

SPECIFICATION

Customer Owned Meter Enclosures for Self-Contained Watthour Meters



SPECIFICATION DETAIL

Customer Owned Meter
Enclosures for Self-Contained
Wathour Meters

RECORD OF SPECIFICATION APPROVALS:

**This Specification is approved for the inclusion of subject products on the
Meter Equipment Group's Approved Metering Equipment Enclosure List:**

Approved:

Tampa Electric Company

Approved:

Duke Energy

Approved:

Florida Power & Light Company

Approved:

Gulf Power

Approved:

Oklahoma Gas & Electric



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SPECIFICATION REVISIONS

Rev. No.	Date	Description	Section(s)
1	7/24/01	Revised to reflect UL-50 Standard	5.01
1	7/24/01	Increased burial depth to 4 ft.	5.07
1	7/24/01	Rephrased section	12.01
2	12/17/01	Removed aluminum type	5.01
2	12/17/01	Reduced Post-type enclosure depth to three feet	5.07
2	12/17/01	Defined knockouts for OH & OH/UG services	6.01
2	12/17/01	Removed type of stainless steel	7.02
2	12/17/01	Added "the utility-side of a meter/breaker combination"	11.01.01
2	12/17/01	Removed "the product or category name"	11.02.02
3	01/04/04	Added ANSI/UL67 to publications	2.01
3	1/04/04	Added wiring space minimum to reference UL67	5.11
3	01/04/04	Added section	5.11.01
3	01/04/04	Added "of utility-side"	6.01.01
3	01/04/04	Added note on exposed rivets	7.02
3	01/04/04	Updated section	8.01.01
3	01/04/04	Updated section	12.00
3	01/04/04	Updated section	13.00
4	05/29/08	Added " Anti insertion clip"	8.07
4	05/29/08	Added "All self-contained 320/400 amp sockets shall be constructed with a manual lever bypass	10.03
4	05/29/08	Added " "Handle shall have plastic incidental contact" sleeve installed "	10.06

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1.00 SCOPE

00.0

This Meter Equipment Group Specification covers general and specific requirements applicable to self-contained watthour meter sockets. All other components that are an integral part of the enclosure shall be listed with Underwriters Laboratories, Inc. (UL) Product Listing Program.

2.00 STANDARDS

2.01 All general requirements, ratings, definitions and terminology, except those covered in this specification shall be in accordance with the latest revision of the following publications and all publications referenced therein:

1. American National Standard Requirements for Watthour Meter Sockets, **ANSI C12.7.**
2. American National Standard Safety Standard for Electric Cabinets and Boxes, **ANSI/UL 50.**
3. American National Standard on Enclosures for Electrical Equipment (1000 Volts Maximum), **ANSI/NEMA 250.**
4. American National Standard Safety Standard for Meter Sockets, **ANSI/UL 414.**
5. American Society for Testing and Materials Standard Method of Salt Spray (Fog) Testing, **ASTM Designation: B 117.**
6. American Society for Testing and Materials Specifications for Electrodeposited Coatings of Cadmium on Steel, **ASTM Designation: A165.**
7. American Society for Testing and Materials Standard Specification for Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process, **ASTM Designation: A 525.**
8. American Society for Testing and Materials Standard for Aluminum and Aluminum Alloy Sheet and Plate, **ASTM Designation: B209.**
9. American National Standard Safety Standard for Panelboards **ANSI/UL 67.**

3.00 DEFINITIONS

- 3.01 Manual Lever Operated Bypass (Bypass): An assembly of parts that when properly operated, closes the circuit between the line and load jaws.
- 3.02 Continuous Load: A load where the current continues for three (3) hours or more.
- 3.03 Continuous-Duty Current Rating: The rating in amperes that a meter socket will carry continuously under stated conditions, without exceeding the allowable temperature rise.
- 3.04 Meter Socket (Socket): An enclosure which has matching jaws to accommodate the bayonet-type (blade) terminals of a detachable watt-hour meter and has a means of connections for the termination of the circuit conductors. It may be a single-position socket for one (1) meter or a multi-position trough socket for two (2) or more meters.
- 3.05 Ring-Type Meter Socket: A meter socket that has a socket rim.
- 3.06 Socket Rim: That part of a ring-type meter socket which is required to accommodate the socket-sealing ring which holds a detachable watt-hour meter in place.
- 3.07 Socket Sealing Ring: A **(captive screw sealing)** ring used to overlap the socket rim and the detachable watt-hour meter to hold and provide a means for sealing a detachable watt-hour meter in place.
- 3.08 Ringless-Type Meter Socket: A meter socket that has no provision for a socket sealing ring but has other means of holding a detachable watt-hour meter in place, such as a cover which is secured in place by a latch/hasp assembly.
- 3.09 Enclosure (Socket Enclosure): The housing including cover to which an assembly of jaws, terminals and bypass (if specified), mounted on an insulating base, are attached.
- 3.10 Block Assembly: The entire assembly mounted in the enclosure to include jaws, terminals, bypass and the mounting hardware.
- 3.11 Jaws (Socket Jaws): The receiver mechanism that accommodates the bayonet-type blades of a detachable watt-hour meter.

- 3.12 Terminals (Socket Terminals): The point of connection to the line or load conductors.
- 3.13 Meter/Breaker Combination Socket: Service entrance device that contains meter mounting and disconnecting means on the load side of the meter.
- 3.14 K-Base meter bases: Meter mounting device designed to accept the (bolt-in) K-Base Class meters.

4.00 PERFORMANCE REQUIREMENTS:

Performance requirements for meter sockets shall be in accordance with applicable performance sections of ANSI/UL 414.

5.00 CONSTRUCTION AND WORKMANSHIP

- 5.01 The meter socket enclosures shall be constructed of steel or aluminum and shall be made and finished with a high degree of uniformity and in a workmanlike manner. The enclosures shall be made in accordance with ANSI/UL 50 standard for Cabinets and Boxes. Steel enclosures to be approved for outdoors use shall be galvanized with a coating designation of G-90 (or equivalent). Any other materials or coatings must be approved (Refer to section 13.0 - Deviations from this specification, page 16).
 - 5.01.01 After fabrication the steel enclosure **shall** be painted. Aluminum enclosures **may** be painted after fabrication. All finish coats shall provide a tough non-chalking weather resistant finish.
- 5.02 All components of the meter enclosure will be completely assembled and tightened to manufacturer's specifications before being shipped.
- 5.03 Enclosure Type. If the enclosure is to be approved for outdoor use, it shall be NEMA Type 3R and shall meet ANSI/UL-50 requirements.
 - 5.03.01 If the enclosure is approved for indoor use, it shall be NEMA Type 1 or 3R.

- 5.04 All multiple position sockets shall be designed such that after mounting, the centerline of the lowest meter shall be a minimum of 22 inches above finished grade while the centerline of the highest meter shall not exceed 72 inches from the finished grade level.
- 5.05 Pedestal type meter enclosures shall be designed so that after mounting the centerline of the meter shall be a minimum of 42 inches and a maximum of 60 inches above finished grade. The disconnecting means (live working parts) shall be a minimum of 24 inches above finished grade.
- 5.06 All Multi-Compartment enclosures shall be constructed such that line and load compartments are separated by a strong, stable barrier. The load wiring shall not inhibit entrance to the line compartment. Stainless Steel latch/hasp (Section 7.02, page 10) shall apply to utility line compartments.
- 5.07 The post type meter sockets shall be constructed such that it shall have a permanent, embedded, ground level mark, to provide a minimum three (3) foot burial. The last foot can be a stabilizer foot and must be included with the enclosure so that it is one assembly.
- 5.08 Protection. The enclosure must be designed to:
1. Protect personnel against accidental contact with the electrical devices. All exposed busswork must be protected.
 2. Guard against unauthorized use of electric service and such that it cannot be opened without either breaking the seal or visibly damaging the enclosure.
 3. Assure that after installation is completed and sealed, no opening shall be left through which wires or other foreign materials can be readily inserted into the enclosure.
 4. Assure that after installation is completed and sealed, no exposed screw heads, that if removed, could provide an opening such that wires or other foreign materials can be readily inserted into the enclosure. This includes the hub-opening cover plate.

5.09 Enclosure Covers. All single-position enclosures shall have ringless enclosure covers. Ringless enclosure covers shall be constructed such that under normal installation and removal of the cover, there shall be no interruption of service and no contact with any energized part. The utility line compartment must have a separate one-piece cover and the cover shall comply with Section 7.02, page 10, re: Stainless Steel latch/hasp and hardware. Ring-type covers are only permitted on multi-socket or ganged enclosures.

5.09.01 For multi-socket assemblies, each meter socket position shall have an individual cover capable of being removed without disturbing the other socket positions.

5.09.02 All enclosure covers weighing more than 12 lbs. must have a handle(s) on the front of the cover to assist removal and installation of the cover.

5.10 Mounting Bosses. Socket enclosures shall have a minimum of four mounting bosses located as close as practical to the enclosure corners. Where more than four are used, the remaining bosses will be located so as to clear any knockouts. Mounting bosses shall have centered knockouts provided for internal screw or bolt mounting to insure rainproof integrity. Mounting bosses shall provide a minimum of 0.125 inch of air space between the back of the sockets and the surface on which they may be mounted.

5.10.01 Multi-socket assemblies shall be provided with an internal means for mounting, unless other external mounting means sufficient to support the device are provided. Wall mounted socket assemblies shall have mounting bosses on all mounting surfaces.

5.11 Spacing. All sockets shall have spacing minimums in accordance with ANSI/UL 414.

5.11.01 Wire Spacing: Minimum wiring space in the meter socket portion of the enclosure shall be in accordance with ANSI/UL 414 or ANSI/UL 67 (table 16.3), whichever is greater.

5.12 No ground, neutral or bonding provision or connector should be above the line side terminals on the meter socket.

6.00 KNOCKOUTS AND HUB OPENING

- 6.01 Concentric conduit knockouts shall be provided. They shall be located as follows: one (1) on each side panel and one (1) in the back panel of the enclosure and shall be as low as practicable. There shall be a minimum of one (1) bottom knockout for OH only service, and a minimum of two (2) bottom knockouts for UG or OH/UG service located on the right and left side of the bottom panel, and be located as close to the back panel as practicable. No part of the knockouts shall be above the load terminals. Knockouts shall be so constructed that any size knockout may be removed without disturbing the next larger size knockout.

All concentric knockouts shall be sized according to Table 1.

TABLE 1		
SERVICE AMP	1 Phase	3 Phase
100 Amp 200 Amp 400 Amp 600 Amp (K- Base)	Up to 1-1/2" Conduit Up to 2-1/2" Conduit Up to 4" Conduit Up to 4" Conduit	N/A Up to 2-1/2" Conduit Up to 4" Conduit Up to 4" Conduit

- 6.01.01 For single position sockets and line termination chambers for multi-socket enclosures, there shall be one (1) additional 1/2" conduit knockout and one (1) additional 1/4" knockout located on the bottom panel of utility-side as near to the back panel as practicable.
- 6.02 Where conduit hubs are required, they shall be per ANSI C12.7, Fig. 8 and as close to the back edge as possible. Where interchangeable hubs are used, they shall be fastened with four mounting screws to make a rainproof fit. Dimensions of hubs shall be sized to accommodate the largest size conduit as specified in Table 1, Sec. 6.01.
- 6.03 For all enclosures that provide for Overhead and Underground feeds, the top cover plate must be secured from the inside of the enclosure. See Section 5.08.

7.00 SEALING

- 7.01 Each socket shall be constructed such that it cannot be opened or have its bypass operated without first having its seal broken.
- 7.02 One (1) latch and hasp with the provision to accept a seal, will be sufficient to fasten the cover at the bottom of the enclosure as close to center as practical, provided the cover cannot be removed/opened when sealed and the meter is held firmly in place. There shall be no exposed rivets on hasp when cover is installed. This latch/hasp assembly including mounting hardware must be made of **high strength stainless steel**. The stainless steel latch shall be provided with two holes, one a minimum of 1/8" (for sealing ring) and one a minimum of 5/16" (for padlock provision). Other methods for sealing must be approved.
- 7.03 For those enclosures having separate line compartments, provisions shall be made for sealing these compartments (refer to section 7.02).
- 7.04 Manufacturers shall provide an approved captive screw sealing ring within shipping container with all ring type meter sockets.
See Approved Metering Equipment List

8.00 SOCKET JAWS

- 8.01 Single-phase sockets can be equipped with four (4) or (5) socket jaws Sockets equipped with (5) socket jaws are designed for use on Wye connected network applications.
See Section 9.03
- 8.01.01 The fifth jaw shall be located in the 9 o'clock position for all non-lever bypassed sockets with provision for field installation in the 6 o'clock position. The fifth jaw must be factory installed and secured in place such that it will not pull free when the meter is removed.
See Section 10.02
- 8.02 Three-phase, four-wire sockets shall be equipped with seven (7) socket jaws.
- 8.03 Block assemblies shall be replaceable from the front, within each individual position without disturbing other socket positions.
- 8.04 Current carrying socket jaws shall be reinforced and have meter blade guides. As an alternate, the meter blade guides can be omitted if the socket is constructed to center the meter as it is installed.

- 8.05 Socket jaws shall be tinplated; capable of carrying **full rated** (continuous) current and withstand the mechanical and heat rise requirements of ANSI/UL 414.
- 8.06 Ring type sockets shall have the line side socket jaws protected with a plastic cover.
- 8.07 320amp sockets and above shall not have an anti-insertion clip permanently installed

9.00 TERMINAL CONNECTORS

- 9.01 Terminal connectors shall be suitable for use with aluminum as well as copper conductors.
- 9.02 The terminal screws shall be 5/16", 7/16" or 1/2" (across flats) hex head and **non-slotted** or Allen set screw, no less than 5/16" across flats of socket. Nut for studs shall be 9/16" or 3/4" across flats. The nut assembly shall include captive Belleville washer with flat washer.
- 9.01 On (4) jaw sockets, neutral terminals shall be provided (**in the meter section of the enclosure**). Neutral test point shall be provided in the meter block, accessible from the front, without removing **Ring-type** meter covers. Ground terminals shall also be provided in the line compartment and shall be securely attached to the neutral buss.

10.00 MANUAL LEVER BYPASS

- 10.01 All self-contained three-phase sockets shall be constructed with a manual lever bypass.
- 10.02 Self-Contained single-phase meter sockets for use in commercial applications shall also be constructed with a manual lever bypass. Only five (5) terminal bypass blocks shall be provided with the fifth (5) terminal installed.
- 10.03 All self-contained 320/400 amp sockets shall be constructed with a manual lever bypass



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- 10.04 The bypass shall have manual jaw tension control, with jaw tension relaxed when in bypass position. It shall be a quick operating pressure release design with a manually operated lever. Meters must be easily installed and removed when in the bypass position.
- 10.05 Meter sockets equipped with a bypass device must have flash barriers between phases and a suitable, transparent, track resistant, safety shield to provide protection from flashes or shocks.
- 10.06 The bypass handle shall be mounted on the right hand side of the enclosure and shall not contact energized parts when operated. The handle shall have a plastic "incidental contact" sleeve installed. When in the bypass position, it shall prevent the cover from being installed.
- 10.07 The bypass device shall be capable of carrying 100% of the continuous rated amperage in the socket in which it is used.
- 10.08 Grounded potential return jumper wires shall be captured by the safety shield or by other means in such a way as to prevent accidental contact with energized or moving parts of the socket.
- 10.09 No horn, slide, or other bypass of any description is allowed. There shall be no unapproved bypass parts shipped or included in any meter enclosures.

11.00 MARKINGS

- 11.01 All sockets shall have identifying markings in accordance with ANSI/UL 414, unless otherwise specified in this specification.
- 11.01.01 The phrase "MEG Approved" and identifying designation (i.e., model number, catalog number, etc.) shall be visible from both inside (the utility-side of a meter/breaker combination) and outside the enclosure and shall be the same as used on the Meter Equipment Group's Approved Metering Enclosure List.
- 11.02 All sockets submitted for approval shall be listed with the Underwriters Laboratories Inc. (UL) Product Listing Service.



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11.02.01 All approved meter sockets shall have a UL Authorized Listing Mark permanently placed inside the enclosure as near to the upper right corner as practicable.

11.02.02 The UL Listing Mark shall include the following information:

- UL's name and/or symbol
- The word "Listed"
- A control number

11.03 A conspicuous label with an arrow containing the below message must be installed on the back panel of all three-phase, four-wire meter sockets. The arrow must point to the right hand line terminal and clearly identify the terminal to which the 208 volt power leg is to be connected when the socket is used for three-phase, four-wire, 120/240 volt delta service. This label should be approximately 2" wide and 4" long:

3Ø, 4W, 120/240V

208V Power Leg To This Position

11.04 The date that a meter socket is manufactured must be displayed on a label or can be applied to an existing label within the line compartment.

11.05 Grounding Label: Each individual socket shall have a label placed in the line compartment stating: "Grounding wire shall be securely fastened to the ground terminal lug in the line compartment with no breaks in the wire".

12.00 DEVIATIONS FROM THIS SPECIFICATION

12.01 Should the manufacturer wish to make exceptions to this specification, or make any changes to an approved meter enclosure, he shall submit to the Meter Equipment Group, a written request and assembly drawing, with parts list, detailing the exception or change. Written approval must be obtained.

12.02 Failure to comply with this specification unless otherwise approved in writing by the MEG may result in the immediate removal of the meter socket(s) in question from the approved list.



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13.0 METER SOCKET EVALUATION/APPROVAL

13.01 Manufacturers shall submit the following:

1. A written statement indicating desire to have meter sockets evaluated for approval by the MEG. Statement shall include:
 - (a) Socket(s) by catalog number to be considered.
 - (b) that the most current MEG Customer Owned Meter Enclosures for Self-Contained Wathour Meters Specifications have been reviewed and the equipment meets these specifications.
2. Three (3) complete assembly drawings with parts list

13.02 After proper documentation, samples shall be submitted with the understanding that they may become the property of the Meter Equipment Group.

SUBMIT REQUESTS AND MAKE ARRANGEMENTS FOR PRODUCT REVIEW WITH ONE OF THE FOLLOWING:

Marc Duquella
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