Energy Management Equipment

A transfer switch configured for energy management shall be certified and meet requirements in UL916.

5.1.3 Transfer Switch with Surge Protection

Transfer switches that are equipped with surge protection shall be certified under UL1449.

5.2 Power Source Adapter

Power Source Adapters are meter socket adapters used as a line side or load side tap to provide AC power (or DC power with a converter) in various applications.

In addition to the requirements in Section 5.0, a meter socket adapter used as a Power Source Adapter shall be certified and meet the following standard:

1) UL414

Power source adapters with additional functionality, other than the base assembly of enclosure, blades, and jaws, shall also meet the following additional certification requirements.

5.2.1 Power Source Adapter with Communications

Power source adapters equipped with communications protocols (wifi, radio, etc.), shall be certified and meet requirements in UL2900.

5.2.2 Power Source Adapter with Energy Management Equipment

Power source adapters configured for energy management shall be certified and meet requirements in UL916.

5.2.3 Power Source Adapter with Surge Protection

Power source adapters that are equipped with surge protection shall be certified under UL1449.

5.3 DER Connector

A DER connector provides provisions for the interconnection of distributed energy systems, such as interactive inverters, energy storage systems, or bi-directional types of electric vehicle chargers.

These provisions connect the distributed energy system to the load side of the meter. The line side of the meter shall not be used to connect to a DER connector.

In addition to the requirements in Section 5.0, a DER connector shall be certified and meet the following standard:

- 1) UL414

DER connectors with additional functionality, other than the base assembly of enclosure, blades, and jaws, shall also meet the following additional certification requirements.

5.3.1 DER Connector with Communications

DER connectors equipped with communications protocols (wifi, radio, etc.), shall be certified and meet requirements in UL2900.

5.3.2 DER Connector with Energy Management Equipment

DER connectors configured for energy management shall be certified and meet requirements in UL916.

5.3.3 DER Connector with Surge Protection

DER connectors that are equipped with surge protection shall be certified under UL1449.

5.4 Surge Arrester

Meter socket adapters used as **Surge Arresters** provide surge protection at the service entrance.

In addition to the requirements in Section 5.0, a surge arrester shall be certified and meet the following standards:

- 1) UL414 for the adapter
- 2) UL1449 for the surge protection components

Surge arresters with additional functionality, other than the base assembly of enclosure, blades, and jaws, shall also meet the following additional certification requirements.

5.4.1 Surge Arrester with Communications

Surge arresters equipped with communications protocols (wifi, radio, etc.), shall be certified and meet requirements in UL2900.

6.0 LOCKING AND SEALING FOR METER SOCKET ADAPTERS

Meter socket adapters shall have provisions for ring-type meter sockets and ringless meter sockets for locking and sealing by Entergy.

Meter socket adapters shall have provisions for a ring-type lock between the meter socket adapter and the watthour meter for locking and sealing by Entergy. The ring type meter cover works with a sealing/locking ring to directly seal the meter socket adapter in place.

The ringless type meter cover has a draw in the cover that fits over the meter socket adapter and holds the meter socket adapter in place. The cover can be sealed or padlocked with the hasp on the cover.

Covers, for access to distributed energy resource (DER) connections, are required as per the UL414 Supplement SB. The covers shall have provisions for the application of a seal or lock by Entergy to prevent unauthorized access.

7.0 STACKED METER SOCKET ADAPTERS

A meter socket adapter is intended for installation between a meter socket and the utility power meter. Only one adapter shall be allowed between the meter socket and the utility meter. The meter adapter types reviewed in this document, are neither certified to be interoperable nor multi-stacked below the meter.



Figure 6: (a) One adapter: Allowed (b) Two or more stacked Adapters: Not Allowed

8.0 MULTI-POSITIONED METER SOCKET ADAPTERS

Multi-position meter sockets used at apartments, condominiums, shopping centers, and multi-family units (a double home or a duplex) where billing is divided for each socket, may be allowed to have one meter adapter per socket. However, any meter socket adapter, its connections, and exterior components or parts shall not extend beyond the edge of the meter pan, and shall not interfere with adjacent meter pans. Walkways and areas adjacent to the entire installation of meter pans, meter adapters and watt-hour meters shall not be encumbered or blocked.



Figure 7: Multi-positioned meter pans with multiple meter sockets

9.0 CHANGES OR MODIFICATIONS TO THE ADAPTER PRODUCT

Changes or modifications to the adapter product must meet the requirements listed in this guideline.

10.0 NOT USED

11.0 RESPONSIBILITIES

Design Basis is responsible for reviewing and updating this guideline.

The meter socket adapter vendors are responsible for meeting the requirements in this guideline. If any vendor fails to provide proof of industry certifications and adherence to Entergy's requirements, the vendor will not be allowed to install their equipment on Entergy's wattmeters.

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11.1 Interpretation

Interpretation of this guideline is the responsibility of Power Delivery Design Basis.

11.2 Deviation

Deviations from this guideline may be made only with the consent of the Manager, Power Delivery Design Basis or an approved agent thereof. Any deviations granted shall be reported to the Manager, Power Delivery Design Basis for consideration for inclusion in the guideline. No other employee is granted independent authority to grant deviations.

11.3 Regulatory Requirements

None

12.0 ACKNOWLEDGMENTS

None

13.0 ATTACHMENTS

None