

Customer Metering Guide

Duke Energy Meter Trough Installations Guidelines:

1. If Duke Energy is connecting service at the trough:
 - Customer conductors must extend the length of the trough. Duke will make one set of connections in the trough to the customer conductors.
 - Minimum trough size is 12" x 12" where customer conductors are < 500 MCM. If customer conductors are 500 MCM or larger, minimum trough size is 18" x 18".
2. Minimum space 3 ft wide, 4 ft deep, and 8 ft high must be provided and maintained around meter equipment to allow for safe and ready access for service and operation. Clear space for safe access to and egress from the working space must be maintained.
3. Metered conductors are not permitted in any raceway, pullbox, or cabinet containing unmetered conductors. Example: Conductors that have exited from a trough and passed through CTs in a CT cabinet cannot re-enter the trough.

See figures, 2 & 3 on pages 5 & 6 for minimum and maximum mounting height.

Duke Energy Customer Owned CT Cabinet Installation Guidelines:

1. Customer installs CT Cabinet.
2. CT Cabinets must be installed in the correct orientation for which they are designed. Cabinets mounted incorrectly can allow water to enter.
3. Space must be planned for the installation of the meter socket enclosure. Center of meter must be between 4 and 6 feet above final grade. Duke Energy technician will install the meter socket.
4. There must be an approved ground connection from an acceptable grounding electrode.
5. Customer will cut hole in the CT cabinet for Duke Energy's riser for underground service.
6. Customer load side conductors should enter the cabinet from one side only.
7. See Duke Energy Customer Owned CT Cabinets General Specifications on page 4 for cabinet construction requirements.

See figure 1 page 3 for minimum and maximum mounting height and wire size.

Customer Metering Guide

Duke Energy Customer Owned Meter Sockets General Specifications

1.0 All Sockets

- 1.1 All meter sockets shall be designed, manufactured and tested in accordance with the specifications given in the latest revision of:
 - 1.1.1 The National Electrical Code and,
 - 1.1.2 The American National Standard Requirements for Watthour Meter Sockets, ANSI C12.7 and,
 - 1.1.3 The Underwriters Laboratories Inc, Standard for Safety - Meter Sockets, UL414.
- 1.2 A national recognized testing lab label shall be attached to the enclosure.
- 1.3 All sockets shall be the Ringless Type.
- 1.4 All sockets must be approved by Duke Energy Company.
- 1.5 All sockets shall be equipped with a closing latch which will accept a ribbon type seal and padlock.

2.0 Enclosure

- 2.1 The enclosure shall be constructed using a minimum of 16 gauge (.05 in.) galvanized steel with a zinc coating or 14 gauge (.063 in.) sheet aluminum.
- 2.2 The socket shall not require any additional gaskets to complete rain tightness.

3.0 Knockouts

- 3.1 Knockouts shall be industry standard.

4.0 Electrical Ratings

- 4.1 The ampere and voltage rating shall be identified in a convenient place on each socket so that it can be seen and to be considered permanent.

5.0 Meter Block

- 5.1 If a bridge or support is mounted under the meter block, it shall be riveted or bolted (not welded) to the enclosure.

6.0 Wiring Terminals

- 6.1 The wiring terminals shall be the lay-in type and they must be suitable for either copper or aluminum conductors.
- 6.2 Labels shall be placed inside the enclosures identifying the range of conductors the terminals will accept.
- 6.3 There shall be two neutral terminals mounted on a common bus and they shall be connected to the grounding terminal. (Exception - see GANG Sockets).
- 6.4 All line, load and neutral terminals shall be equipped with Hex Head Bolts.

7.0 Jaws

- 7.1 Each jaw must be designed and constructed such that repeated insertion of a meter will not spread the jaws or significantly reduce their tension on the meter tabs.
- 7.2 All meter jaws must be factory installed.

8.0 Gang Sockets-In addition to the General Specifications, all GANG Sockets shall be equipped as follows:

- 8.1 The line conductors shall enter at the center section of the enclosure.
- 8.2 All line buses shall be covered with an insulating material as completely as practical from the line terminals to the connectors made at each meter position. The neutral bus does not need to be covered.

9.0 Meter Centers-These specifications are for 125 ampere and 200 ampere, 120/240 voltage single phase applications and up to 400 ampere, 120/208 voltage three phase applications. In addition to the General Specifications, all METER CENTER sockets shall be limited to the following requirements:

- 9.1 The center of the top meter socket in the enclosure shall be mounted no higher than 72 inches above ground or floor level.
- 9.2 The center of the bottom meter socket in the enclosure shall be mounted no lower than 30 inches above ground or floor level.
- 9.3 A bypass lever for each socket is required on three phase METER CENTERS.
- 9.4 An anti-inversion clip on the upper right jaw is required on three phase meter centers when the load exceeds 200 amperes.

10.0 Working Space

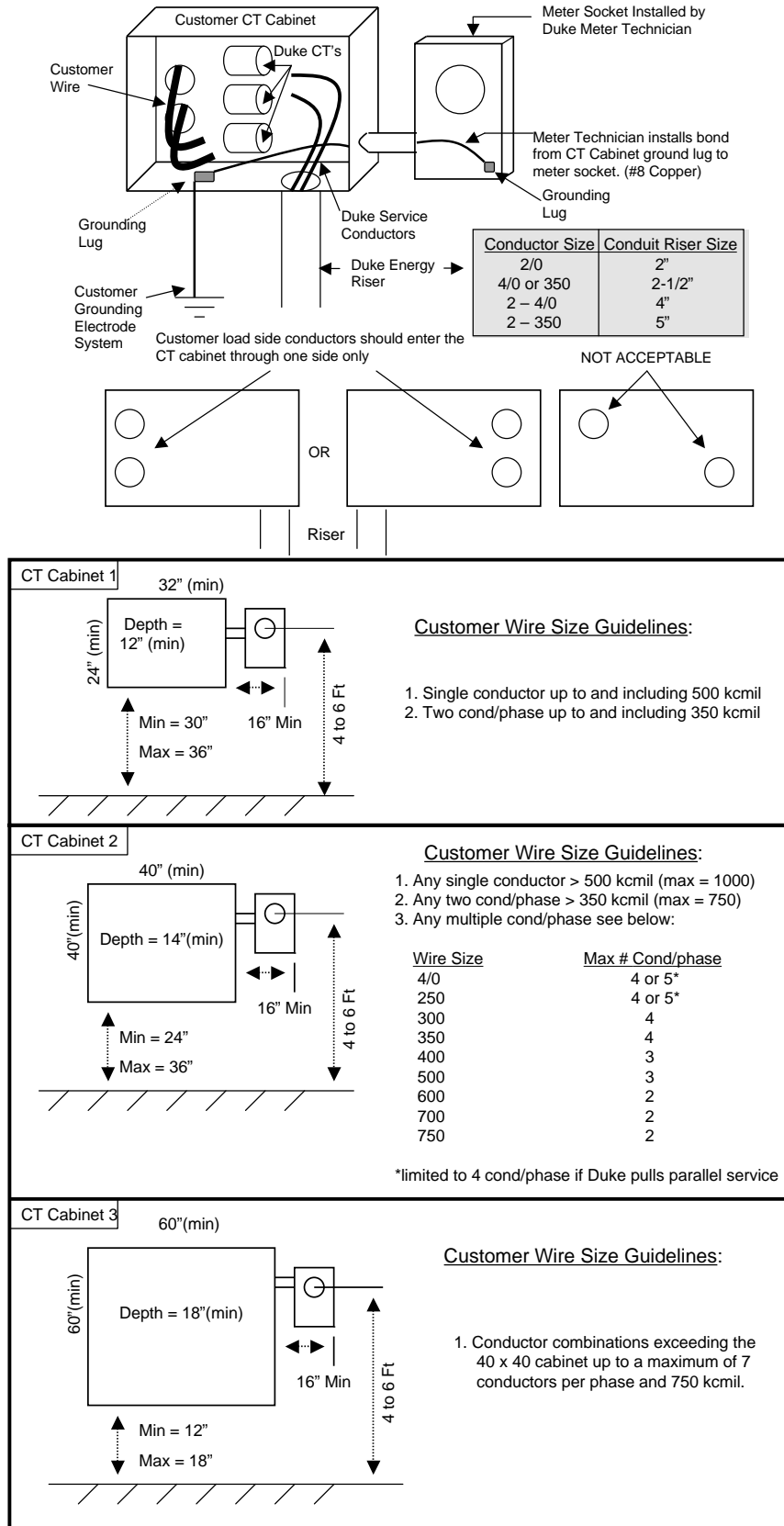
- 10.1 A clear space at least 3 ft wide, 4 ft deep, and 8 ft high must be provided and always be available in front of every meter for reading, inspecting, testing, and maintenance operations. Clear space for safe access to and egress from the working space must be maintained.

Customer Metering Guide

DUKE ENERGY CT CUSTOMER OWNED CABINET

Installation Guidelines

Figure 1



Customer Metering Guide

Duke Energy Customer Owned CT Cabinet and Transocket General Specifications

1.0 All CT Cabinets

- 1.1 All CT cabinets shall be designed, manufactured and tested in accordance with the specifications given in the latest revision of:
 - 1.1.1 The National Electric Code.
 - 1.1.2 The Underwriters Laboratories, Inc., Standard for Safety UL-50.
- 1.2 All CT cabinets shall have a 1/2" knockout and a 5/16" knockout at the bottom panel.
- 1.3 All CT cabinets shall have a backboard made of 3/4" thick plywood affixed to the inside of the back CT cabinet wall with stainless steel screws or bolts. The backboard is for mounting instrument transformers. Other means can be provided for mounting CTs if determined by Duke Energy to be safe and offers the equivalent flexibility.
- 1.4 There shall be a grounding lug attached to the inside of the CT cabinet capable of accepting #14 to #2 copper or aluminum conductors.
- 1.5 All CT cabinets shall have a latch assembly to accept a padlock type seal and can be accommodated according to ANSI C-12.7.

2.0 CT Cabinet 1:

- 2.1 Description: Rectangular CT cabinet 32" wide x 24" high x 12" deep minimum dimensions with lift off cover and mounting provisions for instrument transformers as specified in section 1.3.
- 2.2 The enclosure shall be constructed using a minimum of .050 in. galvanized sheet steel bonderized with zinc coating or .080 in. sheet aluminum.
- 2.3 The front cover shall be "lift off" type. The interior shall have door stops to prevent inward deflection of the front cover.
- 2.4 The enclosure shall have two (2) sealing facilities at the bottom of the cover.

3.0 CT Cabinet 2:

- 3.1 Description: Square CT cabinet 40" wide x 40" high x 14" deep minimum dimension with double hinged doors and mounting provisions for instrument transformers as specified in section 1.3.
- 3.2 The enclosure shall be constructed using a minimum of .063 in. galvanized sheet steel bonderized with zinc coating or .090 in. sheet aluminum.
- 3.3 The enclosure shall have double doors with a minimum of two hinges per door. The double doors shall have a three point latch operated by a single handle which can be secured by a padlock.
- 3.4 There shall be a mechanism provided for holding the doors open greater than 90 degrees from the closed position.

4.0 CT Cabinet 3:

- 4.1 Description: Square CT cabinet 60" wide x 60" high x 18" deep minimum dimensions with double hinged doors and mounting provisions for instrument transformers as specified in section 1.3.
- 4.2 The enclosures shall be constructed using a minimum of .063 in. galvanized sheet steel bonderized with a zinc coating or .090 in. sheet aluminum.
- 4.3 The enclosure shall have double doors with a minimum of two hinges per door. The double doors shall have a three point latch operated by a single handle which can be secured by a padlock.
- 4.4 There shall be a mechanism provided for holding the doors open greater than 90 degrees from the closed position.

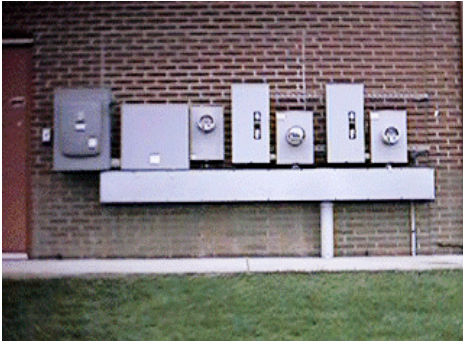
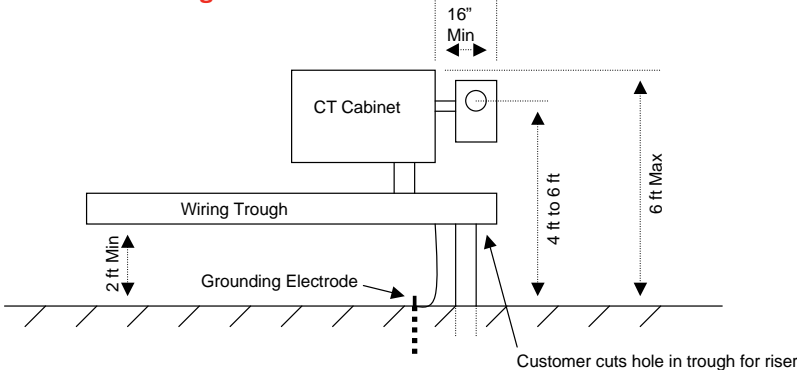
5.0 Transocket Specifications:

- 5.1 All transockets will be 13 terminal sockets for 4 wire wye services and must be pre-approved for use on the Duke Energy system. Transockets approved for use are: Meter Devices Model: 683U3690-T092.
- 5.2 All transockets shall meet the requirements given in the Duke Energy Customer Owned Meter Socket General Specifications, Sections 1.0 through 7.0. In addition, all transockets shall meet the requirements for Underwriters Laboratories, Inc., Standard for Safety UL-50.
- 5.3 All transockets shall have a backboard made of 3/4" thick plywood affixed to the inside of the back wall with stainless steel screws or bolts. The backboard is for mounting instrument transformers. Other means can be provided for mounting CTs if determined by Duke Energy to be safe and offers the equivalent flexibility.
- 5.4 There shall be a grounding lug attached to the inside of the transocket capable of accepting #14 to #2 copper or aluminum conductors.
- 5.5 All transockets shall have a latch assembly to accept a padlock type seal and can be accommodated according to ANSI C-12.7.
- 5.6 All transockets dimensions must be minimum of 25" wide x 33" high x 12" deep.

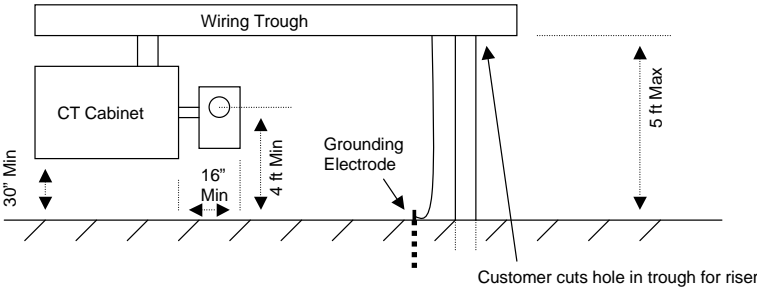
Customer Metering Guide

Duke Energy Meter Trough Installation Guidelines Figure 2

1. Preferred Meter Trough Installation



2. Optional Meter Trough Installation



Customer Metering Guide

Duke Energy Meter Trough

Installation Guidelines

Figure 3

3. Optional Trough Installations with Transocket:

- Customer installs transocket. Transocket must be pre-approved by Duke Energy. See Duke Energy CT Cabinet-Transocket Specifications.
- Duke Energy installs CTs and meter.

