Metering Guide

Revision Date: January 12, 2022

This document is the property of the City of Penticton Electric Utility, and may be updated from time to time. Please contact the Electric Utility for the latest edition, and to discuss your electric service requirements.

Intent of this Document

The intent of this document is to provide guidelines for most metering installations less than 750 volts within the City of Penticton Electric Utility's service area. It is intended for information only, and should any information contained within be contrary to requirements of the current Canadian Electric Code (and BC ammendments), Safety Standards Act or City of Penticton Electric Services Bylaw, then the Code, Act or Bylaw will prevail.

Refer to the current City of Penticton Electric Services Bylaw for a more in depth explanation of terms and service requirements.

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General Information

General Information

1.1 Types of Metering

The type of metering for any installation will depend on the class of service, the size and type of load and the applicable rate class (see the latest Fees & Charges Bylaw and the latest Electric Utility Services bylaw for a breakdown of these rate classes). All meters installed by the City of Penticton Electric Utility are sealed, maintained and tested according to Measurement Canada Standards. The City's preference is to meter on the secondary side, however for some large services where the City cannot provide the necessary equipment, the service may be Primary Metered.

1.1.1 Self-Contained Meters are used for all new services. All 3 phase meters are to be cold-metered i.e. there must be a load break disconnect on the line side for each meter.

1.1.2 Instrument Metering is used for most services that are greater than 200 amperes. They require additional instrument transformers and are to be cold-metered i.e. there must be a load break device on the line side for each meter. The exception to this is the approved 320 Amp self- contained meter socket (Microelectric BP320 series).

1.1.3 Primary Metering is currently available for services over 2000 kVA, contact the City of Penticton Electric Utility for service requirements, as the City reserves the right to limit these types of services.

1.1.4 Pad Mount Metering is available for 3 phase services over 200 amperes if the service is only for 1 customer. The City will supply & install all the metering requirements at the customer's cost.

1.1.5 AMR (automated meter reading) is the City's standard metering. It allows the City to remotely read meters in an accurate and rapid fashion. For customers that do not want an AMR meter installed, an opt-out option is available. See the latest Fees and Charges Bylaw for initial and monthly fees.

1.2 Standard Voltages

1.2.1 Single Phase 3-wire standard voltage is 120/240 Y.
1.2.2 Three Phase 4-wire standard voltages are 120/208 Y & 347/600 Y.

1.3 Utility Sign On

A billing account must be set up for every metered service prior to energizing the service. This can be done at the Utilities Department in City Hall.

1.4 Micro DR (micro distributed resource) Systems

Bi-directional metering is available for renewable interactive power supply installations eg. Solar PV, Fuel Cell, Micro-Hydro or Wind. A "Net Metering Interconnection Agreement" must be executed before connection to the City of Penticton Electric Utility will be allowed.

All systems must meet anti-islanding requirements and must be capable of isolating the net metering installation from the Penticton Electric Utility System.

Contact the City of Penticton Electric Utility before installing these systems to ensure that you are aware of all the City requirements and for approval by the City of Penticton Electric Utility Manager. Refer to the current Electric Utility Services bylaw for more information.

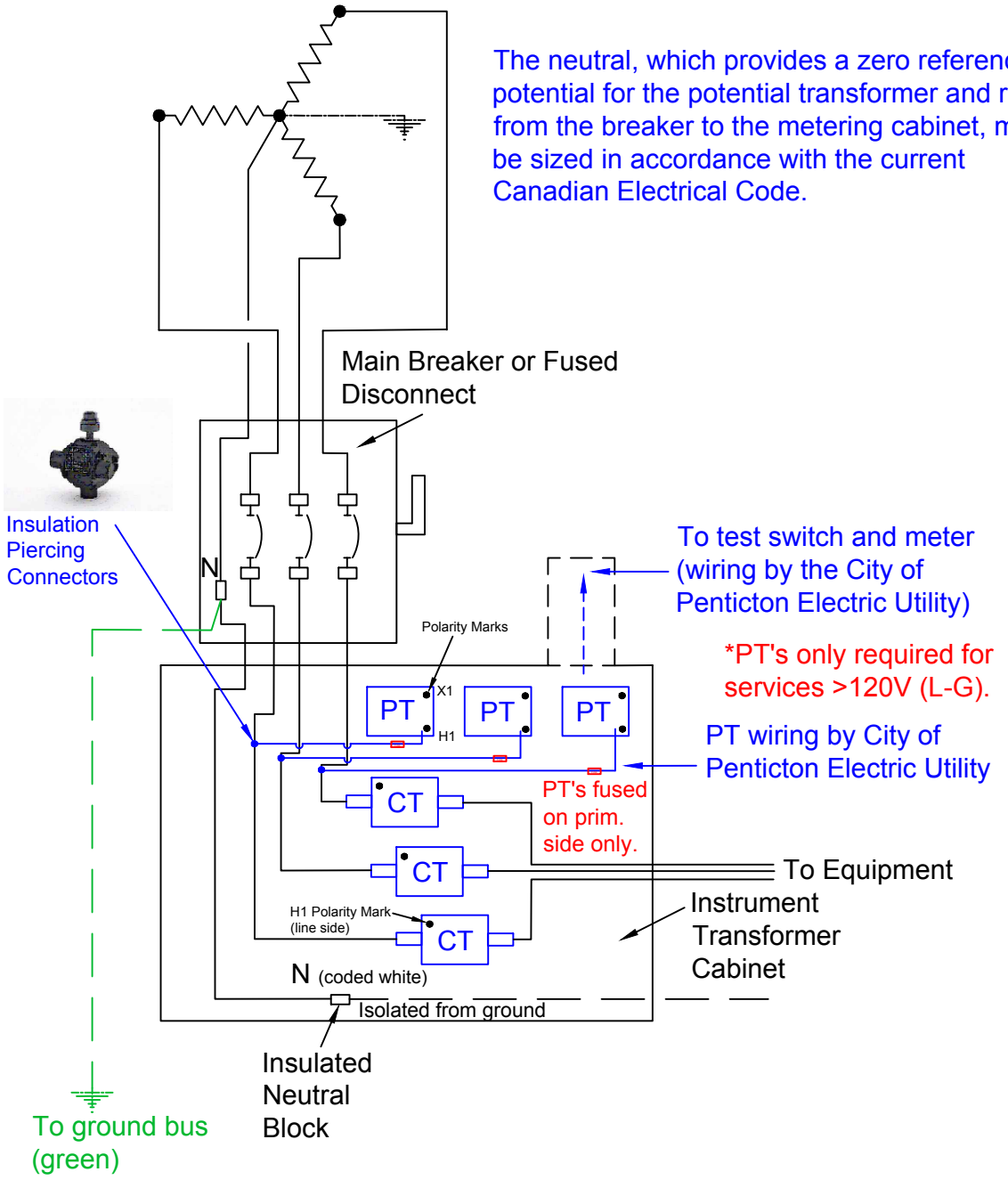
1.5 Illumination

When metering is installed inside, the metering location shall have adequate illumination as per Canadian Electrical Code (CEC) Rule 2-318.
Optimum Illumination
· 100 to 200 lux horizontal at 750mm above grade; and
· 100 lux vertical at the face of the meter

1.6 Accessibility for Maintenance

Employees should have ready access to all metering equipment as per CEC Rule 2-314.

The neutral, which provides a zero reference potential for the potential transformer and runs from the breaker to the metering cabinet, must be sized in accordance with the current Canadian Electrical Code.

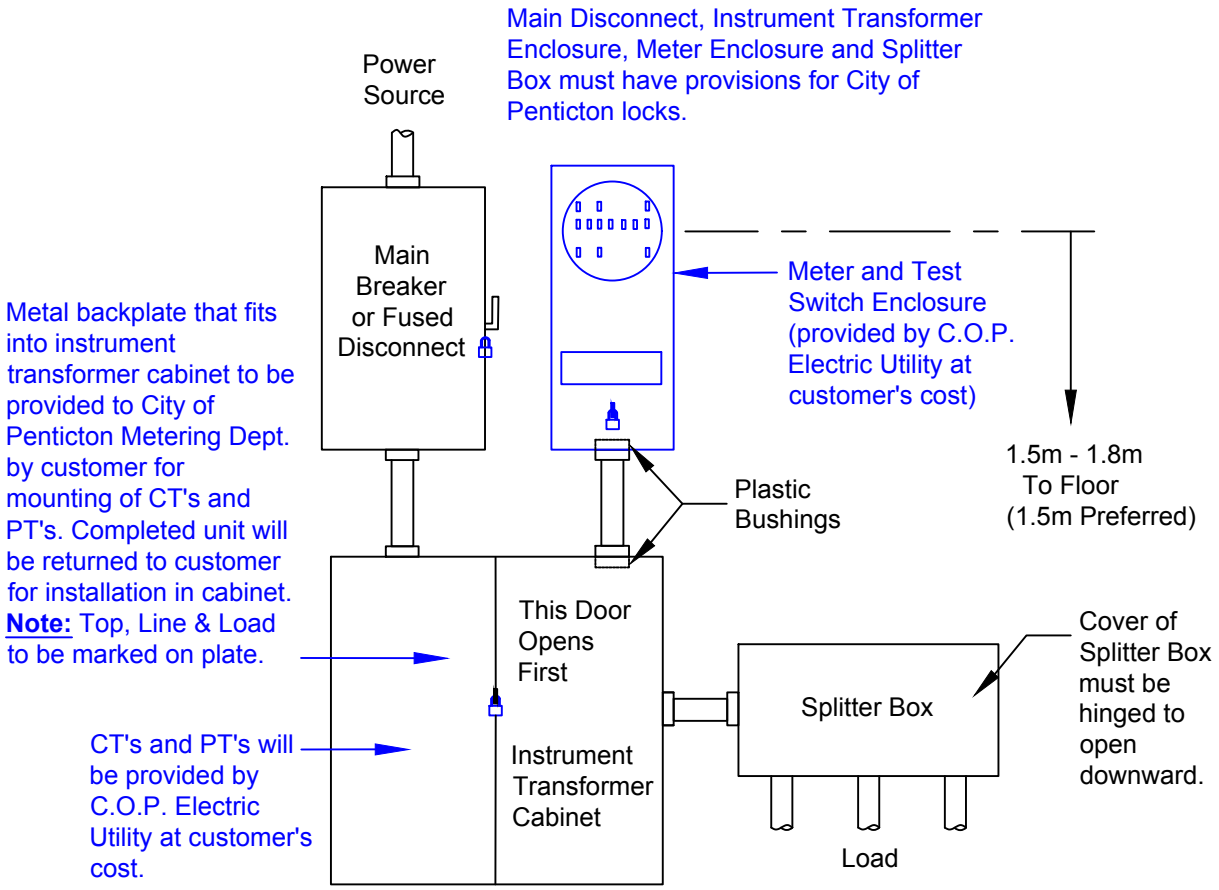


NOTES:

1. CT's to be staggered to allow best use of space and allow easier wiring.
2. The City must be able to remove the instrument transformers without removing the back plate.
3. All mounting holes on instrument transformers must be used.

3 Phase Instrument Meter Connection Guidelines

Metering and Services Guidelines

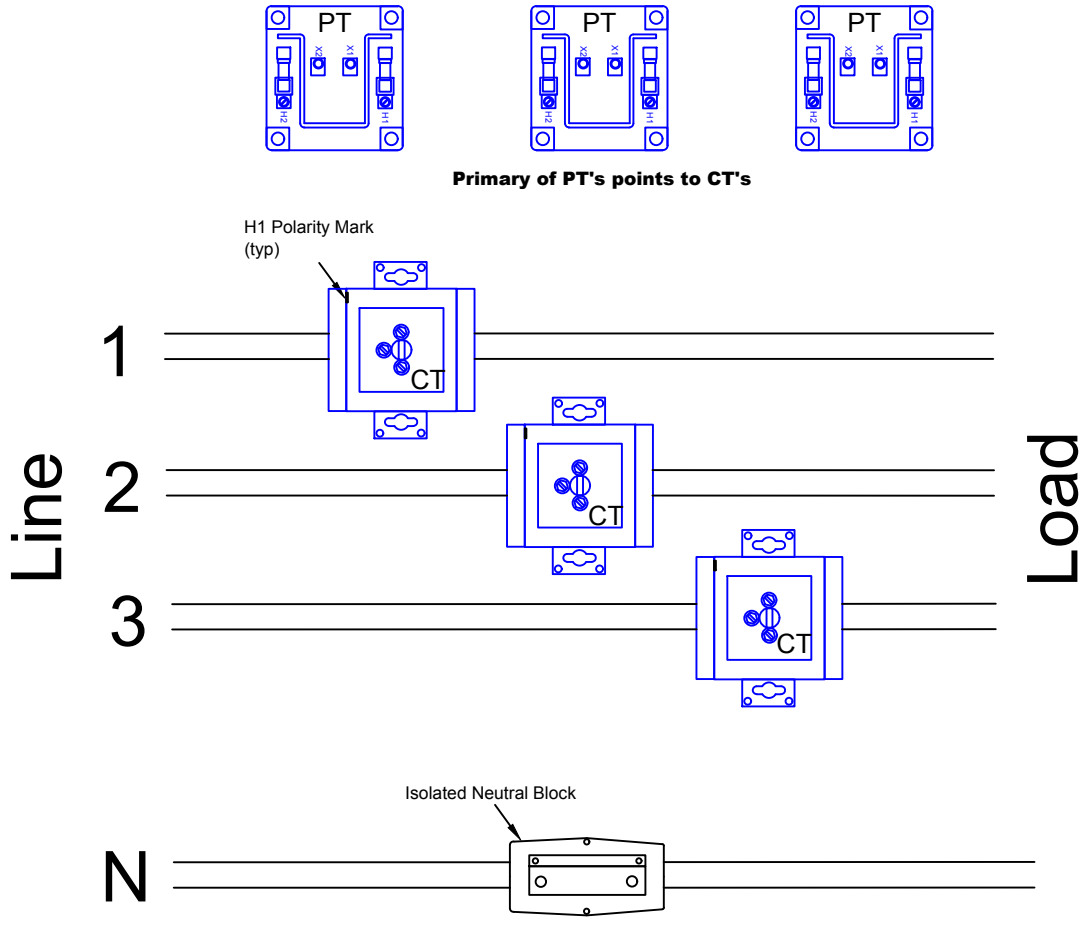


Service Characteristics				Instrument Transformer Cabinet (mm / in.)		
Voltage	Phase	Wire	Service Size (Amps)	Height	Width	Depth
240 / 120	1	3	201 - 600	610 / 24	610 / 24	254 / 10
208 / 120	3	4	201 - 600	760 / 30	760 / 30	254 / 10
208 / 120	3	4	601 - 1,600	915 / 36	915 / 36	305 / 12
600 / 347	3	4	201 - 2,000	915 / 36	915 / 36	305 / 12

NOTES:

1. The meter location is to be determined by the City of Penticton Electric Utility.
2. 19mm Plywood to be installed behind all enclosures. Directly mounting to walls is not permitted.
3. CT's are required for all 3 phase services >200A, requiring an instrument meter (13 jaw).
4. PT's are required for all 3 phase services >120V (Line to Ground).
5. All 3 phase metering is to be 'cold' metering i.e. a load break disconnect installed between the source and the meter.
6. Minimum thickness of Instrument Transformer Enclosure to be 16mm.

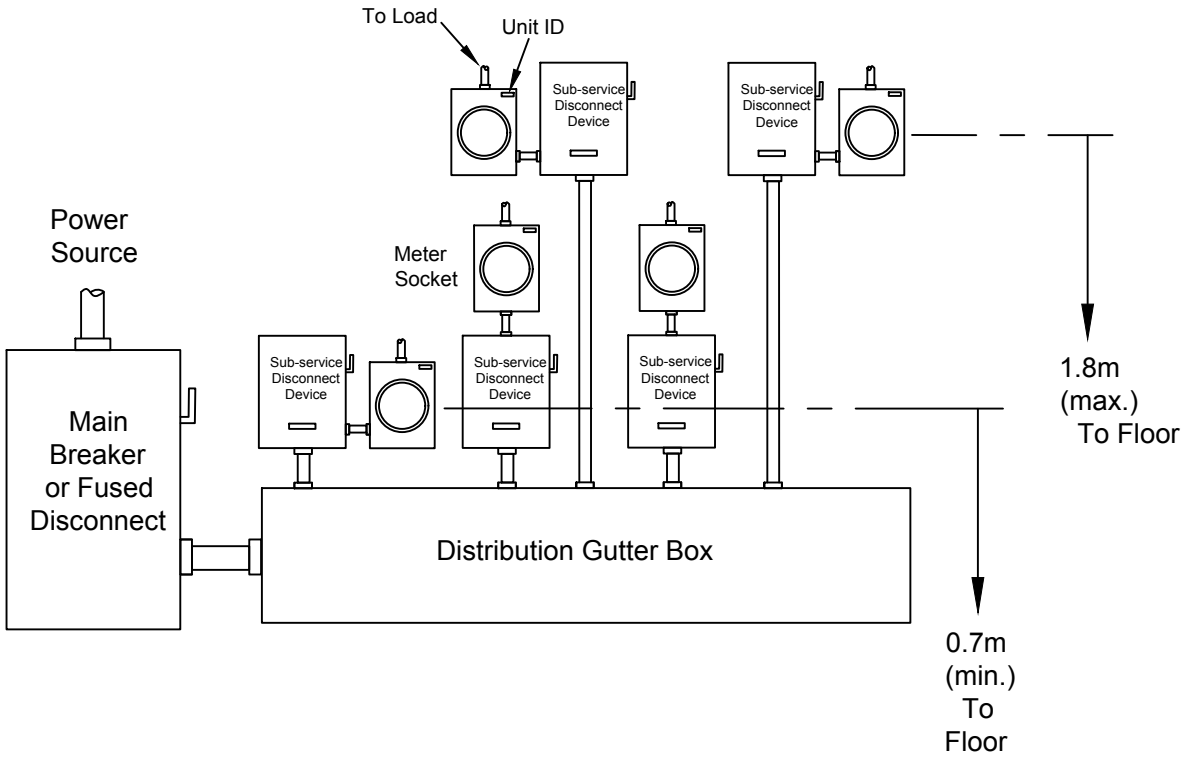
Instrument Meter Installation Guidelines



Notes:

1. 3 x PT's and 3 x CT's will be supplied and installed by the City of Penticton Electric Utility on a backplate supplied by the customer (see installation guidelines for sizes).
2. PT's are only required on services > 120V (L-G).
3. The neutral conductor must be run into the Instrument Transformer Enclosure.
The customer must install an isolated neutral block to facilitate connection of the potential wire for metering.
4. The isolated neutral block must be insolated from the enclosure and not grounded.
5. Where parallel runs of conductors are used, only one neutral conductor need be connected to the isolated neutral block.

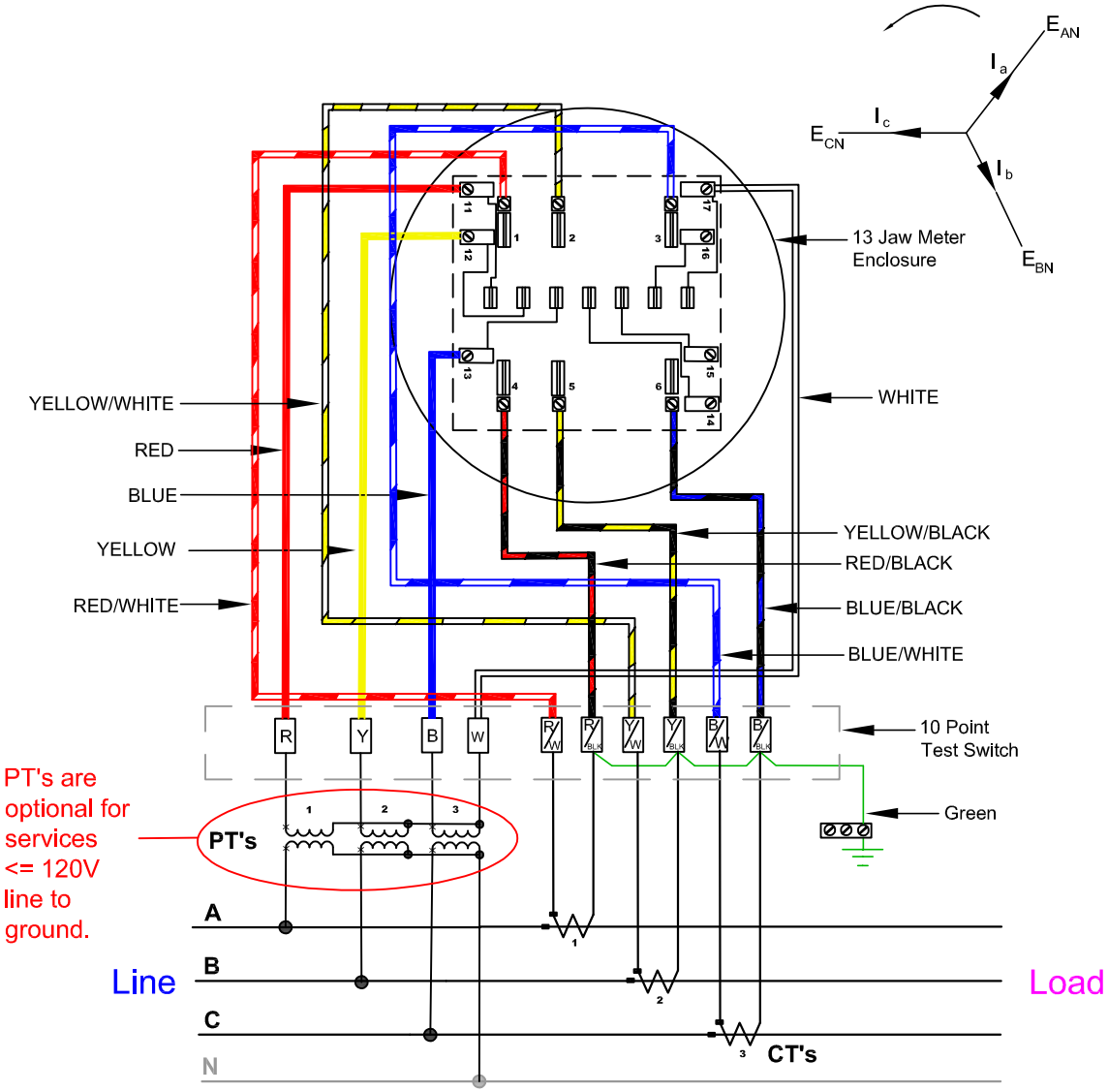
3 Phase Instrument Meter Enclosure Layout



Notes:

1. Cold style metering required with the meter socket on the load side of the sub service disconnect (all 3 phase secondary voltages).
2. The neutral to be isolated at the meter socket.
3. Each meter socket to be adjacent to and as close as practicable to the sub service disconnect device.
4. Main Service Disconnect, Splitter Box & Sub-service Disconnects must have provisions for a City of Penticton lock.
5. The distance between horizontally or vertically adjacent meter socket rims shall not be less than 150mm (6").
6. Contact the City of Penticton Electric Utility for service requirements.

Grouped Sub Service Installation



CIRCUIT: 3-Phase, 4-Wire, Y
METER: S-Base, Transformer Type
ELEMENTS: 3.0
CT's: 3
PT's: 3
MC Dwg: #3458
Form: 9S

13 Jaw SC Meter Connections

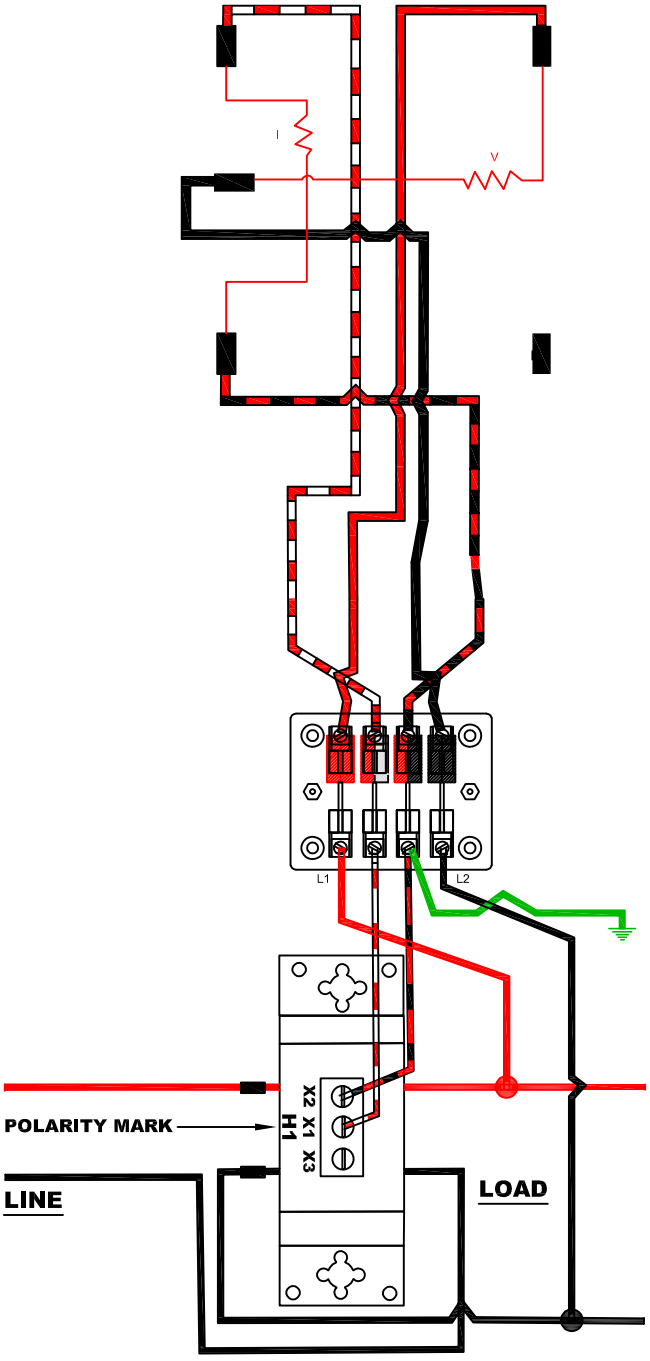
3 Phase $^{120}/_{208}$V Y & $^{347}/_{600}$ V Y

13 Jaw SC Meter Connections

3 Phase $^{120}/_{208}$V Y & $^{347}/_{600}$ V Y

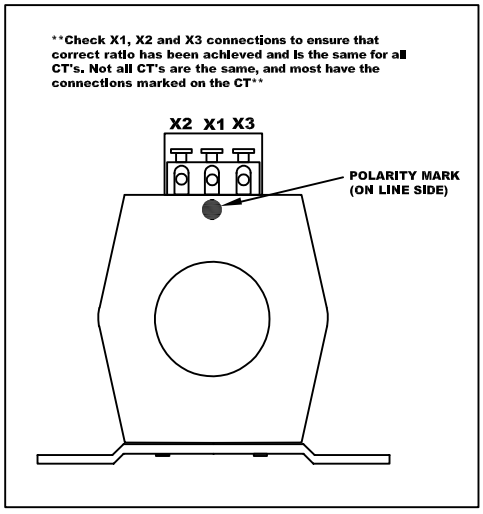
INSTALLATION MULT. X 1/2

CIRCUIT: 1-Phase, 3-Wire, Y
METER: S-Base, Transformer Type
ELEMENTS: 1.0
CT's: 1 x 2 Wire
PT's: 0
MC Dwg. # N/A



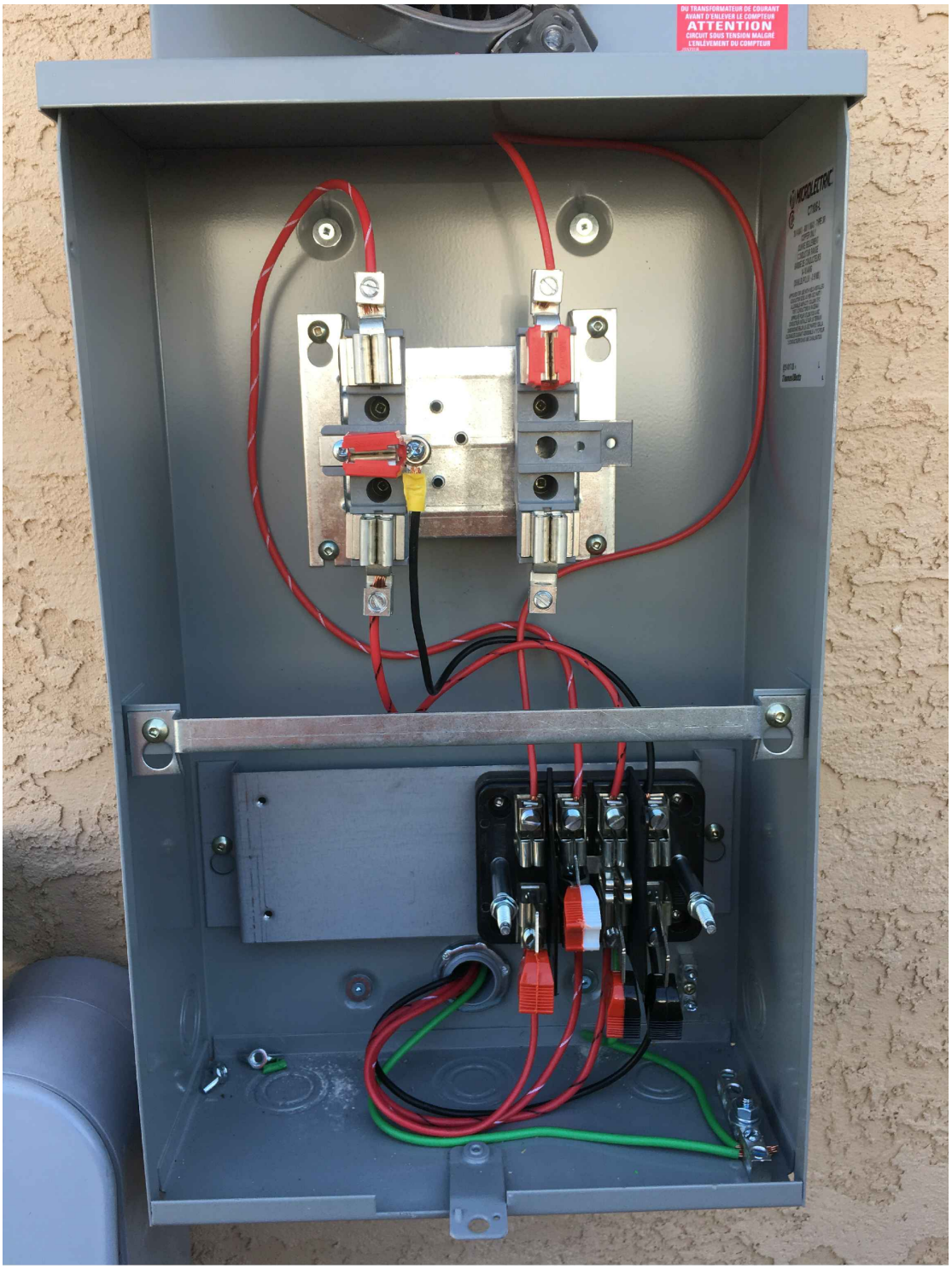
1 hot leg goes through the CT In the opposite direction. Ensure correct polarity.

WINDOW TYPE DUAL RATIO CT

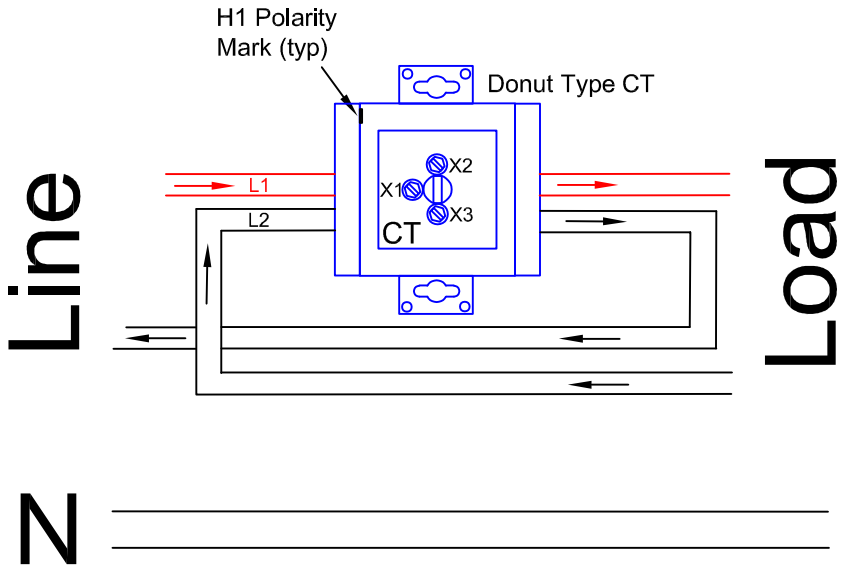


5 Jaw SC Meter Connections (Donut Type CT)

1 Phase 120/240V Y



5 Jaw SC Meter Connections
1 Phase 120/240V Y



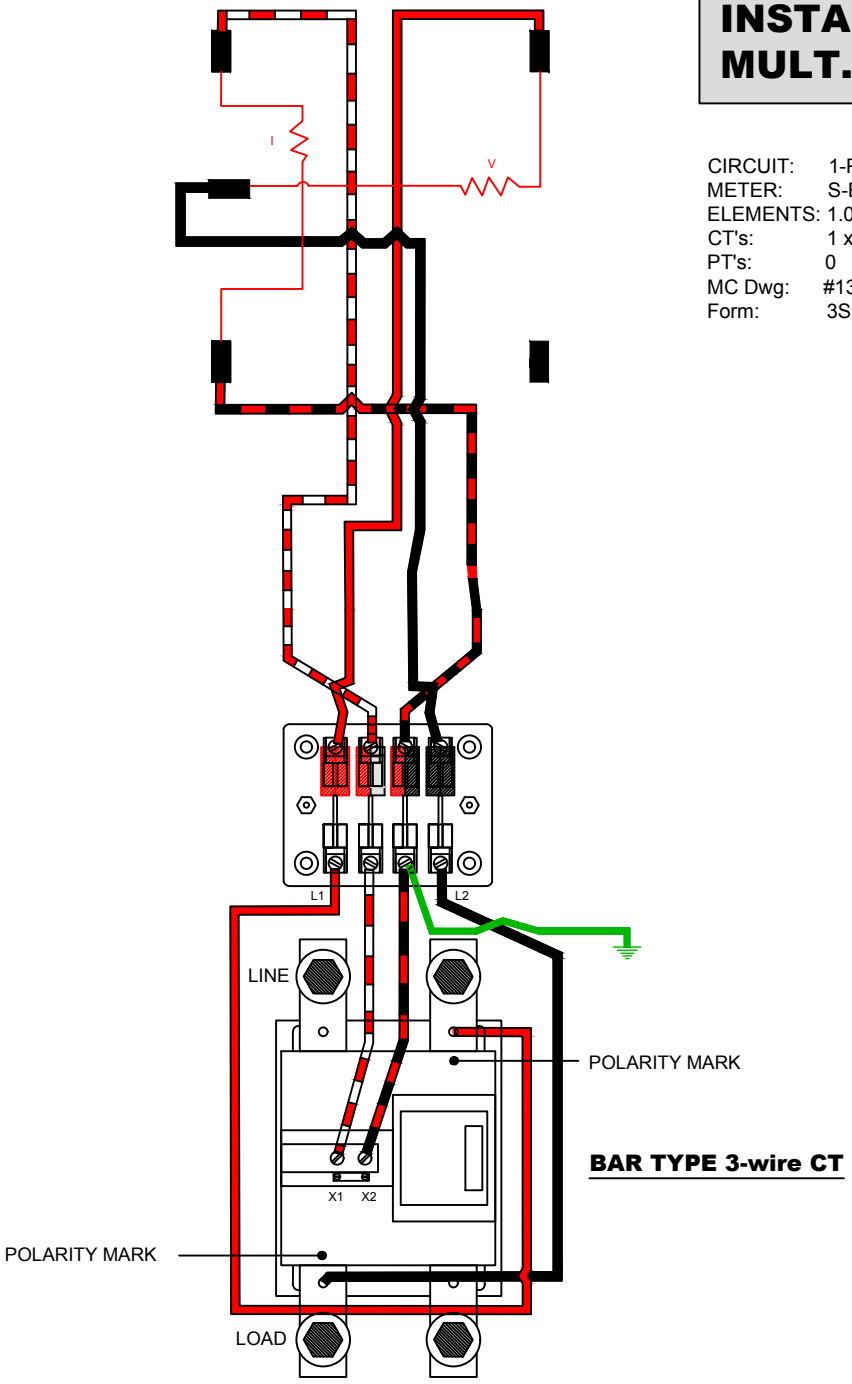
Notes:

1. 1 x CT will be supplied and installed by the City of Penticton Electric Utility on a backplate supplied by the customer (see installation guidelines for sizes).
2. 5-jaw Meter Socket supplied by the City of Penticton.
3. This type of installation to be used only for commercial services residing in an electrical room and downstream of a main service disconnect or a sub-service disconnect.
4. For large 400A residential installations, see "All in One Transformer Rated Meter Socket".
5. Current flow ←

1 Phase Instrument Meter Enclosure Layout

5 Jaw SC Meter Connections
1 Phase 120/240V Y

5 Jaw SC Meter Connections
1 Phase 120/240V Y

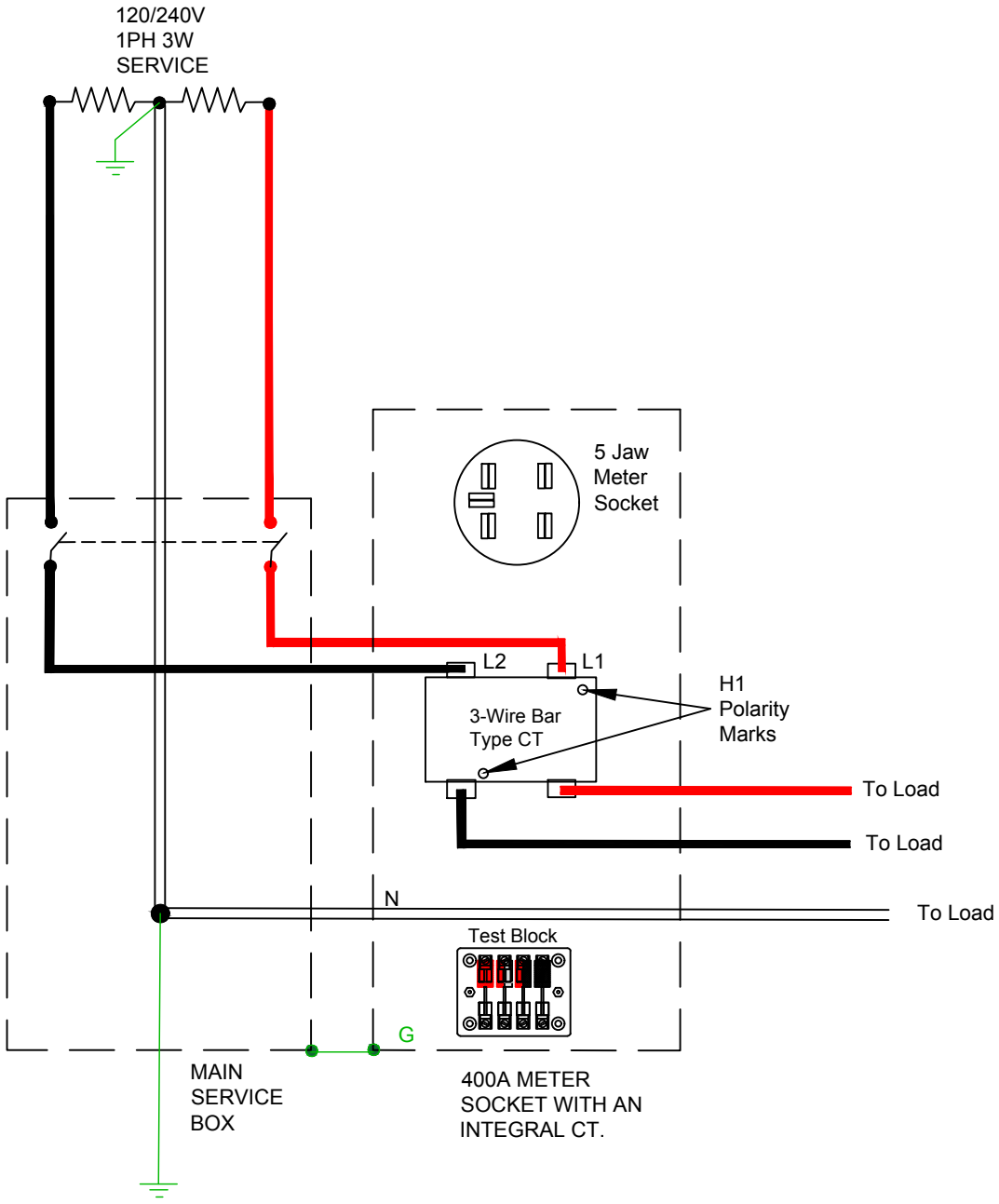


INSTALLATION MULT. X 1

CIRCUIT: 1-Phase, 3-Wire, Y
METER: S-Base, Transformer Type
ELEMENTS: 1.0
CT's: 1 x 3 Wire
PT's: 0
MC Dwg: #1304-3
Form: 3S

BAR TYPE 3-wire CT

5 Jaw SC Meter Connections (Bar Type CT)
1 Phase 120/240V Y



5 Jaw SC Meter Connections (3-Wire Bar Type CT)

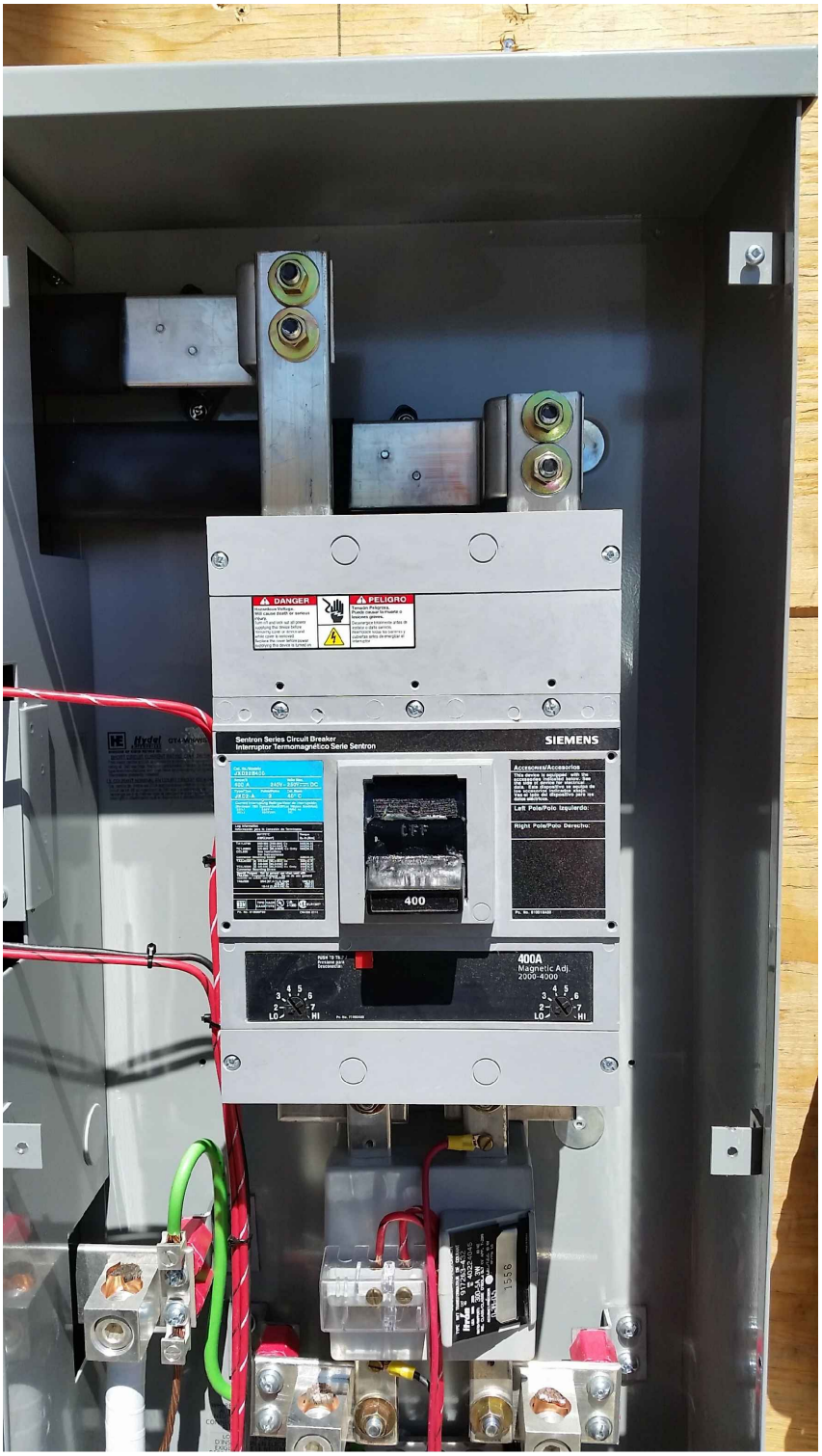
1 Phase 120/240V Y

Hydel CT4-WS-BC

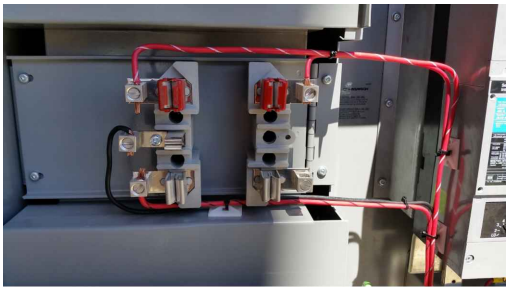
- Load and line side terminations: tunnel type connectors, dual rated for 1 x 600 kcmil or 2 x 250 kcmil
- 1067mm(42 in.) H x 660mm(26 in.) W x 216mm (8-1/2 in.) D, heavy gauge galvanized steel. Powder coated grey finish. Weight each: lb./ kg
- One 2 , 2-1/2 , 3, 3-1/2, 4 in., bottom Knockout for line entry and two knockouts for load exit, one 2,2-1/2, 3, 3-1/2, 4 in, and one 2, 2-1/2, 3 in.
- Weatherproof Type 3R enclosure, underground only
- 5 Jaw meter socket
- Provision for test switch (test switch supplied by City of Penticton)
- Provision for current transformer (transformer supplied by City of Penticton)
- A secondary circuit wiring not included
- Provided with a Siemens 400 A 240V 65KA breaker as disconnect means on the line side of metering
- Available in an O/H version CT4-WSOH-BC, however special permission will be required from the Utility for it's use.

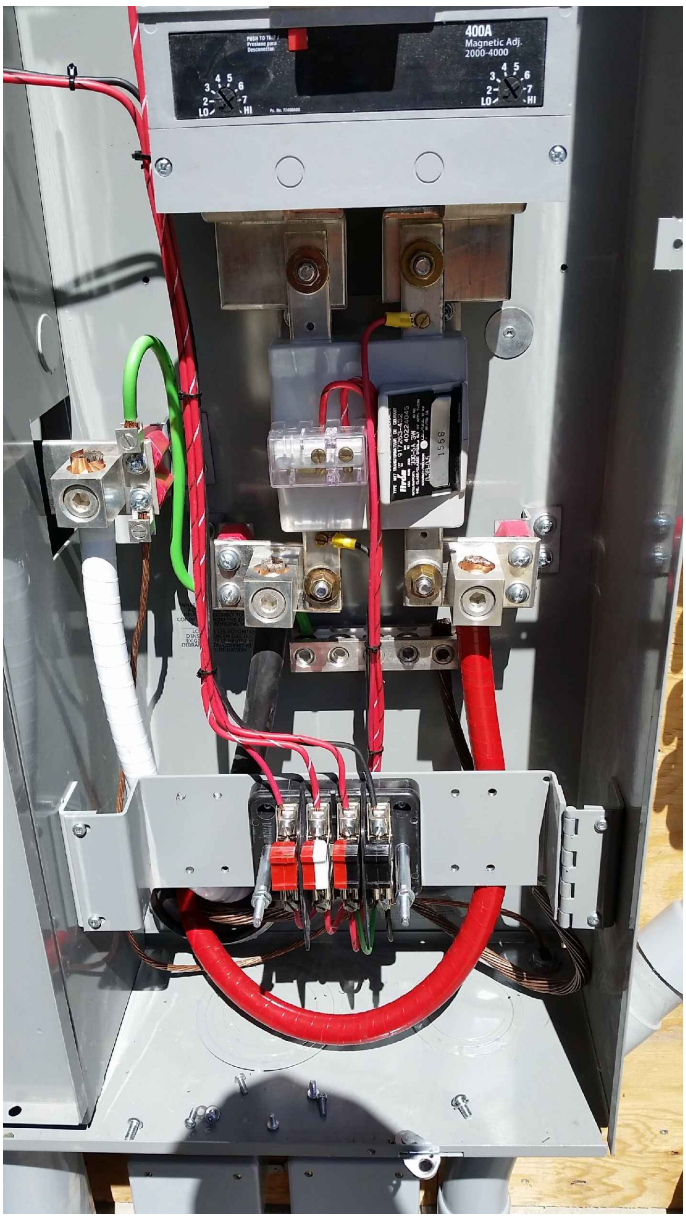
Single Phase Residential Service 400A 120/240V
All in One Transformer Rated Meter Socket

Single Phase Residential Service 400A 120/240V
All in One Transformer Rated Meter Socket

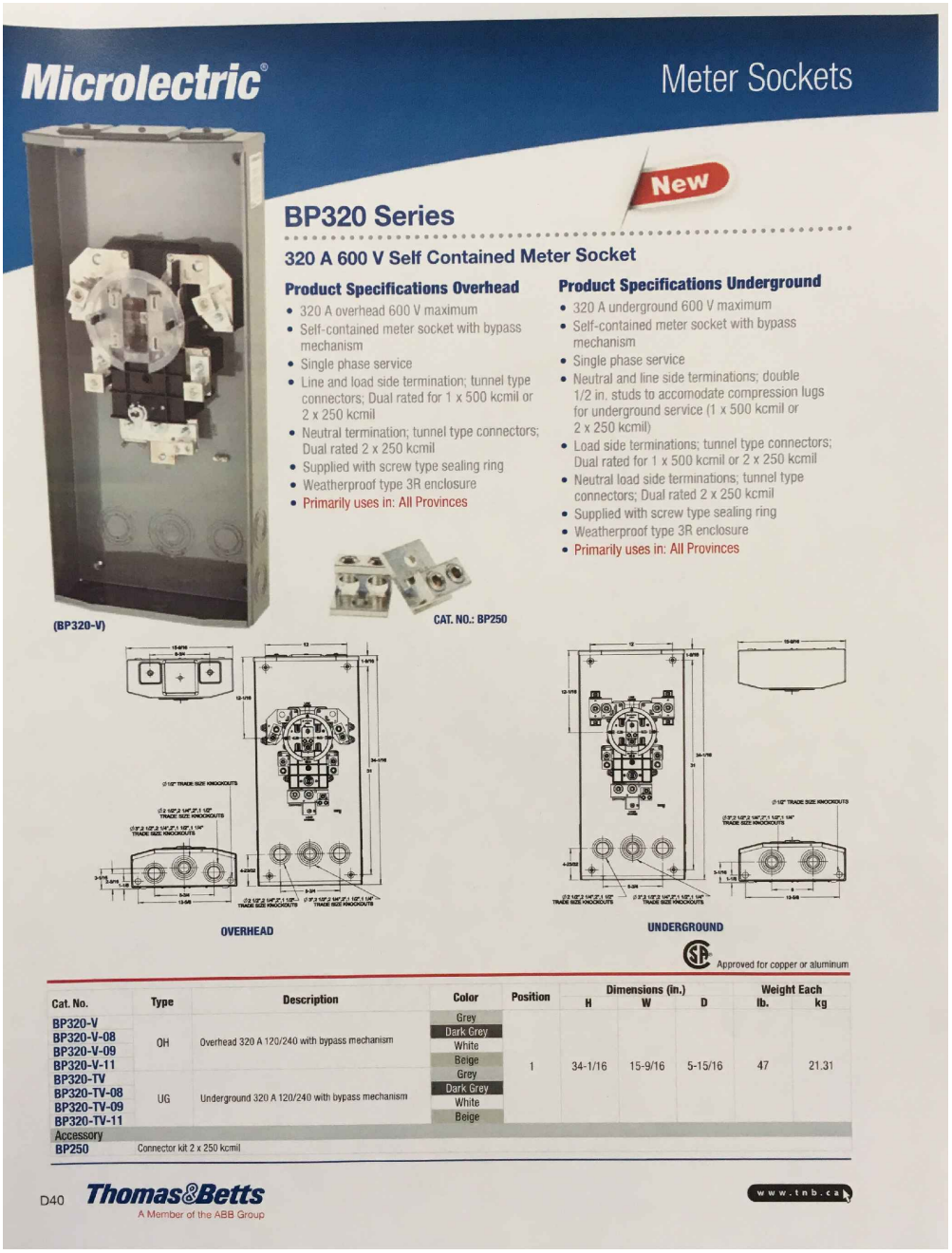


Single Phase Residential Service 400A 120/240V
All in One Transformer Rated Meter Socket





Single Phase Residential Service 400A 120/240V
All in One Transformer Rated Meter Socket



Microlectric®

Meter Sockets

New

BP320 Series

320 A 600 V Self Contained Meter Socket

Product Specifications Overhead

- 320 A overhead 600 V maximum
- Self-contained meter socket with bypass mechanism
- Single phase service
- Line and load side termination; tunnel type connectors; Dual rated for 1 x 500 kcmil or 2 x 250 kcmil
- Neutral termination; tunnel type connectors; Dual rated 2 x 250 kcmil
- Supplied with screw type sealing ring
- Weatherproof type 3R enclosure
- Primarily uses in: All Provinces

Product Specifications Underground

- 320 A underground 600 V maximum
- Self-contained meter socket with bypass mechanism
- Single phase service
- Neutral and line side terminations; double 1/2 in. studs to accomodate compression lugs for underground service (1 x 500 kcmil or 2 x 250 kcmil)
- Load side terminations; tunnel type connectors; Dual rated for 1 x 500 kcmil or 2 x 250 kcmil
- Neutral load side terminations; tunnel type connectors; Dual rated 2 x 250 kcmil
- Supplied with screw type sealing ring
- Weatherproof type 3R enclosure
- Primarily uses in: All Provinces

(BP320-V)

CAT. NO.: BP250

OVERHEAD

UNDERGROUND

Approved for copper or aluminum

Cat. No.	Type	Description	Color	Position	Dimensions (in.) H	W	D	Weight Each lb.	kg
BP320-V BP320-V-08 BP320-V-09 BP320-V-11	OH	Overhead 320 A 120/240 with bypass mechanism	Grey Dark Grey White Beige	1	34-1/16	15-9/16	5-15/16	47	21.31
BP320-TV BP320-TV-08 BP320-TV-09 BP320-TV-11	UG	Underground 320 A 120/240 with bypass mechanism	Grey Dark Grey White Beige						
Accessory									
BP250	Connector kit 2 x 250 kcmil								

D40 Thomas&Betts
A Member of the ABB Group

www.tnb.ca

NOTE:
1. Contact the City of Penticton Electric Utility for use of this approved 320A meter socket to ensure meter availability.
2. Approved for residential use only.

Single Phase Residential Service 320A 120/240V
4-Jaw Self Contained Meter Socket

Pad Mount Transformer Metering

Pad Mount Transformer Metering