

**TECHNICAL SPECIFICATIONS**

**AND SCHEDULES**

- SCOPE

This specification covers requirements for measuring current transformer for use with metering and indicating instrument, intelligent metering and similar apparatus.

- SYSTEM PARAMETARS

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

- 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

- STANDARS

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

- **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 (5 Volt – Amperes rated output power for 100/5 Amp or 160/5 window type CT could be accepted)

- **INSTRUMENT SECURITY FACTOR (FS)**

The maximum value of the instrument security factor should be decided by agreement between the purchaser and the supplier.

- **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 window type, with fixing brackets, internal dimensions of the CT's should be compatible with its highest primary rating whether being used on busbars or cables.

For CT's with primary current greater than or equal to 1000 A, the internal dimensions of those CT's should not be less than 100 mm.

The window size of LV current transformers shall be suitable for the sizes of cables and busbars as per Table2.

Current transformer	busbar dimension	cable dimension
160/5	30x5 mm <sup>2</sup>	
200/5		95mm <sup>2</sup>
250/5	30x5mm <sup>2</sup>	
300/5	30x5mm <sup>2</sup>	
400/5	40x5mm <sup>2</sup>	
600/5	30x10mm <sup>2</sup>	
1000/5	50x10mm <sup>2</sup>	
1600/5	60x10mm <sup>2</sup>	
2500/5	100x12mm <sup>2</sup>	

Table 2

The relative polarities shall be permanently marked on the current transformers as Per IEC 61869-2, Brass bolts, nuts and spring washers shall be provided at the Secondary terminals to accommodate 2.5 mm<sup>2</sup> wire leads.

The secondary terminals of the current transformer shall be housed in a terminal Box with sealing facilities to prevent access to unauthorised persons. The terminal box shall be provided with transparent cover to detect any tampered terminal connections.

- 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.

- Limit of current error and phase displacement

The current error and phase displacement at rated frequency shall not exceed the value given in Table 1 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 1

- 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.

- 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 offer.**

## SCHEDULE AND GUARANTEES

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

**SCHEDULE (A)**

**SCHEDULE OF REQUIREMENTS**

<b>Item No.</b>	<b>Description</b>	<b>EDCO Stock Code</b>	<b>Unit</b>	<b>Quantity Required</b>
1-	1000/5 window type current transformer class 0.5 and burden 10VA.			51
2-	600/5 window type current transformer class 0.5 and burden 10VA.			30
3-	400/5 window type current transformer class 0.5 and burden 10VA.			9

**SCHEDULE (B)**

**PRICE SCHEDULE**

ITEM NO.	DESCRIPTION	QTY AND UNIT	UNIT PRICE & CURRENCY		TOTAL PRICE C&F AQABA-JORDAN
			FOB	C & F AQABA	
1-	1000/5 window type current transformer class 0.5 and burden 10VA.	51			
2-	600/5 window type current transformer class 0.5 and burden 10VA.	30			
3-	400/5 window type current transformer class 0.5 and burden 10VA.	9			
<b>TOTAL PRICE C&amp;F AQABA</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
1000/5 window type current transformer class 0.5 and burden 10VA.		
600/5 window type current transformer class 0.5 and burden 10VA.		
400/5 window type current transformer class 0.5 and burden 10VA.		

**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.

<b>DESCRIPTION</b>	<b>MANUFACTURER</b>	<b>PLACE OF MANUFACTURE</b>	<b>PLACE OF TESTING AND INSPECTION</b>
1000/5 window type current transformer class 0.5 and burden 10VA.  600/5 window type current transformer class 0.5 and burden 10VA.  400/5 window type current transformer class 0.5 and burden 10VA.			

**SCHEDULE (E)**

**TECHNICAL PARTICULARS AND GUARANTEES**

**FOR LV CURRENT TRANSFORMER**

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

Item No.	Description	Information provided by Supplier in Tender		
		1000/5	600/5	400/5
1.	Name of Manufacturer & country of manufacture			
2.	Model number			
3.	Type			
4.	Nominal voltage            V			
5.	Rated voltage                V			
6.	Standard accuracy class for metering service			
7.	Instrument security factor for metering Service			
8.	Rated burden        VA			
9.	Insulation type			
10.	Class of insulation			
11.	Power frequency withstand voltage    kV			
12.	Impulse withstand voltage                kV			

13.	Short time withstand current/duration kA/sec			
14.	Temperature rise (max)      C°			
15.	ratio for metering service primary/secondary	A		
16.	primary continuous thermal current rating	A		
17.	rated short—time thermal current rating	A		
18.	rated short-time dynamic current rating	A		
19.	Resistance of secondary winding at 75C°: ohm			
20.	Power loss	W		
21.	Weather the transparent terminal box provided (Yes/No)			
22.	Weather the type test certificate as per IEC 61869 attached (Yes/No)			
23.	Whether the BH curves submitted (Yes/No)			
24.	Internal diameter	mm		
25.	degree of protection	IP		

**SCHEDULE (F)**

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

<b>ITEM NO.</b>	<b>BREIF DESCRIPTION</b>	<b>DEVIATIONS</b>

**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.

<b>Type test made on identical designs of equipment to those offered</b>	<b>Certificate No.</b>	<b>Certificate Authority</b>

**SCHEDULE (H)**

**SERVICE EXPERIENCE OF MATERIAL**

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

<b>Customer</b>	<b>Total Quantity.</b>	<b>Type</b>	<b>No. of years in service</b>