

8 – Meter Requirements

The following are general requirements only, we encourage customers to consult with Engineering or the Meter Shop before you purchase and install your meter equipment.

General Provisions

Grounds: Bond all meter sockets and CT enclosures to the customer ground in accordance with the National Electrical Code (NEC).

Meter Location: Check with Engineering before equipment is installed. Meters shall be:

- Front (roadside) or side exterior wall of the building within 6' of the front of the building.
- Accessible to FPUD personnel on a 24-hour basis.
- Height to center of meter shall be at or between 4'6" and 5'6" above construction and final grade.
- In developments with existing facilities along a rear lot line, verify the meter location with Engineering.
- Other locations will be at the discretion of FPUD. Permission needs to be in writing.

Non-Residential Underground Services: If underground conductor is customer-owned, customer or customer representative makes up service conductor connections in the CT can. FPUD will mount CT's and make meter connections. FPUD makes the connections to the transformer spades.

Single Family Residential Underground Services: The underground service conductor is owned and installed by FPUD. For installations above 320 A, the installation will be the same as a commercial installation, with FPUD making the service connections at the transformer spades only, but billed on a residential rate. The CT wiring will also be by FPUD.

Self-Contained Metering

Residential – Customer provides the meter base and conduit to the line side of meter base. Conductor on the load side of the meter base into the customer system is owned and maintained by the customer.

- Overhead Entrances – Customer provides and owns the service wire from the weatherhead to the line side of the meter base. FPUD provides service conductor to the weatherhead “knuckle” connections. The “knuckle connection is the end of the utility owned service wire and the utility also owns the meter within the meter socket.

- Underground Entrances – FPUD owns and installs service conductor up to the terminal connections in top side of the meter socket. For above a 320A service, the customer owns and installs the service conductor and a CT can. FPUD only terminates the service wire at the transformer spades. FPUD will swap a CT meterbase with a pre-wired meterbase. FPUD will also provide and install CT metering wiring between the CT can and the CT meter socket. Check with FPUD Engineer for details.
- Meter sockets (meterbase) must be U.L. approved and meet the requirements of the National Electrical Code (NEC).
- Since FPUD requires ring-type meterbases, horn type bypasses and lever-type bypasses are not allowed, since they must be used within a ringless meterbase. Safety socket meterbases, with a bypass are required for all self-contained (non-CT) commercial installations. Only Terminal Block (TB) or Manual Circuit Closing (MCC) type bypasses are allowed. Bypasses are allowed on residential services, but not required.
- Sealing provisions are required on all metering service equipment.

Residential Single-Phase installations, 120/240 Volt, 3-wire:

- Effective July 1, 2020, the Department of Labor & Industries require an integrated disconnect (breaker) with the meterbase socket for residential applications. Self-contained meter sockets shall be rated at 200 or 320 Amperes continuous and shall be ring type. Integrated meter sockets shall be UL labeled. Examples of meter sockets meeting FPUD requirements include:

Class 200 Ampere Meter Sockets:

Are used for homes with one panelboard.

Eaton CMBEB200BTS (200A, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface Mount, Bottom or Top Feed, NEMA 3R. Main Disconnect: 200A, 2-Pole, 22 kAIC, No Bypass). CMBEB200BTF (same, with recessed flush mount).

Eaton MBEB200BTS (200A, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface Mount, Bottom or Top Feed, NEMA 3R. Main Disconnect: 200A, 2-Pole, 10 kAIC, No Bypass). MBEB200BTF (same, with recessed flush mount).

Or other manufacturers with identical features and a UL listing.

Class 320 Ampere Meter Sockets:

Shall be used for residential services only and normally serve two panelboards. The heating load limit is 40 kW connected. Check with Engineering and the State Electrical Inspector to assure compatibility with available fault current. A minimum amperes interruption (AIC) rating for the main breaker of 10kA is required, but 22 kA is recommended.

Class 320 Ampere meter sockets shall be rated 320 Amp continuous (400A with a continuous rating of 80%), with meter mains and ring type. Meter socket design may incorporate a bypass link. Compression or setscrew type connectors are acceptable. An example of a meter socket meeting FPUD requirements includes:

Eaton	U4042MC (400A Meter Socket for 320A Meter, 1-Phase, 4 Jaw, Ring-Type, 3-Wire, 120/240V, Surface mount, Bottom Feed, NEMA 3R. Main Disconnect: (2) 200 Amp, 2-Pole, 10 kAIC Breakers, No Bypass. Use U4042MC with Overhead Kit CK8326 for overhead entry. Flush Trim Kit FK2438) Use U404MC for 22 kAIC Breakers.
-------	--

Or other manufacturers with identical features and a UL listing.

Residential services above 320A or 3-phase services shall coordinate with Franklin PUD engineering department for written approval of the meterbase before purchasing.

Commercial Single-Phase installations, 120/240 Volt, 3-wire:

Self-contained meter sockets shall be rated 200 Amperes continuous for commercial installations and shall be ring type and are not required to have an integrated disconnect. **Meterbases with lever actuated jaw clamping or lever bypasses are not acceptable. A link bypass is required.** Meter sockets shall be UL labeled. Examples of meter sockets meeting FPUD requirements include:

The meterbase below does not include a main disconnect breaker:

Eaton	U264 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 120/240V, Surface Mount, OH/UG feed, MCC Bypass) Add "F" for Flush Mount.
-------	--

Or other manufacturers with identical features and a UL listing.

The meterbases below include the main disconnect breaker:

Eaton	U224 MTBH MS45 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 120/240V or 120/208V (w/ 5 th jaw kit), Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)
Eaton	U224 MTBH MS15 (200A, 1-phase, 4 Jaw, Ring Type, 3-wire, 240/480V, Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)

Or other manufacturers with identical features and a UL listing.

For multiple meter applications such as apartments, the customer shall provide material specifications and catalog cut sheets **prior to ordering equipment**. All the meter bases must be clearly marked according to "Meter base Identification Drawing 263.1." In addition, all apartment units shall be permanently labeled prior to energization.

Should meter base labeling be incorrect, FPUD personnel will not energize the service until corrections are made. If additional trips are required due to incorrect labeling, the customer will be required to pay actual cost for the additional trip(s) prior to the service being energized.

- Commercial loads requiring more than a 200A service shall have a CT installation, 320A self-contained meters are not available for commercial installations, in order to eliminate arc flash issues.

Commercial 3-Phase Installations:

New installations shall have a voltage of either 208Y/120V or 480Y/277V.

- 240/120 Volt 3-phase delta - Self-contained meters are used up to 160 Amps NEC computed load, (200 Amp panel loaded to 80%), or 60 kW or 60 HP. **Terminate the wild leg on the far-right terminal, C-phase.** Call Engineering if you have any questions.
- 480/240 Volt 3-phase delta – **Terminate the wild leg on the far-right terminal, C-phase**
- 480Y/277 Volt wye or 480/240 Volt delta – Self-contained 200 Amp meters are used through 125 kW or 125 HP.
- 208Y/120 Volt 3-phase wye – self-contained meters are used up to 160 Amp NEC computed load, (200 Amp panel loaded to 80%) or 57.5 KW 50 HP.

Self-contained 3-phase meter sockets shall be rated 200 Amperes. **Meter bases with lever actuated jaw clamping or lever bypasses are not acceptable.** Manual link bypass type meter bases are acceptable. FPUD does not install self-contained 400 Amp 3-phase meters due to the arc flash hazard potential. Examples of meter sockets that meet FPUD requirements include:

The meterbase below does not include a main disconnect breaker:

Eaton	U267MS20 (200A, 3-Phase, 7 Jaw, Ring Type, 4-Wire, 600V, Surface Mount, Bottom or Top Feed, MCC Bypass) Add "F" for Flush Mount.
-------	--

Or other manufacturers with identical features and a UL listing.

The meterbases below include a main disconnect breaker:

Eaton	U227 MTBH MS45 (200A, 3-phase, 7 Jaw, Ring Type, 4-wire, 208Y/120V or 240/120V (w/ 5 th jaw kit), Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)
-------	---

Eaton U227 MTBH MS15 (200A, 3-phase, 7 Jaw, Ring Type, 4-wire, 480Y/277V, Surface Mount, OH/UG feed, Meter Main, 22 kAIC, TB Bypass)

Or other manufacturers with identical features and a UL listing.

CURRENT TRANSFORMER (CT) METERING

CT Meter Socket:

- 1-phase meter sockets are to be six terminal with space in socket for a test switch. The test switch is provided and installed by FPUD.
- 3-phase meter sockets are to be thirteen-terminal with space in the socket for a test switch. The test switch is provided and installed by FPUD.
- **Approved Meter Base Sockets for all CT installations must be brought to the FPUD meter shop and traded for a pre-wired unit, which will include the test switch.**

The following meter sockets are approved for use.

- 1-phase: Six-terminal with provision for test switches

Cooper B-Line	12146
Milbank	UC-3436XL (Ring Type)

- 3-phase: Thirteen-terminal single socket with provision for test switches

Cooper B-Line	121413
Milbank	UC-3433-XL (Ring Type)

- All overhead services with CT metering are required to install a CT can or compartment. FPUD will not install CT's at the service mast.
- **If an existing service with CT's at the service mast is upgraded or altered the customer will be required to install a CT can.**

Current Transformer (CT Can) Mounting Bases:

A CT mounting base is required to meet the following continuous and fault withstand ratings.

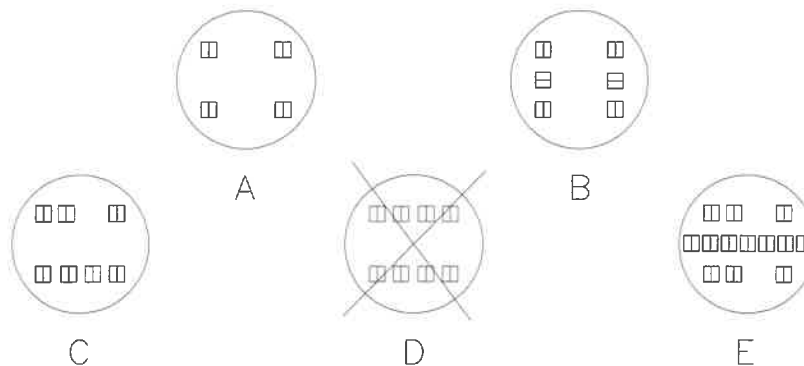
<u>Type</u>	<u>Continuous Rating</u>	<u>Withstand Rating</u>	<u>Approved Mounting bases</u>
1-phase	400 A	50,000 A	Cooper B-line 6019 - HA Milbank A4-k4797
1-phase	800 A	50,000 A	Cooper B-line 6019 - HE Milbank A-k4797
3-phase	400 A	50,000 A	Cooper B-line 6067 - HA Milbank B4-K4798
3-phase	800 A	50,000 A	Cooper B-Line 6067 - HE Milbank B -L4798

Conduit

- 1-phase – ¾" EMT or Rigid
- 3-phase – 1" EMT or Rigid
- Conduit runs must be less than 25 feet and contain no condulets
- FPUD installs the CT metering wires

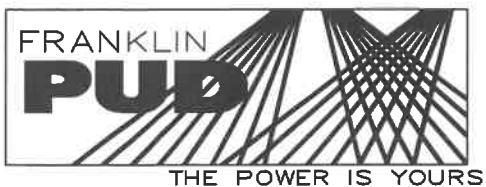
SINGLE PHASE							
		SELF-CONTAINED			WITH CURRENT TRANSFORMERS		
VOLTAGE	WIRES	AMP	NO. CLIPS	SOCKET	NO. C.T.	NO. CLIPS	SOCKET
120/240	3	200	4	A	-	-	-
RESIDENTIAL ONLY							
120/240	3	320	4	A	-	-	-
240/480	3	200	4	A	-	-	-
120/240	3	400	-	-	2	6	B
120/208	3	200	5	A	-	-	-

THREE PHASE							
		SELF-CONTAINED			WITH CURRENT TRANSFORMERS		
VOLTAGE	WIRES	MAX AMP	NO. CLIPS	SOCKET	NO. C.T.	NO. CLIPS	SOCKET
208Y/120	4	200	7	C	3	13	E
240/120	3 or 4	200	7	C	3	13	E
480/240	3 or 4	200	7	C	3	13	E
480Y/277	4	200	7	C	3	13	E



1. THE CUSTOMER PROVIDES AND INSTALLS ALL METER BASE.
2. THE PUD PROVIDES AND INSTALLS TEST SWITCHES.
3. TYPE B AND E METER BASES NEED TO BE BROUGHT TO THE PUD METER SHOP FOR TEST SWITCH INSTALLATION AND PRE-WIRING BEFORE CUSTOMER INSTALLS.

261.1.DWG



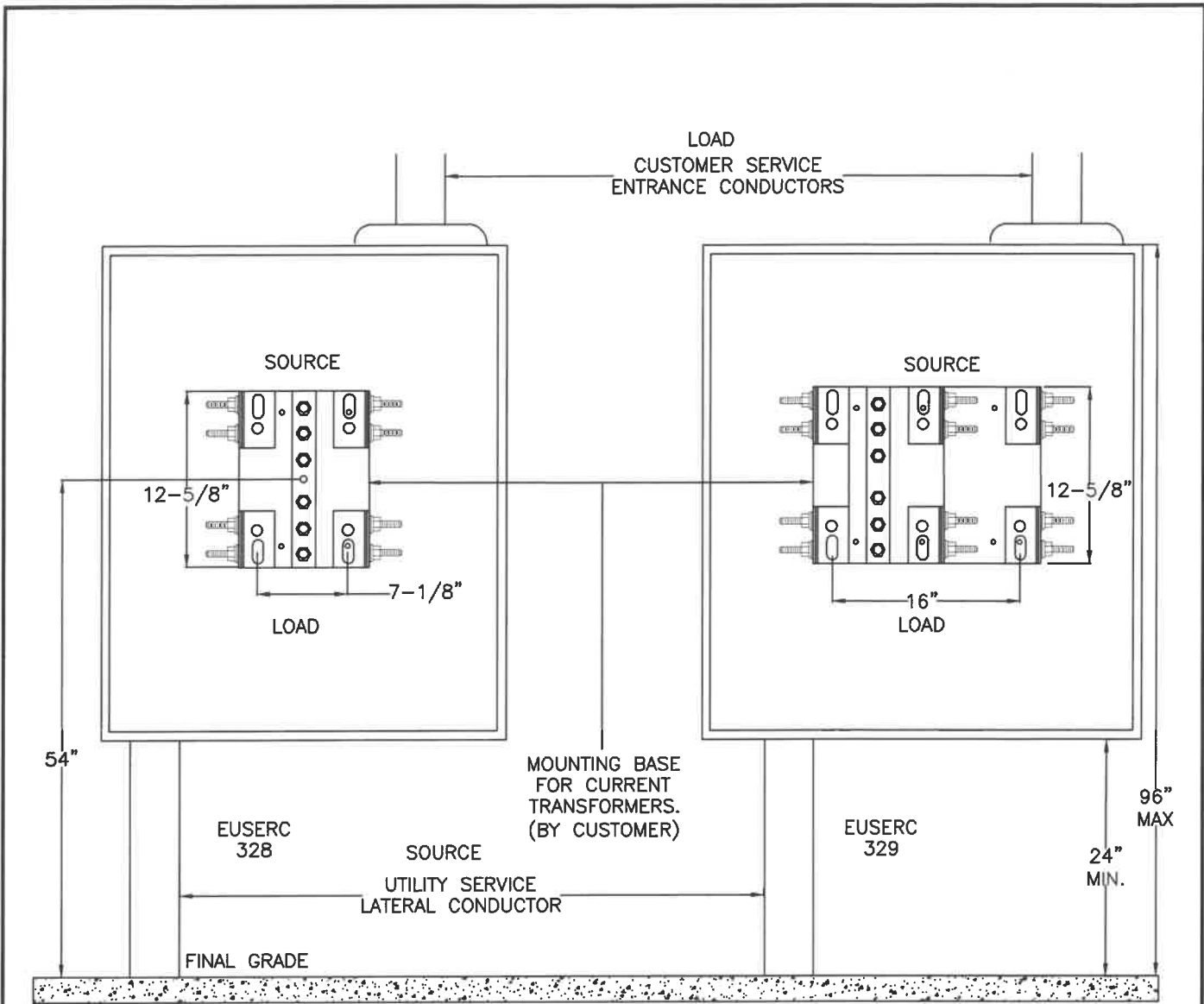
METER SOCKET CLIP ARRANGEMENT

DWN.
WR
APP. D. SAMS

DATE: 12/26/96
UPDATED: 11/22/2019

DWG. NO.

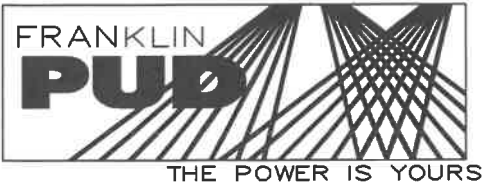
261.1



PHASE	AMPACITY	ENCLOSURE SIZE	MODEL NUMBER
1 ϕ	201-800	24x48x11 MINIMUM	MILBANK #CT244811-SC COOPER B-LINE #244811 RTCT
3 ϕ	201-800	30x48x11 MINIMUM	MILBANK #CT304811-HC COOPER B-LINE #304811 HRTCT

SWITCHBOARDS SHALL BE USED ON SERVICE 801 AMPERES AND ABOVE.

262.1.DWG



**CURRENT TRANSFORMER (C.T.)
ENCLOSURE REQUIREMENTS**

DWN. WR APP. D. SAMS	DATE: 12/11 UPDATED: 11/22/2019	DWG. NO. 262.1
----------------------------	------------------------------------	-----------------------

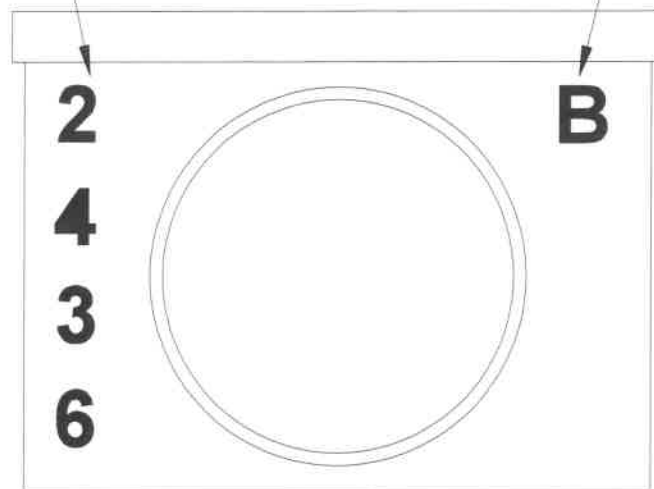
Current Transformer Enclosure (CT Can) Requirements

NOTES: (Consult FPUD regarding any exceptions to these requirements.)

- Consult FPUD for available fault current before purchasing mounting base.
- Cover needs to be NEMA 3 or NEMA 3R rated (i.e. rain tight).
- 30 x 48 x 11 CT **hinged** enclosure and mounting base for 3-phase.
- 24 x 48 x 11 CT enclosure and mounting base for 1-phase.
- FPUD will provide and install CT's.
- Customer provides and installs enclosure and mounting base.
- Maximum of two (2) load conductors per phase without prior FPUD approval.
- FPUD will provide and install source side connectors for residential services.
- **Customer will provide and install both source-side and load-side connectors for commercial and irrigation applications.** The source conductors attach to the top of the CT and the load conductors attach to the bottom of the CT. Six feet of tail is recommended in order to properly train the wire within the CT can.
- Check with FPUD for alternate conduit locations.
- Only conductors associated with metering or grounding are permitted in the current transformer enclosure. No connections may be made in any current transformer enclosure to supply any other meter.
- Consult with FPUD on CT compartment location. The meter base is to be located within 25 feet of CT compartment. No condulets or junctions are allowed in meter conductor conduit. Cumulative **bends over 270° are not acceptable.**
- When current transformers or other equipment are installed in a location where it may be struck by a motorized vehicle, the customer is to install and maintain FPUD approved barrier posts to protect equipment.

ADDRESS NUMBER

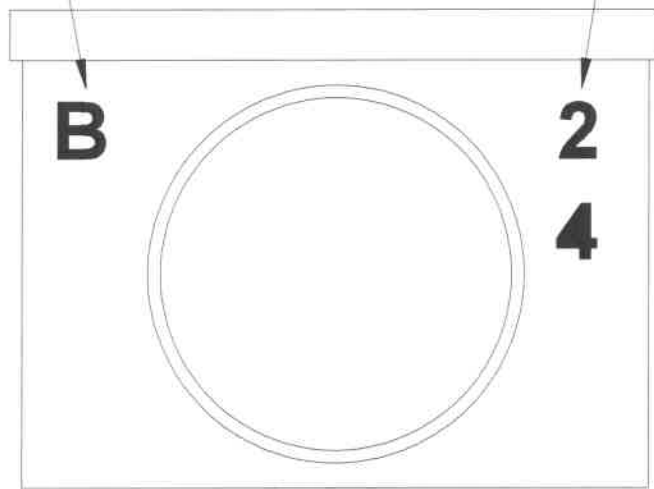
APT. OR UNIT LETTER



OR

BUILDING LETTER

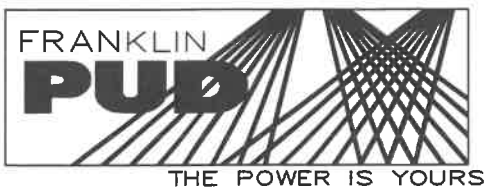
APT. OR UNIT NUMBER



ALL MULTIPLE METERBASE INSTALLATIONS NEED TO BE APPROPRIATELY LABELED PRIOR TO CONNECTION OF SERVICE. ACCEPTABLE MARKING METHODS ARE SHOWN ABOVE.

LETTERS AND NUMBERS ARE TO BE A 1" MINIMUM HEIGHT, SECURELY FASTENED TO THE METERBASE BY SCREWS, RIVETS OR WATERPROOF ADHESIVE.

263.1.DWG



METERBASE IDENTIFICATION

DWN.
WR
APP. D. SAMS

DATE: 1/13/97
UPDATED: 11/22/2019

DWG. NO.

263.1