



Electricity Distribution Company

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# **TECHNICAL SPECIFICATIONS AND SCHEDULES**

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## **FOR LOW VOLTAGE CURRENT TRANSFORMERS**

## 1. SCOPE

This specification covers requirements for measuring current transformer for use with metering and indicating instrument, smart metering and similar apparatus for **maintenance and replacement purposes.**

## 2. SYSTEM PARAMETERS

System Voltage	400 V
System Highest Voltage	440 V
System Frequency	50 Hz
Method of Earthing	Solidly earthed
System Fault Level	25 MVA
No. of Phases	3

## 3. SERVICE CONDITION

Maximum ambient temperature	50°C
Lowest ambient air temperature	- 5°C
Average relative humidity	40%- 90%
Annual average rainfall approx.	30 CMS
Annual average thunderstorm days	16

## 4. STANDARDS

The current transformers and accessories covered by this specification shall comply with the requirement of the latest edition of the following standards unless otherwise stated in this specification.

**IEC 61869-1:2016** : Instrument transformers - Part 1: General requirements

**IEC 61869-2:2012** : Instrument transformers - Part 2: Additional requirements for current transformers

**NF C 42-502** : Measuring instruments Current Transformers Characteristics

**IEC 61180:2016:** High-voltage test techniques for low-voltage equipment-  
Definitions, test and procedure requirements, test equipment

**IEC 60085:2007 :** Electrical insulation - Thermal evaluation and designation

## **5. ACCURACY CLASS AND BURDEN CAPABILITY**

The accuracy class shall be designated by the highest permissible percentage current error at rated current for that accuracy class and shall be for measuring current transformers 0.5.

They shall have secondary current of 5 Ampere rating and rated output power shall not less than 10 Volt – Amperes.

## **6. INSTRUMENT SECURITY FACTOR (FS)**

The value of the instrument security factor shall not be exceeding 5.

## **7. DESIGN REQUIRMENTS**

Current transformers shall be designed for use on a 415/240-volt system, 50 Hz, and have single ratio as specified. They shall have secondary current of 5 Ampere rating.

Current Transforms shall be as follows:

- 1- Window type CT with fixing brackets and in two categories according to internal dimensions as explained in Table-2
- 2- Ring type suitable for cable installation only with fixing brackets as explained in Table-3

Requested quantities are mentioned in schedule (A): Schedule of Requirements

Current transformer ratio	Window type
	Internal dimensions (mm)
<b><u>Category (1): Square shape internal opening</u></b>	
1200/5	100*100
1500/5	100*100
2000/5	100*100
2500/5	100*100
<b><u>Category (2): Suitable for bus-bars only</u></b>	
1200/5	130 x 60
1500/5	130 x 60
1600/5	130 x 60
2000/5	130 x 60
2500/5	130 x 60

Table -2

Current transformer ratio	Ring type
	<b><u>suitable for cables only</u></b> Internal diameter (mm)
1200/5	140
1500/5	140
2000/5	140
2500/5	140

Table -3

## 8. PROPERTY PLATES

Each CT shall be fitted with a property plate, and it shall specify the tender number and the year of manufacture, Rated output followed by the accuracy class and rated instrument security factor.

The plate shall also carry a separate engraved serial number and shall be of stainless steel or other corrosion resistant material.

## 9. LIMIT OF CURRENT ERROR AND PHASE DISPLACEMENT

The current error and phase displacement at rated frequency shall not exceed the value given in Table-3 when the secondary burden has any value from 25 percent to 100 percent of the rated burden.

Accuracy class	Ratio error				Phase displacement							
					± Minutes				± Centiradians			
	± %											
	at current (% of rated)				at current (% of rated)				at current (% of rated)			
	5	20	100	120	5	20	100	120	5	20	100	120
0,1	0,4	0,2	0,1	0,1	15	8	5	5	0,45	0,24	0,15	0,15
0,2	0,75	0,35	0,2	0,2	30	15	10	10	0,9	0,45	0,3	0,3
0,5	1,5	0,75	0,5	0,5	90	45	30	30	2,7	1,35	0,9	0,9
1	3,0	1,5	1,0	1,0	180	90	60	60	5,4	2,7	1,8	1,8

Table-3

## 10. TECHNICAL PARAMETER FOR CT'S:

Parameter	Requested value
Class	0.5 FS5
Burden	10VA
Voltage level	0.72/3 KV
I <sub>cth</sub>	120% I <sub>th</sub>
I <sub>dyn</sub>	2.5 I <sub>th</sub>
Frequency	50Hz

Table-4

## **11.ROUTINE TEST**

The following Routine Tests shall be carried out on all Current Transformers as per IEC 61869 and the routine test report shall be submitted to the Inspector appointed by the purchaser at the time of inspection of the items.

1. Power-frequency voltage withstands tests on primary terminals.
2. Tests for accuracy.
3. Inter-turn overvoltage test.
4. Verification of terminal marking and inner diameter.

## **12.DOCUMENT TO BE SUBMITTED WITH THE OFFER**

The following items shall be attached and submitted with the offer:

1. Catalogues describing the equipment and indicating the type and model number.
2. Constructional features, materials used and relevant technical literature.
3. Complete dimensional drawings.
4. The details of the information indicated on the Name Plate.
5. The B.H curve and saturation characteristic of each type of transformer.
6. Sample of each type of offer materials shall be submitted with the offer.

- ❖ **EDCO has the right to reject any offer is not clear or not enclosed with clear specification, drawing. Catalogue and samples for the offered material.**
- ❖ **EDCO has the right keep and don't return samples belong to awarded**

## **SCHEDULE AND GUARANTEES**

<b><u>SCHEDULE NO.</u></b>	<b><u>DESCRIPTION</u></b>
<b>A</b>	<b>SCHEDULES OF REQUIREMENTS</b>
<b>B</b>	<b>SCHEDULES OF PRICES</b>
<b>C</b>	<b>GUARANTEED DELIVERY PERIODS</b>
<b>D</b>	<b>MANUFACTURER, PLACE OF MANUFACTURE &amp; TESTING</b>
<b>E</b>	<b>TECHNICAL PARTICULARS AND GUARANTEES</b>
<b>F</b>	<b>DEVIATIONS FROM SPECIFICATIONS</b>
<b>G</b>	<b>LIST OF TYPE TEST CERTIFICATES</b>
<b>H</b>	<b>REFERENCE LIST</b>

**SCHEDULE (A)****SHCHEDULE OF REQUIREMENTS**

Item No.	Description		Unit	Quantity Required
1.1	1200/5 Amp. Current Transformer	Window type category (1) 100*100 mm current transformer class 0.5FS5 and burden 10VA.	unit	39
1.2		Window type category (2) 130*60 mm current transformer class 0.5FS5 and burden 10VA.	unit	15
1.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	unit	10
2.1	1500/5 Amp. Current Transformer	Window type category (1) 100*100 mm current transformer class 0.5FS5 and burden 10VA.	unit	12
2.2		Window type category (2) 130*60 mm current transformer class 0.5FS5 and burden 10VA	unit	26
2.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	unit	10
3	1600/5 Amp. Current Transformer	Window type category (2) 130*60 mm current transformer class 0.5FS5 and burden 10VA.	unit	6
4.1	2000/5 Amp. Current Transformer	Window type category (1) 100*100 mm current transformer class 0.5FS5 and burden 10VA.	unit	12
4.2		Window type category (2) 130*60 mm current transformer class 0.5FS5 and burden 10VA	unit	19
4.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	unit	14
5.1	2500/5 Amp. Current Transformer	Window type category (1) 100*100 mm current transformer class 0.5FS5 and burden 10VA.	unit	12
5.2		Window type category (2) 130*60 mm current transformer class 0.5FS5 and burden 10VA		19
5.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	unit	14



**SCHEDULE (B)****PRICE SCHEDULE**

ITEM NO.	DESCRIPTION		QTY & UNIT	UNIT PRICE & CURRENCY		TOTAL.PRICE C&F AQABA-JORDAN
				FOB	C&F AQABA	
1.1	1200/5 Amp. Current Transformer	Window type <b>category (1) 100*100 mm</b> current transformer class 0.5FS5 and burden 10VA.	39			
1.2		Window type <b>category (2) 130*60 mm</b> type current transformer class 0.5FS5 and burden 10VA.	15			
1.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	10			
2.1	1500/5 Amp. Current Transformer	Window type <b>category (1) 100*100 mm</b> current transformer class 0.5FS5 and burden 10VA.	12			
2.2		Window type <b>category (2) 130*60 mm</b> current transformer class 0.5FS5 and burden 10VA	26			
2.3		Ring type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	10			
3	1600/5 Amp. Current Transformer	Window type <b>category (2) 130*60 mm</b> current transformer class 0.5FS5 and burden 10VA.	6			
4.1	2000/5 Amp. Current Transformer	Window type <b>category (1) 100*100 mm</b> current transformer class 0.5FS5 and burden 10VA.	12			

4.2		<b>Window type category (2)</b> <b>130*60 mm</b> current transformer class 0.5FS5 and burden 10VA	19			
4.3		<b>Ring</b> type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	14			
5.1	<b>2500/5</b> Amp. Current Transformer	<b>Window type category (1)</b> <b>100*100 mm</b> current transformer class 0.5FS5 and burden 10VA.	12			
5.2		<b>Window type category (2)</b> <b>130*60 mm</b> current transformer class 0.5FS5 and burden 10VA	19			
5.3		<b>Ring</b> type 140 mm $\phi$ current transformer class 0.5FS5/burden 10VA.	14			
<b>Total Price</b>						

❖ **IMPORTANT NOTES:**

1. EDCO has the right to accept partial offers and to award part of the items quantities without any limit or notice.
2. EDCO has the right to reject any offer received without clear technical details;  
EDCO has the right to reject that offer during evaluation without any prior notice.

### **SCHEDULE (C)**

#### **GUARANTEED DELIVERY PERIODS IN WEEKS**

This Schedule shall be completed by the Tenderer and the periods entered shall be binding on the Contractor

DESCRIPTION	DELIVERY PERIOD FOB PORT OF LOADING-SPECIFY PORT	DELIVERY PERIOD TO AQABA PORT- JORDAN
L.V. window type current transformers L.V. ring type current transformers		

**Note:-**

**Delivery time shall not exceed (12) weeks, C&F Aqaba port from the date of receipt EDCO purchasing order.**

**SCHEDULE (D)**

**MANUFACTURERS, PLACES OF MANUFACTURE AND TESTING**

The Tenderer shall state the town and country where manufacture, testing and inspection take place.

DESCRIPTION	MANUFACTURER	PLACE OF MANUFACTURE	PLACE OF TESTING & INSPECTION
L.V. window type current transformers			
L.V. ring type current transformers			

**SCHEDULE (E)**  
**TECHNICAL PARTICULARS AND GUARANTEES**

These Schedules are to be completed by the Contractor at the time of tendering and particulars and guarantees entered will be binding.

Description	Window/Ring type CT Information provided by Supplier in Tender				
	1200/5	1500/5	1600/5	2000/5	2500/5
Name of Manufacturer & country of origin					
Model number					
Type					
Nominal voltage                      V					
Rated voltage                          V					
Standard accuracy class for metering service					
Instrument security factor for metering Service					
Rated burden              VA					
Insulation type					
Class of insulation					
Power frequency withstand voltage      kV					
Impulse withstand voltage                  kV					
Short time withstand current/duration   kA/sec					
Temperature rise (max)              C°					
ratio for metering service primary/secondary   A					
primary continuous thermal current rating      A					
rated short—time thermal current rating      A					
rated short-time dynamic current rating      A					
Resistance of secondary winding at 75C° ohm					
Power loss   W					
Weather the transparent terminal box provided (Yes/No)					

Weather the type test certificate as per IEC 61869 attached (Yes/No)					
Whether the BH curves submitted (Yes/No)					
Internal diameter Mm					
degree of protection IP					

**SCHEDULE (F)**

**DEVIATIONS FROM SPECIFICATION (IF ANY) TO BE COMPLETED BY THE TENDERER**

ITEM NO.	BREIF DESCRIPTION	DEVIATIONS

**SCHEDULE (G)**

**LIST OF TYPE TEST CERTIFICATES FOR OFFERED MATERIALS**

Tenderers shall provide the information required below for the type test certificates from a recognized testing station covering the equipment offered to IEC recommendations & shall be submitted with the tender.

Failure to provide copies of type test certificates/reports will result in rejection of the tender.

Type test made on identical designs of equipment to those offered	Certificate No.	Certificate Authority

**SCHEDULE (H)**

**SERVICE EXPERIENCE OF MATERIAL**

Tenderers shall provide the information required below for the service experience of the same offered material.

Customer	Total Quantity.	Type	No. of years in service