TECHNICAL SPECIFICATIONS FOR

DISTRIBUTION INSTRUMENT TRANSFORMERS
For Revenue Metering

JPS SPECIFICATION: 6880-S-04

Effective: October 03, 2021

The "Technical Specifications, General Requirements" forms a part of this specification.

1. Scope

1.1 This specification covers current and potential instrument transformers of types generally used in the measurement of electricity (and control of equipment) associated with the distribution of 50 Hertz alternating current.

2. GENERAL REQUIREMENTS

2.1 INFORMATION

2.1.1 Refer to "Submittal of Information" Section 2 paragraph 2.1 of "Technical Specifications, General Requirements".

2.1.2 Supplier shall complete the data sheet "Appendix A" for submission with bid.

2.2 DRAWINGS ETC. BY SUPPLIER

Refer to "Submittal of Information" Section 2, paragraph 2.2 of "Technical Specifications, General Requirements".

3. STANDARDS AND SERVICE CONDITIONS

3.1 STANDARDS

3.1.1 Refer to "Codes and Standards" Section 3 of "Technical Specifications General Requirements".

3.1.2 Design, construction, performance and tests shall conform to applicable sections of ANSI C57.13-2008 - Requirements for Instrument Transformers and ANSI C12.11-2007 - Standard for instrument transformers for revenue metering.

3.1.3 In the event of conflicts between this specification and any other specification to which it refers, this specification shall have precedence and shall govern. However, the bidder shall point out these conflicts in his bid at the time of tendering.

4. DETAILED REQUIREMENTS

4.1 TYPE

4.1.1 Window type current transformers, 0.6 kV insulation class for revenue metering purposes.

4.1.2 Wound type current transformers, 25 kV insulation class for primary revenue metering purposes.

4.1.3 The potential transformers shall be the dry type, with two high voltage line terminals. Potential transformer shall be suited for indoor or outdoor use.

4.2 RATINGS

4.2.1 Window type current transformers 0.6 kV insulation class, Basic Impulse Insulation level shall be 10 kV in accordance with ANSI C12.11-2007. The current transformers are for use on electric system with 50 Hertz frequency, accuracy rating of current transformers shall be 0.3 at burdens of B-0.1 through to B-0.5 as per ANSI C12.11-2007.

The minimum continuous thermal current rating factor for the current transformer shall be 3 based on a 30^{o}C ambient temperature as per ANSI C12.11-2007. The mechanical current rating shall be at least 200 times primary current rating, (R.M.S. Symmetrical Amperes). The short-time thermal rating shall be at least 100 times normal rated primary current for one (1) second. The current transformers are to be 55^{o}C temperature rise limit above ambient of 30^{o}C as detailed in ANSI C57.13-2008. The current ratings of the window type current transformers shall be as follows:

4.2.1.1 Current Ratio 800:5 Amperes

4.2.1.2 Current Ratio 600:5 Amperes

4.2.1.3 Current Ratio 400:5 Amperes

4.2.1.4 Current Ratio 200:5 Amperes

4.2.2 Window type current transformers 0.6 kV insulation class, Basic Impulse Insulation level shall be 10 kV in accordance with ANSI C12.11-2007. The current transformers are for use on electric system with 50 Hertz frequency, accuracy rating of current transformers shall be 0.3 at burdens of B-0.1 through to B-1.0 as per ANSI C12.11-2007.

The minimum current rating factor for the current transformer shall be 2 based on a 30^{o}C ambient temperature as per ANSI C12.11-2007. The mechanical current rating shall be at least 200 times primary current rating, (R.M.S. Symmetrical Amperes). The short-time thermal rating shall be at least 100 times normal rated primary current for one (1) second. The current transformers are to be 55^{o}C temperature rise limit above ambient of 30^{o}C as detailed in ANSI C57.13-2008. The current ratings of the window type current transformers shall be as follows:

4.2.1.1 Current Ratio 1500:5 Amperes

4.2.1.2 Current Ratio 1200:5 Amperes

4.2.1.3 Current Ratio 1000:5 Amperes

4.2.3 Window type current transformers 0.6 kV insulation class, Basic Impulse Insulation level shall be 10 kV in accordance with ANSI C12.11-2007. The current transformers are for use on electric system with 50 Hertz frequency, accuracy rating of current transformers shall be 0.3 at burdens of B-0.1 through to B-2.0 as per ANSI C12.11-2007.

The minimum current rating factor for the current transformer shall be 1.5 based on a 30^{o}C ambient temperature as per ANSI C12.11-2007. The mechanical current rating shall be at least 200 times primary current rating, (R.M.S. Symmetrical Amperes). The short-time thermal rating shall be at least 100 times normal rated primary current for one (1) second. The current transformers are to be 55^{o}C temperature rise limit above ambient of 30^{o}C as detailed in ANSI C57.13-2008. The current ratings of the window type current transformers shall be as follows:

4.2.1.1 Current Ratio 4000:5 Amperes

4.2.1.2 Current Ratio 3000:5 Amperes

4.2.1.3 Current Ratio 2500:5 Amperes

4.2.1.4 Current Ratio 2000:5 Amperes

4.2.4 Wound type current transformers, 25 kV insulation class with a Basic Impulse Level of 150 kV in accordance with ANSI C12.11-2007, for operation on a nominal 13.8/24 kV wye effectively grounded 50 Hertz electrical system. The accuracy class of the current transformer shall be minimum 0.3 for burdens B0.1 through to B 0.5. Each current transformer shall have minimum current rating factor of 1.5 based on a 30^{o}C ambient temperature as per ANSI C12.11-2007. The mechanical current rating shall be at least 200 times the primary current rating, (R.M.S. Symmetrical Amperes). The short-time thermal rating shall be at least 100 times normal rated primary current for one (1) second. The current transformers are to be 55 ^{o}C temperature rise limit above ambient of 30 ^{o}C as detailed in ANSI C57.13-2008. The current rating of the wound type current transformers shall be as follows:

4.2.4.1 Current Ratio 5:5 Amperes

4.2.4.2 Current Ratio 10:5 Amperes

4.2.4.3 Current Ratio 20:5 Amperes

4.2.4.4 Current Ratio 30:5 Amperes

4.2.4.5 Current Ratio 50:5 Amperes

4.2.4.6 Current Ratio 75:5 Amperes

4.2.4.7 Current Ratio 150:5 Amperes

4.2.4.8 Current Ratio 200:5 Amperes

4.2.4.9 Current Ratio 300:5 Amperes

4.2.5 The accuracy class of the potential transformer shall be minimum 0.3 for burdens of W,X,Y and Z as per ANSI C12.11-2007. Thermal burden rating of the potential transformers shall be at least 750 VA for the potential

transformers with insulation class of 15,000 V and 1,200 VA for the 25,000 V insulation class transformers at thermal and current rating based on temperature rise of 55^{o}C ambient temperature of 30^{o}C. The insulation class, Basic Impulse Insulation Level and voltage ratings as follows:

4.2.5.1 The rated primary voltage required is 14,400 V for line to line connection on a 13.8 kV delta system or line to neutral connection on 13.8/24 kV wye, effectively grounded system. Secondary voltage to be 120 Volts. The BIL shall be 150kV as per ANSI C12.11-2007.

4.2.5.2 The rated primary voltage required is 7,200 V for line to neutral connection on a 6.9/12 kV wye effectively grounded system. Secondary voltage to be 120 Volts. The BIL shall be 110kV as per ANSI C12.11-2007.

4.3 CONSTRUCTION

4.3.1 For the window type current transformers the secondary terminals should be either silver plated clamp or brass stud type with nut and washer. The terminals should be able to accommodate 10-25 mm^2 (A.W.G. sizes #4 through #6) stranded wire. A secondary shorting mechanism must be provided to enable quick and safe shorting of the secondary terminals. A secondary terminal cover should be included. The mounting base of the window type current transformers should be flat/low type. The dimension of the window type current transformer shall be as per ANSI C12.11-2007 for intermediate and large size window type current transformers. The weight of each transformer shall not exceed 15lbs. All tolerances shall be as per ANSI C12.11-2007.

4.3.2 The wound type current transformers shall have solderless primary terminals suitable to be used with copper and aluminum alloy stranded conductor 35-70 mm^2 (77.47 kcmil to 155.45 kcmil(#2 through #2/0 A.W.G. equivalent). A covered secondary terminal box should be provided with required shorting mechanism. The dimension of the wound type current transformer shall be as per ANSI C12.11-2007 for small size outdoor current transformers. All tolerances shall be as per ANSI C12.11-2007. The weight of the current transformer shall not exceed 80lbs.

4.3.3 Dry type potential transformers with solderless primary terminals shall be

suitable for use with copper or aluminum alloy conductor size. 35 mm^2 -70 mm^2 (77.47 kcmil to 155.4 kcmil, (#2 through to #2/0). The relevant section of ANSI C12.11-2007 shall be utilized as a guide for determining the various dimensions of the 7200:120V and 14400:120V potential transformer. The dimension tolerances shall be as per ANSI C12.11-2007. The weight of the 14400V potential transformer shall not exceed 105lbs and the weight of the 7200V potential transformer shall not exceed 80lbs.

5. TESTS

5.1 Refer to "Tests" Section 5 of "Technical Specification, General Requirements".

5.2 Certified test reports shall be provided for all instrument transformers supplied Certificates are required before notification to proceed with shipment.

6. PACKAGING AND MARKING

Refer to "Export Packaging" and "Export Marking" Section 7 and Section 8 of "Technical Specifications, General Requirements".

7. SHIPMENT

No shipment of transformers shall commence before the written authorization of the purchaser.

APPENDIX A

DATA SHEET FOR CURRENT/POTENTIAL TRANSFORMERS

Manufacturer	
Style or catalog number	
Current or Potential Transformer?	
Primary current or voltage	
Secondary current or voltage	
ANSI metering accuracy	
Rating factor	
Relaying Accuracy	
Continuous current rating factor-30 ^{o}C ambient	
Window diameter	
Weight	
Width	
Length	
Height	
Mechanical current rating	

Accessories/options

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Effective: October 3, 2021

INDEX OF REVISIONS

Revision Number	Date of Revision	Revision Made	Checked By
01	12th March 2004	Dimensions and weight of the various class of instrument transformer added. In addition to ANSI C57.13, ANSI C12.11 was utilized as a guide in revising sections 3.1.2, 4.1.1, 4.1.2, 4.2 and 4.3 of the JPSCo specification.	
02	23rd July 2012	Addition of section 4.2.2 and 4.2.3 which speaks about currents transformers with rating 1000:5 – 4000:5.	
03	5th October 2017	Addition of section 4.2.4.1 and 4.2.4.2 which speaks about currents transformers with rating 5:5 and 10:5	
04	3rd October 2021	Addition of 4.2.4.9 Current Transformer Ratio 300:5 Amperes	

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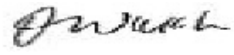

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