

**PURCHASE SPECIFICATIONS**  
**FOR**  
**1800:5, 20 VA CLASS 0.2; MEASURING & CONTROL**  
**SPLIT CT (CURRENT TRANSFORMER)**  
**FOR**  
**STATCOM APPLICATIONS**



SPECIFICATION NO. : OR 12607  
REVISION NO. : Rev 00  
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Prepared by

*Praveen Shah*  
03/02/17

**Praveen Shah**  
Sr. Engg./CEE

Checked by

*Rakesh Vishnoi*  
04/02/2017

**Rakesh Vishnoi**  
Sr. DGM/ OFE

Approved by

*A Mitra*  
11.2.17.

**A Mitra**  
AGM/ CEE

**OIL FIELD EQUIPMENT ENGINEERING DIVISION**  
**BHARAT HEAVY ELECTRICALS LTD BHOPAL-22**

**TECHNICAL SPECIFICATIONS FOR 1800:5 CONTROL &  
MEASURING SPLIT CURRENT TRANSFORMER (CT) FOR  
STATCOM APPLICATION**

**1. INTRODUCTION:**

This specification covers technical requirement of in-door current transformer (CT) for STATCOM for harsh industrial application generally conforming to IS 2705: 1992 (item code: **OE 4267027064**).

Offered CT must be split type having a 75 sqmm (diameter) slot for accommodating existing cable/ bus-bar without requiring opening of bus-bar/ cable for installation of CT.

The CT shall have suitable arrangement for clamping back after encircling cable all hardware required for the same shall be in supplier's scope. Mounting bracket/holes for installation of CT to be provided by supplier along with CT. Supplier to be submit OGA with mounting arrangement along with offer.

Offered CT shall confirm specification and conditions as under:

**2. TECHNICAL REQUIREMENT:**

CLAU SE NO	TECHNICAL PARAMETER/ FEATURE & UNIT	BHEL's REQUIREMENT	BIDDERS CONFIRMATION/ COMMENTS
2.0	Application	Measuring CT as defined in 3.3 of IS 2705, part1 & covered in IS 2705 part II. CT shall be used as feedback control device for measurement & STATCOM control	
2.1	Type of CT	split Type with 75mm diameter slot for cable Refer drg.4271103104#5	
2.2	No. of Cores	<b>(No.)</b> 1	
2.3	CT RATIO	<b>A/A</b> 1800/5	
2.4	VA Rating	<b>VA</b> 20	
2.5	Accuracy, as per IS 2705 part 2, 1992 Table 1C & clause 3.3.3	Class 0.2	
2.6	System Voltage (L-L) & frequency	<b>V/Hz</b> 600/50	
2.7	Insulation	suitable for 3kV AC grade	

2.8	System highest Voltage	<b>V</b>	660	
2.9	Power freq. withstand Voltage (primary)	<b>kV</b>	3	
2.10	Power freq. withstand Voltage (secondary)	<b>kV</b>	3	
2.11	Insulation Class	<b>kV/kVrms/kVp</b>	0.66/ 3/ NA as per IS	
2.12	STC Rating / Duration	<b>kA/sec</b>	50 KA for 1sec.	
2.13	Instrument Safety factor for all metering cores (The ISF shall be as Low as practicable and should be preferably less than 3)			
2.14	Continuous Overloading Capacity		125% of rated primary current	
2.15	Neutral Earthing		Solidly earth Power system	
2.16	Insulation class of CT's		B or better	
2.17	Secondary Connection terminal		M4/M5 size integral part of CT casting	
2.18	CT Colour		Brick red	
2.19	Applicable standard (for design, manufacturing, testing and interpretation of above parameters )		IS 2705: 1992	
2.20	Ambient Site Conditions			
2.20a	Temperature		-5°C to+ 55°C	
2.20b	Relative Humidity		5%-95%	
2.20c	Height above MSL		<1000 m	
2.20d	Site Conditions		Saline, Dusty, Highly Corrosive	
2.21	Terminal marking		As per IS 2705	
2.22	Rating Plate Detail			
2.22a	a. Ratio			
2.22b	b. VA rating			
2.22c	c. Accuracy Class			
2.22d	d. Insulation class			
2.22e	e. Frequency			
2.22f	f. STC rating			
2.22g	g. Identification marking			
2.22h	h. Sl. No.			
2.23	Terminal Covers (Transparent)		Fitted with each CT	
2.24	Loose CT Covers		10% extra to be supplied	

### 3. DESIGN & CONSTRUCTION:-



3.0	DESIGN AND CONSTRUCTION	BIDDERS CONFIRMATIO N/COMMENTS
3.1	The current transformer cores shall be made of suitable grade non-ageing cold rolled grain oriented silicon steel of low hysteresis loss and permeability to ensure accuracy at both normal and over voltages of 110 percent of the rated voltage and currents of 120 percent of the normal current. There shall be no saturation under service conditions.	
3.2	The current transformer shall be designed to withstand the indicated climatic conditions without temperature rise exceeding beyond permissible limits and CT shall be designed to withstand the thermal and mechanical stresses due to rated short circuit condition. Ambient temp. of 50°C shall be considered for design purpose.	
3.3	The secondary winding layer should be insulated with polyester film tape. Transparent cover shall be provided over secondary terminal.	
3.4	The CTs shall be completely encapsulated and terminal marking shall be properly & legibly provided without any requirement to interfere with wiring connections.	
3.5	The CTs should be cured properly so that the final product is non-hygroscopic.	

#### 4. TESTING & INSPECTION:-

4.0	TESTING & INSPECTION	BIDDERS CONFIRMATIO N/COMMENTS
4.1	Type Test of First CT shall be witnessed at supplier's works by BHEL/BHEL's BHEL's authorized representative. BHEL engineer may also witness routine test.	
4.2	The tests shall be carried out as per IS 2705: 1992	
4.3	Facilities for type/ test shall be provided by supplier at no charge to BHEL.	
4.4	The following type tests/ verification shall be carried out on first CT, as per IS 2705 (wherever applicable):	
4.4a	Accuracy Test (IS 2705- part II Cl. 7.1)	
4.4b	Short time current Test	
4.4c	Temperature Rise	
4.4d	Instrument Security Current test	

4.5	All routine Test as mentioned below shall also be performed	
	The following routine tests/ verification shall be carried out on all CT's, as per IS 2705 (wherever applicable):	
4.5a	OGA Dimension	
4.5b	Terminal marking & polarity	
4.5c	Ratio & Phase error	
4.5d	PF withstand test on primary	
4.5e	PF withstand test on secondary	
4.5f	Inter-turn test	
4.5g	Accuracy Test (IS 2705- part II Cl. 7.2)	

**5. PACKING & SHIPPING:-**

<b>5.0</b>	<b>Packing &amp; Shipping</b>	<b>BIDDERS CONFIRMATION/COMMENTS</b>
5.1	Identification marking : STATCOM	
5.2	The equipment is to be transported adequately sealed against water ingress. They shall be packed non-returnable packing cases to ensure safe transit in rough terrain.	
5.3	It shall be the responsibility of the supplier to make good the damage caused due to insufficient packing.	

**6. DOCUMENTS TO BE SUBMITTED:-**

<b>6.0</b>	<b>DOCUMENTS TO BE SUBMITTED</b>	<b>BIDDERS CONFIRMATION/COMMENTS</b>
6.1	<b>Documents to be furnished along with the offer -</b>	
6.1a	Clause wise confirmation/ comments against each clause of this specification	
6.1b	Dimensional drawing of the offered CT (Manufacturing shall be as per BHEL approved drawing)	
6.1c	Schedule of deviations as per cl. 9 duly filled.	
6.2	<b>Documents to be furnished at the time of delivery</b>	
6.2a	2 copies of type test & routine test certificates along with the consignment and 1 copy along with the dispatch document.	

**7. PERFORMANCE GUARANTEE:-**

<b>7.0</b>	<b>PERFORMANCE GUARANTEE</b>	<b>BIDDERS CONFIRMATION/COMMENTS</b>
7.1	The supplier shall guarantee the satisfactory performance of the CTs for a period of 24 months	

	from the date of receipt at BHEL Bhopal or 18 months from the date of commissioning, whichever is later.	
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**8. ACCEPTANCE CRITERIA:-**

<b>8.0</b>	<b>ACCEPTANCE CRITERIA</b>	<b>BIDDERS CONFIRMATION/COMMENS</b>
8.1	BHEL/BHEL's authorized representative's report for successful completion of type test.	
8.2	Visual checks for crack and surface finish.	
8.3	Rating plate as per specification parameters.	
8.4	Dimensions as per approved drawing.	
8.5	Availability of all routine test certificates.	
8.6	Availability of 10% extra secondary terminal covers.	

**9. DEVIATION, IF ANY:-**

<b>9.0</b>	<b>Deviation if any</b>	<b>BIDDERS CONFIRMATION/COMMENS</b>
9.1	Deviation shall be clearly indicated in a separate annexure. No deviation shall be accepted if written elsewhere. If no deviation is mentioned it will be considered as total compliance to this specification	



INVENTORY NO.	SIGN. & DATE	REF. DRG. NO.	THIS INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY																																																			
				<p style="font-size: small;">NO. OF SHEETS 200/CEP/002</p> <p style="font-size: small;">ON DRAWING</p>	<p style="font-size: small;">FIRST ANGLE PROJECTION</p>																																																	
			<p style="font-size: small;">NOTE:-</p> <p>1. CORE IS TO BE ANNEALED AND TO BE IMPREGNATED WITH ANALYTE UNDER VACUUM BEFORE CUTTING GRINDING &amp; LAPPING OF FACES</p> <p>TEST AT VENDOR'S WORK:-</p> <p>1. FULLY ASSEMBLED AND CLAMP CORE TO BE TESTED FOR WORKING CURRENT AT 4 VOLT AND 20 TURNS THE MEASURED CURRENT SHOULD BE LESS THAN 200MA</p>																																																			
			<p style="font-size: small;">DRAWING SHOWN HERE IS TENTATIVE AND TENDER PURPOSE. BIDDER TO SUBMIT THEIR OWN DRAWING</p>																																																			
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			<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">SR</th> <th style="width: 15%;">ITEM</th> <th style="width: 30%;">DESCRIPTION</th> <th style="width: 10%;">QTY</th> <th style="width: 10%;">MATERIAL SPECN.</th> <th style="width: 10%;">UNIT</th> <th style="width: 10%;">V.T.</th> </tr> </thead> <tbody> <tr> <td>01</td> <td>001</td> <td>CORE</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>02</td> <td>002</td> <td>BENDING STRIP</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>03</td> <td>003</td> <td>STEEL ROD</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>04</td> <td>004</td> <td>SLOTTED HEX HEAD SCREW</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>05</td> <td>005</td> <td>HEX NUT STEEL</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>06</td> <td>006</td> <td>WASHER PLAIN</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			SR	ITEM	DESCRIPTION	QTY	MATERIAL SPECN.	UNIT	V.T.	01	001	CORE	-	-	-	-	02	002	BENDING STRIP	-	-	-	-	03	003	STEEL ROD	-	-	-	-	04	004	SLOTTED HEX HEAD SCREW	-	-	-	-	05	005	HEX NUT STEEL	-	-	-	-	06	006	WASHER PLAIN	-	-	-	-
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