

**SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS OF 11KV 350 MVA, 1250  
AMP VACUUM CIRCUIT BREAKERS**

- |     |   |   |
|-----|---|---|
| 1.a | Name of Manufacturer                              | : |
| 1.b | Type of breaker                                   | : |
| 1.c | Make of breaker operating Mechanism               | : |
| 2.  | Service voltage and frequency                     | : |
| 3.  | Rated current                                     | : |
| 4.  | Making capacity                                   | : |
| 5.  | Breaking capacity                                 | : |
|     | (I) Symmetrical                                   | : |
|     | (II) Asymmetrical                                 | : |
| 6.  | Short time current rating for 3 second.           | : |
| 7.  | No. of break per pole.                            | : |
| 8.  | Total length of break per-pole.                   | : |
| 9.  | Type of arc control device.                       | : |
| 10. | Arc duration.                                     | : |
|     | (I) With no load.                                 | : |
|     | (II) With 100% SC Current.                        | : |
| 11. | Total break time                                  | : |
|     | (From trip impulse to arc extinguishing)          |   |
|     | (I) With 10% SC current                           | : |
|     | (II) With 100% SC current                         | : |
| 12. | Make time in case of spring operated<br>Mechanism | : |
| 13. | Duty Cycle  | : |
| 14. | CONTACTS.   | : |

- (I) Type of material & finish of fixed main Contact :
- (II) Type of material & finish of moving Contacts :
15. Minimum clearance in air :
- (I) Between phases :
- (II) Between live parts and earth :
16. Details of operating mechanism :
17. Degree of protection :
- Enclosure. :
- Partition :
- Shutters :
18. Whether the circuit breakers is designed to close and latch on making or fitted with making current release :
19. Whether fixed trip or trip free :
20. No. of contacts of auxiliary switch :
- (I) Normally open :
- (II) Normally closed :
21. Is the equipment vermin proof :
22. **BUS BARS** :
- (I) Whether bus bar height and arrangement is according to Para 4.5 and drawing annexed with specification(drawing with these details to be enclosed in part-I) :
- (II) Bus bar material : (EG Copper)
- (III) Current density of Bus bar Material :  $\leq 1.6 \text{ A/Sqmm.}$
- (IV) Cross sectional area (item wise). :
- (V) Insulation. :

- (VI) Minimum electrical clearance :
- (a) To earth. :
- (b) Between phases. :
- 23.** Power-required for heater :
- 24.** Whether heater is continuously rated :
- 25.** Weight of circuit breaker trolley :
- 26.** Protective characteristics :
- (I) Impulse withstand (1/50 Micro sec. Wave). :
- (II) One minimum with stand test :
- 27.** Protective relay characteristics :
- (I) Secondary resistance of protection CT :
- (II) Trip coil. :
- (III) Make & Type of Relay. :
- 28.** Whether sheet steel construction is according Para 3.1 of specification :
- 29.** Whether circuit breaker is type tested according to ISS/IEC & When? :  
[Enclose copy of complete Type Test report in tender bid-part-I]

**NOTE :-**

1. The bus bars and connectors should be insulated properly with HT insulation compound/sleeves.
2. The bus bars and connectors should be made of copper with proper cross-section area.
3. The copper bus bars and connectors should be tinned.
4. Dimensional drawing along with schematic and other details  
Should be enclosed in tender Bid Part-I.
5. Operating & maintenance manual to be enclosed in tender  
Bid Part-I
6. Details of recommended spare parts and their frequency of  
Replacement to be enclosed.

**GUARANTEED TECHNICAL PARTICULAR FOR 11 KV CURRENT TRANSFORMERS**

(Please use separate sheet for each type of CTs)

(a) 600-300/5 + 5 A for Incomer.

(b) 400-200/5 + 5 A for Outgoing.

1. Make :
2. Manufacturer's type and designation :
3. Rated Voltage :
4. Rated primary current :
5. Rated secondary current :
6. Rated output :
7. Class of accuracy :
8. Accuracy limit factor :
9. Short time rating :
10. Knee point voltage :
11. Secondary limiting voltage :
12. Rated dynamic current (Peak). :
13. Power frequency withstand test Voltage :  
on secondaries :
14. 1.2/50 MS. impulse withstand test voltage :
15. Power frequency (Dry withstand voltage.) :
16. a) No. of Primary turn :  
b) No. of Secondary turns :  
c) Cross sectional area of Primary windings :  
(mm<sup>2</sup>)  
d) Cross sectional area of secondary winding :  
(mm<sup>2</sup>)  
e) Type of Primary conductor :  
f) Type of Secondary conductor :
17. Total Weight and over-all dimension :
18. Secondary resistance of protection CT. for :  
differential-protection relay :
19. Whether in-house testing facility of CT :  
available or not ? :
20. Whether CT have been-type tested. :  
(Enclosed copy of all reports)
21. Details of past supply experience (in case of :  
bought out CTs). Kindly enclose :  
performance report.

**GUARANTEED TECHNICAL PARTICULAR OF VOLTAGE TRANSFORMER**

1. Type
2. Manufacturer's type & designation.
3. Rated primary voltage.
4. Rated secondary voltage.
5. Rated burden of secondary.
6. Accuracy class.
7. Temp. rise at 1.1 time rated voltage with rated burden.
8. Rated voltage factor & time.
9. Temp. rise for (8) above
10. One minute power frequency withstand  
test (dry) voltage.
11. 2/50 ms. Impulse wave with withstand voltage.
12. One minute power frequency withstand test  
voltage.
13. Total weight and overall dimension.
14. Whether in-house testing facility of PT  
Available or not ?
14. Mounting details.

**GUARANTEED TECHNICAL PARTICULAR OF RELAYS**

1. Make.
2. Type.
3. Ambient temp limit.
4. RATING: -
  - (a)- Rated current/voltage
  - (b)- Continuous thermal current voltage.
  - (c)- Current Voltage setting range in %  
of rated current voltage and no. of  
taps provided.
  - (d)- Range of available bias setting  
(In case of differential relay) &  
no. of taps provided.
  - (e) Whether harmonic restraint provided  
(In ease of differential relay)
5. Resting ratio and time
6. Rated short time current/voltage at  
differential setting .
7. One-minute power frequency withstand  
Voltage.
8. No. and types of contact -:
  - (a) Normally open
  - (b) Normally closed.
9. Rating of contacts -:
  - (a)- Voltage AC & DC.
  - (b)- Current AC & DC.

10. Operating time
11. Current/Voltage time characteristics for  
IDMTL current/voltage relay.
12. Tune setting for IDM TL current/voltage  
Relay.
13. Rated burden at lowest and highest setting.
14. Whether series or shunt trip type relay.
15. Whether hand/self reset flag indicator  
Provided.
16. Overall dimension.
17. Whether relay is draw out type.

**ADDITIONAL DATAS FOR ENERGY METER & INDICATING INSTRUMENTS**

1.Make

2.Type

3.Size & type of meters

4.Standards

5.Class of accuracy.

(Enclose all details and drawings of  
all the above instruments/meter)

6.Details of selector switch:

(a)- Type & make

(b)- Range



**GUARANTEED TECHNICAL PARTICULAR OF VACUUM INTERRUPTER BOTTLE**

1. Make
2. Manufacturer
3. Address of manufacture of vacuum bottle
4. Type and designation.
5. Dimensions **(Please provide drawings)**
6. Insulation.
7. Degree of vacuum inside-the bottle.
8. Gap between the contacts in vacuum.
9. Area of contacts.
10. Interrupter weight.
11. Electrical ratings of vacuum bottle.
12. Rated short circuit current.
13. Rated short circuit making current.
14. Rated short time withstands current.
15. Duration of short time current.
16. Maximum contact resistance at minimum closing force.
17. Capacitor switching capacity.
18. Contact stroke (In mm).
19. Opening speed.
20. Maximum over travel during opening.
21. Closing speed.
22. Electrical life at rated normal current.
23. Electrical life at rated short circuit current.
24. Mechanical life.
25. Contact erosion limit.
26. Shelf life