



# Models PTW5-1-110 & PTW5-2-110

## Voltage Transformer

### Models PTW5-1-110 & PTW5-2-110 Indoor Voltage Transformers, Medium Voltage

REGULATORY AGENCY APPROVALS



Manufactured to meet the requirements of ANSI/IEEE C57.13.



Accuracy Class:

0.3 WXYZ 1.2 ZZ at 100 % rated voltage with 120V based ANSI burden.

0.3 WXY, 1.2Z at 58 % rated voltage with 69.3 V based ANSI burden.

Frequency:

60 Hz.

Thermal Rating:

1,500 VA 30 °C. amb.

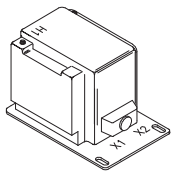
1,000 VA 55 °C. amb.

Maximum System Voltage:

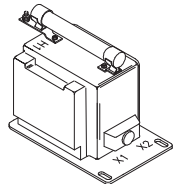
15.5 kV, BIL 110 kV.

Approximate weight:

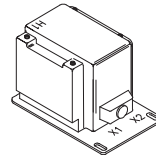
85 lbs. unfused



Unfused  
Two Bushings



One Fuse  
One Bushing



Switchgear Style  
Two Bushings

Two Fuses  
Two Bushings

#### PTW5-1

| One Bushing (b) |                     |       |                       |                     | Catalog Numbers  |                  |                  |
|-----------------|---------------------|-------|-----------------------|---------------------|------------------|------------------|------------------|
| Group           | Primary Voltage (V) | Ratio | Secondary Voltage (V) | R <sub>FR</sub> (c) | Fuses            | Fuse Clips only  | Switchgear Style |
| 4A              | *7200               | 60:1  | 120                   | 65                  | PTW5-1-110-722F  | PTW5-1-110-722C  | PTW5-1-110-722S  |
| 4A              | *8400               | 70:1  | 120                   | 65                  | PTW5-1-110-842F  | PTW5-1-110-842C  | PTW5-1-110-842S  |
| 4B              | 11000               | 100:1 | 110-50Hz              | 65                  | PTW5-1-110-113F  | PTW5-1-110-113C  | PTW5-1-110-113S  |
| 4B              | *12000              | 100:1 | 120                   | 65                  | PTW5-1-110-123F  | PTW5-1-110-123C  | PTW5-1-110-123S  |
| 4B              | 13200               | 110:1 | 120                   | 65                  | PTW5-1-110-1322F | PTW5-1-110-1322C | PTW5-1-110-1322S |
| 4B              | *14000              | 120:1 | 120                   | 65                  | PTW5-1-110-1442F | PTW5-1-110-1442C | PTW5-1-110-1442S |

#### PTW5-2

| Two Bushings (a) |                     |       |                       | Catalog Numbers |                   |                     |                   |
|------------------|---------------------|-------|-----------------------|-----------------|-------------------|---------------------|-------------------|
| Group            | Primary Voltage (V) | Ratio | Secondary Voltage (V) | Unfused         | Fuses             | Fuse Clips only (d) | Switchgear Style  |
| 1                | *7200               | 60:1  | 120                   | PTW5-1-110-722  | PTW5-1-110-722FF  | PTW5-1-110-722CC    | PTW5-1-110-722SS  |
| 1                | *8400               | 70:1  | 120                   | PTW5-1-110-842  | PTW5-1-110-842FF  | PTW5-1-110-842CC    | PTW5-1-110-842SS  |
| 2                | 11000               | 100:1 | 110-50Hz              | PTW5-1-110-113  | PTW5-1-110-113FF  | PTW5-1-110-113CC    | PTW5-1-110-113SS  |
| 2                | *12000              | 100:1 | 120                   | PTW5-1-110-123  | PTW5-1-110-123FF  | PTW5-1-110-123CC    | PTW5-1-110-123SS  |
| 2                | 13200               | 110:1 | 120                   | PTW5-1-110-1322 | PTW5-1-110-1322FF | PTW5-1-110-1322CC   | PTW5-1-110-1322SS |
| 2                | *14000              | 120:1 | 120                   | PTW5-1-110-1442 | PTW5-1-110-1442FF | PTW5-1-110-1442CC   | PTW5-1-110-1442SS |

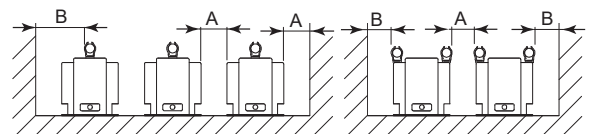
NOTE: All Primary voltages marked with an asterisk (\*) are approved for revenue metering in Canada by Industry Canada, Approval No. AE-0431 Rev. 01

#### Recommended Minimum Spacings

A = Unit to Unit or to Ground = 1.25" minimum.

B = HV to Ground in air = 6.50" minimum.

Recommended spacing are for guidance only. User needs to set appropriate values to assure performance for high potential test, impulse test, high humidity, partial discharge, high altitude, and other considerations like configuration.



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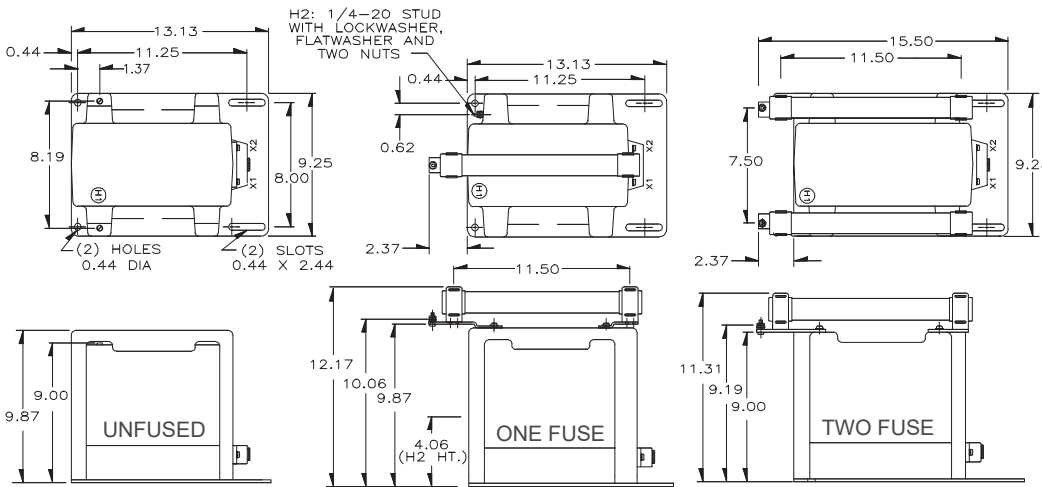
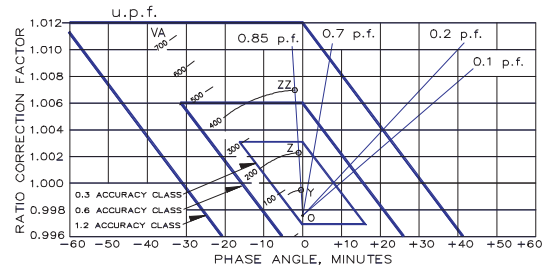


# Models PTW5-1-110 & PTW5-2-110

## Voltage Transformer

### Circle Diagram

The circle diagram can be used to predict the performance of a transformer for various loads and power factors. A convenient scale of volt-ampere is shown on the unity power factor line (u.p.f) and commences at the zero or no-load locus. To use the diagram, measure the known V.A. and scribe an arc about the "Zero" locus of a length that contains the angle of the burden power factor. The point at which the arc terminates is the error locus in phase angle minutes and ratio correction factor.



### PTW5

| Fuse For Model<br>PTG4 Transformer | Rating<br>(kV) | Interrupting<br>Amperes (Sym) | Suggested Rating<br>Continuous Amperes | Cap Dia.<br>Inches (a) | Length<br>Inches | Clip Centers<br>Inches |
|------------------------------------|----------------|-------------------------------|--|------------------------|------------------|------------------------|
| 7200:120V                          | 15.5           | 80,000                        | 1.0E                                   | 1.63                   | 13               | 11.50                  |
| 8400:120V                          | 15.5           | 80,000                        | 1.0E                                   | 1.63                   | 13               | 11.50                  |
| 11000:110V                         | 15.5           | 80,000                        | 0.5E                                   | 1.63                   | 13               | 11.50                  |
| 12000:120V                         | 15.5           | 80,000                        | 0.5E                                   | 1.63                   | 13               | 11.50                  |
| 13200:120V                         | 15.5           | 80,000                        | 0.5E                                   | 1.63                   | 13               | 11.50                  |
| 14400:110V                         | 15.5           | 80,000                        | 0.5E                                   | 1.63                   | 13               | 11.50                  |

(a) Two fuse transformers should not be used for Y connections. It is preferred practice to connect one lead from each voltage transformer directly to the neutral terminal, using a fuse in the line side of the primary only. By using this connection a transformer can never be made "live" from the line side by reason of a blown fuse in the neutral side. For continuous operation the transformer primary voltage should not exceed 110% of rated value.

(b) Voltage transformers connected line-to-ground cannot be considered to be grounding transformers and must not be operated with the secondaries in closed delta because excessive currents may flow in the delta.

(c) See page 32, item 1 for ferroresonance considerations. Values in table are in ohms.

Note: It is recommended that system line-to-line voltage not exceed the transformer maximum system voltage level.

- Primary terminals that are unfused are 1/4-20 brass screws with one flatwasher and lockwasher.
- Primary terminals that are fused are 1/4-20 brass screws with one flatwasher and lockwasher and two nuts.
- Secondary terminals are No. 10-32 brass screws with one flatwasher and lockwasher.
- The core and coil assembly is vacuum encapsulated in polyurethane resin.
- Thermal burden rating is for 120 volt secondaries.
- Switch gear style is similar to fused style. No fuse or fuse clip is provide, but inserts for fuse clips are supplied.
- A test card is provided with each unit.