



**KERALA STATE ELECTRICITY BOARD LIMITED**  
(Incorporated Under the Companies Act, 1956 (No.1/1956)  
Corporate Identity No.U40100KL2011SGC027424

**Corporate Office (Supply Chain Management)**

Vydyuthi Bhavanam, Pattom, Thiruvananthapuram- 695004, India,  
Ph: +91-471-2446853, Fax: +91-471-2447246, E-mail: cescmkseb@ksebnet.com

**PURCHASE ORDER**

P.O.No.	SCM.86/2015-16/	403/
Date	11/12/2015	
P.O. type	Supply	
P.O. type	New	
Reference file	XR/AEE1/2015/CE(SCM)/e P.22/AB Switch	
Tender No.	KSEB/SCM/ep.22/2015-16 dated 22/07/2015	
Purchase Value	<b>Rs. 2,46,66,000/-</b>	
Price	<b>Fixed</b>	

From

**The Deputy Chief Engineer (SCM)  
with powers of Chief Engineer**

To

**M/s. United Electrical Industries  
Limited, Pallimukku,  
Kollam 691 010**

Sir,

Sub:- Supply of 2000 numbers of 11kV, 400 Amp AB Switches – reg:

- Ref:-
- 1) This office Bid No. KSEB/SCM/ep.22/2015-16 dated 22/07/2015
  - 2) Your offer against the tender dated 7.8.2015
  - 3) XR/AEE1/2015/CE(SCM)/ep.22/AB Switch/2692 Dated, 18/9/2015
  - 3) Your letter Sales/KSEB/1621/2015-16/dated 22.9.2015
  - 4) XR/AEE1/2015/CE(SCM)/ep.22/AB Switch/2835 Dated, 29/09/2015
  - 5) UEI/Sales/KSEB/ABS/18602015-16 dated 16.10.2015
  - 6) Sales/KSEB/2160/2015-16 dated 18/9/2015 received on 18/11/2015
  - 7) Remarks of the Financial Advisor No. Tender-III/137/2015 dated 7.11.2015
  - 8) Your letter Sales/KSEB/2273/2015-16/dated 24.11.2015
  - 9) Proceedings of Purchase Committee (Agenda Item No. 88 dated 7.12.2015) No. SCM/TA.41/PC/15-16/4015 dated 10.12.2015

Your offer to supply the materials as detailed below is accepted provided the item confirming to the technical specifications mentioned in the purchase order. Please effect the supply according to the instructions in the note below. None of the conditions stated in your tender or other letters will be applicable unless it is specifically mentioned in this order. Please acknowledge receipt of the order and confirm acceptance of the conditions by return.

A copy of this order attached is to be attested by you on all pages in token of acceptance and returned for incorporation in the contract agreement.

This Purchase Order contains 15 pages serially numbered from 1 of 15 to 15 of 15 and signed by the Deputy Chief Engineer (SCM) with powers of Chief Engineer on all pages.

Yours faithfully,

**Deputy Chief Engineer (SCM)**  
with powers of Chief Engineer

- Acc:-
- 1) As above
  - 2) Annexure- I – Format of Agreement.
  - 3) Annexure-II – Format of Security Deposit Bank Guarantee
  - 4) Annexure-III – Format of Performance Bank Guarantee.

P.O.No.SCM 86/2015-16

Copy to:-

- 1) The Secretary (Administration), KSEB Limited, Vidyuthi Bhavanam, Thiruvananthapuram.
- 2) The Financial Adviser, KSEB Limited, Thiruvananthapuram.
- 3) The Accountant General, Kerala.
- 4) The Commissioner, Commercial Tax, Public Office, Thiruvananthapuram
- 5) The Chief Engineer (Distribution - South), Power House Building, Thiruvananthapuram.
- 6) The Chief Engineer (Distribution - Central), KSEB Limited, Gandhi Square, D.H.Road, Ernakulam.
- 7) The Chief Engineer (Distribution - North), Vidyuthi Bhavanam, Gandhi Road, Kozhikode -11.
- 8) The TA to Director (Distribution and Safety), Vidyuthi Bhavanam, Thiruvananthapuram.
- 9) The Deputy Chief Engineer, Electrical Circle, Kollam
- 10) The Deputy Chief Engineer, Electrical Circle, Thrissur.
- 11) The Deputy Chief Engineer, Electrical Circle, Kozhikode.
- 12) The Assistant Executive Engineer, Sub Regional Store, Kollam
- 13) The Assistant Executive Engineer, Sub Regional Store, Thrissur.
- 14) The Assistant Executive Engineer, Sub Regional Store, Kozhikode.
- 15) The Executive Engineer, Allocation (M), O/o the Chief Engineer (SCM)
- 16) The Finance Officer, Transmission Circle, Nallalam, Kozhikode
- 17) Stock File.

*Sudhakar*  
11/12/15

with powers of Chief Engineer  
Deputy Chief Engineer (SCM)  
11/12/15

Total Contract Value = Rs. 2,46,66,000/- (Rupees Two crore forty six lakh sixty six thousand only)

Sl. No	Description	Qty. (Nos.)	Unit Price (Rs.)	Excise Duty 12.5% (Rs.)	CST @ 2% (Rs.)	Packing & Forwarding (Rs)	Freight Charges (Rs)	Insurance Charges (Rs.)	All inclusive unit rate	Total all inclusive Amount (Rs.)
1.	11kV 400 Amp AB Switches	2,000	9848.00	1231.00	554.00	200.00	490.00	10.00	12,333	2,46,66,000
<b>Total</b>										<b>Rs.2,46,66,000</b>

SCHEDULE OF PRICE FOR 11KV 400 Amp AB SWITCHES - P.O. NO.SCM 86/2015-16 dated 11/12/2015

### Special Instructions

1) **Scope:-** This order covers design, manufacture, inspection, testing at suppliers works and delivery including unloading at site at KSEB Limited's stores of items mentioned in the schedule and its guarantee for satisfactory performance for a period of 24 months from the date of acceptance by the consignee or 18 months from the date of commissioning whichever is earlier.

This contract will be governed by the KSEB Limited's above bid specification, terms and condition in our bid documents, General condition of contract, above correspondence and this order. In case there is any disparity between the terms and conditions of this order and aforesaid specifications and offer, the terms and conditions stated herein and the specification shall prevail, None of the conditions stated in your offer or in subsequent letters shall be deemed to be accepted unless specifically stated herein also

2) **Agreement:-** A contract agreement should be executed by you within 15 days of receipt of this order in the prescribed form in Kerala Government Stamp Paper worth Rs.200/- along with Security Deposit as referred to below. The Power of Attorney (duly certified by a Registered Notary and with attestation of signature) authorizing the Person signing the contract agreement on behalf of the company may also please be forwarded with the contract agreement. Payment on account of supplies against this order is liable to be withheld until the agreement is executed. General Conditions of Contract, Bid Agreement, Tender Conditions and this Purchase Order will also be a part of the contract agreement.

3) **Security Deposit:-** An amount of Rs. 12,33,300/- (Rupees Twelve Lakh Thirty Three Thousand and Three Hundred Only) has to be deposited as security deposit with the Deputy Chief Engineer (SCM) with powers of Chief Engineer in the form of demand draft. Security Deposit can also be furnished in the form of Bank Guarantee valid upto 3 months after expiry of the Guarantee Period from a Nationalized / Scheduled Bank except Indus Ind Bank Limited. Cheques are not acceptable. If Security Deposit submitted is in the form of Bank Guarantee, the said Bank shall include Purchase Order No., Description of Material, Quantity and All Inclusive Price in the Bank Guarantee. The security deposit will be released after satisfactory completion of supply provided the firm furnishes performance bank guarantee. The total amount to be retained after satisfactory completion of supply is limited to 10% of the amount of contract (performance bank guarantee) which will be released after expiry of the contract period on receiving NLC from the consignees. The performance bank guarantee will be valid upto 3 months after expiry of the guarantee period.

4) **Price Details:-** This price noted above is all inclusive of taxes, other levies, packing and forwarding freight and insurance. Loading and Unloading of materials at site is suppliers responsibility.

The split up details of all inclusive rates are follows.

Description	11KV 400 Amp AB Switch (Rs)
Unit Basic Price (Rs.)	9848.00
Excise duty 12.5% (Rs.)	1231.00
VAT/CST @ 2%(Rs.)	554.00
Packing and forwarding charges (Rs.)	200.00
Freight Charges (Rs.)	490.00
Insurance Charge (Rs.)	10.00
All inclusive Rate (Rs.)	12333.00
Total all Inclusive Amount (Rs.)	2,46,66,000.00

5) **Firmness of rates:-** The price noted above is FIXED. Statutory variation, if any, in taxes and duties due to policy decision of the Govt. during the scheduled delivery period will be to the KSEB Limited's account. Taxes and duties will be admitted only at actuals on production of documentary evidence. Changes in statutory levies on account of change in policy decisions of the Government after the date of opening of tender, but during the scheduled delivery period will be to Board's account but any increase in statutory levies on account of crossing limits of turn over of your firm as specified by Govt. rules and regulations or due to delay in supply will not be compensated by the Board. Documentary proof regarding payment of service tax for freight charges shall also be furnished. **Service charge on freight charges shall be to suppliers account.**

*Audhya*  
11/12/15

In case the documentary proof for remittance of service tax against freight charges is not made available the following shall be produced before the consignee.

1) A certificate issued by a practicing Chartered Accountant showing invoice vice details of remittance of service taxes against freight charges.

2) An undertaking in stamp paper worth ₹200/- shall be furnished by the contractor to the effect that the contractor shall be liable to pay the service taxes if any claimed by the concerned authorities.

Taxes and duties quoted by the firm will be reimbursed after obtaining an undertaking from the supplier in Kerala Govt. stamp paper worth Rs.200/- in the following format.

" P.O. NO.SCM. .... /2015-16 dated .... /.... /2015 M/s. United Electrical Industries Limited, Palimukku, Kollam 691 010 hereby agreed that if any dispute on payment of taxes and duties from concerned tax authorities occurs in future, the firm shall indemnify the KSEB Limited from such liabilities and supplier will be liable for the additions, loss or cost on account of such discrepancies/ dispute".

6) **Payment terms:-** 90% of basic price with 100% taxes, duties, freight charges and insurance charges will be made by the consignee through KSEB Limited's fund in due course by cheque on the SBI or its subsidiaries after receipt and preliminary verification and acceptance by the consignee and balance 10% will be paid after completion of the guarantee period or on production of a Bank guarantee from a Nationalized/ Scheduled Bank, except Indus Ind Bank Limited, for an amount equivalent to 10% of the contract value valid upto 3 months after the expiry of the guarantee period. Bank guarantee will be for Rs. 24,66,600/- (Rupees Twenty four lakh sixty six thousand and six hundred Only). Clause 15 of General Conditions of Contract stands amended to this extent. Bank charges, if any, incurred in connection with effecting payment to the suppliers will be to the supplier's account.

**Final payment will be made on production of an undertaking by the Supplier/ Contractor in Rs.200/- stamp paper that all taxes and duties payable to the Central/ State Government Department/ Agencies due to the Supply/ Contract have been paid by him and if any claim is received in future from any Central/ State Government Department/ Agencies under existing laws regarding this supply / contract, the Supplier/ Contractor shall be liable to pay the same.**

7. **Delivery period and schedule:-** Delivery shall commence within 60 days from the approval of the sample, GTP and drawing with a quantity of 1000 numbers and to be completed as per the schedule detailed below to Sub Regional Stores, Kollam, Thrissur & Kozhikode. The Consignee for the delivery of the item will be the **Deputy Chief Engineer, Electrical Circle, Kollam, Thrissur and Kozhikode.** But the consignment shall be delivered anywhere in Kerala without any extra cost, if required by the Board.

Sl. No.	Consignee	Within 60 days from the date of purchase order	2 <sup>nd</sup> month (Within 90 days from the date of purchase order)	Total
1)	The Deputy Chief Engineer, Electrical Circle, Kollam	300	300	600
2)	The Deputy Chief Engineer, Electrical Circle, Thrissur.	300	300	600
3)	The Deputy Chief Engineer, Electrical Circle, Kozhikode.	400	400	800
	Total	1000	1000	2000

Delivery period noted above cannot be altered except under recognized force-majeure conditions or under revised instructions from this office. Clarifications sought for or amendments issued will not entitle the supplier for

*[Handwritten Signature]*  
11/12/2015

extension of delivery time. However, the materials shall be delivered any where in Kerala without any additional cost, if required by the Board. Unloading of materials at the destination store is supplier's responsibility.

8) **Packing and Despatch:-** The material shall be packed properly as per standard to eliminate the chances of damages during transit and while handling at site.

The packages should be marked KSEB/SCM.86/2015-16.

9) **Quantity Variation:-** Purchase Order for an additional quantity up to 25% over and above the original tendered quantity will be placed if the supplier is willing to supply the additional quantity at the same rates, terms and conditions of the original order and accepts the KSEB Limited's refixation clause "the price for this additional quantity shall be refixed if a fall in price occurs in the next tender opened (Price bid) during the delivery schedule fixed for the additional order". The materials if any, supplied after the delivery schedule mentioned in the 25% additional quantity will be accepted only on condition that price of such materials shall also be refixed.

10) **Branding:-** Necessary identification mark as required in the relevant IS specification shall be provided on each product. In addition to the above marking, the word KSEB Ltd. and supplied on \_\_\_/\_\_\_/2016 has to be indented on each item. This should be done before the material is offered for inspection.

11) **Standard:** The items shall be designed, manufactured assembled marked and packed as per the purchase order specifications, approved drawing and approved GTP

a) **Drawing:-** The drawing shall be submitted for approval within ten days from the purchase order.

b) **GTP:-** The GTP shall be submitted for approval within ten days from the purchase order.

12) **Pre- despatch Inspection and Testing:-** The inspection may be carried out by the purchaser's representative during manufacture and before dispatch. The supplier shall keep the purchaser informed in advance about manufacturing program so that the purchaser can arrange for inspection.

i. The manufacturer shall grant free access to the purchaser's representative at a reasonable time when the work is in progress. Inspection and acceptance of material under this specification by the purchaser shall not relieve the supplier of his obligation of furnishing the material in accordance with the technical specification attached with the purchase order and shall not prevent subsequent rejection if the equipment is found to be defective.

ii. All acceptance tests and inspection shall be done at the place of the manufacture unless otherwise especially agreed upon by the Bidder and Purchaser at the time of purchase.

iii. The purchaser reserves the right to insist for witnessing the acceptance/routine testing of the bought out items.

iv. The supplier shall give 15 days advance intimation to enable the purchaser to depute the representative for witnessing the acceptance and routine tests. Material shall be dispatched only after getting the dispatch authorization from the Purchaser, after successful inspection/testing.

v. The supplier shall provide the inspectors representing the purchaser all reasonable facilities without charge, to satisfy himself that the material is being manufactured in accordance with this specification during stage inspection, if any and final inspection. The supplier shall ensure that the packing list and bill of material are approved by the purchaser before dispatch

vi. The packing shall be done as per the manufacturer's standard practice. However the supplier should ensure the packing is such that, the material should not get damaged during transit by Rail/Road.

13) **Test Certificate:-** Test certificate covering all acceptance tests and routine tests as per relevant IS for each consignment shall be submitted to this office for approval before dispatch duly attested by your testing Engineer with name and seal affixed.

Copies of test certificate thus approved shall be sent along with delivery documents to the respective consignees.

The goods shall be dispatched only after the test certificates are approved from this office and MDCC is issued by the Deputy Chief Engineer (SCM) with powers of Chief Engineer.

14)

**Guarantee:-** The materials offered shall be guaranteed for a minimum 24 months from the date of acceptance by the consignee or 18 months from the date of commissioning whichever is earlier. Defects if any noticed during this period, which are due to faulty design, workmanship or inferior raw materials or non adherence to specified IS limits, shall be made good by way of replacement free of all costs to the KSEB Limited.

15)

**Penalty for delayed supply:-** The quantity ordered shall be supplied as noted in clause '7' above. The material shall deliver on condition that in the event of their defaults to supply as ordered/failure to supply within the period stipulated in the order, the security deposit will be forfeited. In such cases, the KSEB Ltd or the Deputy Chief Engineer (SCM) with powers of Chief Engineer has the option to refuse or accept the delayed supply and also has further option that when belated supplies are accepted the price to be paid will be the rate of such materials on the date of actual supply as per new tender/ Purchase Order or at the ordered rate as per this order whichever is lower or as settled by the KSEB Limited / or Chief Engineer, whose decision will be final and the contractor be further liable to pay 1% of the all inclusive rate minus taxes & duties (i.e., Basic rate plus Freight & Insurance) of materials supplied as liquidated damages for every month of delay or part subject to a maximum of 10% value of the belated supplies. But if the actual damages exceed this amount the contractor is liable to pay for such damages instead of 1% or 10% above stipulated.

In case the successful bidders, after having made partial supplies, fail to fulfill the contract in full or any of the materials is not supplied, such supplies may at the discretion of the purchasing officers be arranged by means of another bid/quotation or by negotiation or from the next higher bidder, and the loss if any, caused to the KSEB Ltd thereby shall, together with such sums as may be fixed by the KSEB Ltd towards damages, be recovered from the defaulting contractors.

Even in cases where no alternative purchases are arranged for the materials not supplied, the proportionate portion of the security deposit based on the materials not supplied at the rate shown in the bid of the defaulter, shall be forfeited and the balance alone shall be refunded.

The Purchaser without prejudice to the conditions laid in the General Conditions of Contract may terminate this contract, if the supplier fails to commence the supply within the stipulated time or fails to perform any other obligations under this contract or does not make up its failure within a period allowed by the purchaser after the receipt of the default notice from the purchaser. After termination of contract, KSEB Ltd will have liberty to arrange alternative purchase of the materials at the risk and cost of the supplier.

If the 11 kV AB Switches is offered for inspection as stipulated in Clause - 12 and inspected within the contractual delivery schedule, the materials will be accepted without imposing penalty if they are delivered within 15 days from the date of issue of Material Despatch Clearance Certificate. This is not applicable for refixation of prices.

Penalty is applicable for belated replacement of materials rejected also as stated above.

For calculation of penalty, periods less than fifteen days will not be counted and delay of 15 days and above will be counted as one month. In the event of non supply of the total quantity before due date, Board reserves the right to terminate the contract to the extent of the quantity remaining undelivered at the risk and cost of the supplier. In case KSEB Limited accept belated supply after completion period of contract this will be regulated as per clause '27' (Price refixation) below.

16)

**Replacement of Rejected Materials:-** Rejected materials will have to be replaced by you within 45 days from the date of intimation by the consignee. If the replacement is not effected within the above period, the rejected materials should be taken back within a maximum period of 3 months from the date of intimation of rejection by the consignee officer, failing which the KSEB Limited will be at liberty to dispose off the rejected material without any notice. No claims by the supplier will be entertained on account of the disposal. KSEB Limited also reserves the right to recover from the concerned supplier any loss sustained by the Board due to the delay in clearing the rejected materials by the suppliers and the inconvenience caused to the KSEB Limited in this respect.

If the rejected materials are not lifted from the site/store within 15 days on receipt of the intimation of rejection by the consignee, the supplier shall be liable to pay @ 0.1% of the value of rejected materials for every week of delay subject to maximum ground rent of 10%.

- 17) **Acceptance of Materials and Tests:-** The materials will be inspected and relevant tests if deemed necessary will be conducted on receipt of the materials by the consignee and the lot not satisfying the tests will be rejected. A minimum period of 20 days will be required for verification and acceptance of the items by the consignee. Damages and defects if any noticed will be intimated to you within the period.
- Final acceptance of materials will be made after conducting tests, if deemed necessary by the purchaser in an independent laboratory (any of the Government approved laboratories in Kerala) and the lot not satisfying the tests will be rejected. The fact that the consignee has received the materials will not automatically imply total acceptance.
- 18) **Raw Materials:-** Raw materials required for the manufacture of the ordered item shall be procured by the supplier himself. No assistance in any form will be provided by the KSEB Limited for procuring raw materials.
- 19) **Force Majeure Conditions:-** You will not be liable for any liquidated damages for such delay due to force majeure conditions such as acts of God, acts of Public enemy, acts of Government, Fire, Floods, epidemics, quarantine restrictions, riots, civil commotion and freight embargo provided that you notify (within 10 days from the beginning of such delay due to force majeure condition) with valid proof for force majeure conditions. The KSEB Limited will verify the facts on merits and grant suitable extension of delivery period if facts justify.
- 20) **Sales Tax/Excise Duty:-** The KSEB Limited is a registered dealer under the Central Sales Tax Act and the Registration Number is TIN No.32021065899 (Kottarakkara),32081607538 (Thrissur) and 32110881276 (Kozhikode). Hence inter state Sales Tax, if payable, will be only at the concessional rates allowed to registered dealers. C forms will be issued by the consignees on request with full details of LR and invoices. Request for C forms should be made to the consignees immediately after completion of supply. **The Deputy Chief Engineers concerned will issue 'C' forms within 15 days of receipt of request.**
- 21) **Recovery:-** Any sum of money due and payable to the KSEB Limited arising out of this contract or under any other contract made by the supplier with the purchaser may be appropriated by the purchaser and set off against the pending payments of the present contract.
- 22) **Termination:-** The purchaser without prejudice to the conditions laid in the General Conditions of Contract may terminate this contract, if the supplier fails to commence the supply within the stipulated time or fails to perform any other obligations under this contract or does not rectify the defects within a period allowed by the purchaser after the receipt of the default notice from the purchaser. After termination of the contract KSEB Limited will have liberty to arrange alternate purchase of the material at the risk and cost of the firm.
- 23) **Corrections and Omissions:-** Specification, quantities, prices etc. noted in the schedule are subject to correction. Errors or omissions, if any, will be intimated to or by the contractor within ten days from the date of this order.
- 24) **Insurance:-** The materials should be insured at your cost to the destination and for one month storage. However, proof of insurance will not be insisted, as the materials are delivered at store. The responsibility for the safe and satisfactory delivery of the materials at the destination will rest with the supplier.
- 25) **Bankers:-** Our Bankers are State Bank of Travancore.
- 26) **Invoice:-** Invoice in triplicate should be drawn and forwarded to the consignee concerned. Separate invoices should be sent for each consignment. Separate invoices for 90% payment and 10% payment are to be drawn for each consignment. In all correspondences and invoices relating to this order, the number and date of the order given in page 1 should be clearly quoted.
- 27) **Price Refixation:-** The materials, if any, supplied after the Scheduled delivery period noted in the order will be accepted only on condition that price of such materials will be refixed taking into consideration the value of such materials on the date of actual supply as per the new tender/purchase order or as per this order whichever is lower. For applying price refixation the date of opening of price bid of the new tender shall be treated as the effective date. The price shall

*Subhash*  
11/12/15



be refixed only for the quantity of materials delivered after this effective date. The re-fixation shall be done on the basic price only when there is a fall in price noticed in the basic price of the materials with same specifications supplied and accepted by KSEB Limited on subsequent purchase orders. The Deputy Chief Engineer (SCM) with Powers of the Chief Engineer's decision in refixing the price will be final.

- 28) **Jurisdiction:-** The courts situated at the place where the Headquarters of the KSEB Limited is situated viz. Thiruvananthapuram alone will have jurisdiction to entertain civil suits pertaining to this contract.
- 29) **Governing conditions:-** This order shall be governed by the conditions stated herein and in the tender notification issued by the KSEB Limited. None of the conditions stated in your offer or in the subsequent letter shall be deemed to be accepted unless specifically stated herein also.

*Sudhadevi*  
11/12/15  
Deputy Chief Engineer (SCM)  
with powers of Chief Engineer  
*PS*

**TECHNICAL SPECIFICATION  
FOR AB SWITCHES FOR 11KV, 400A OUTDOORS**

**1. SCOPE**

This specification covers the design, manufacture, testing before despatch at the manufacture's work, inspection, packing, forwarding, supply and delivery of 11 kV, 3phase, 400A, 50Hz, Gang operated type Outdoor No load Air Break Isolator for the K.S.E.Board Ltd.

**2. MATERIALS AND WORKMANSHIP**

All materials used in the construction of the AB Switches and accessories shall be of the highest quality. List of all sub venders should be submitted along with the Bid. The entire design and construction should be capable of withstanding the severest stresses likely to occur in actual services and capable of resisting rough handling during transport. The workmanship shall be of the highest grade and entire construction in accordance with the best modern practice.

**3. STANDARDS APPLICABLE**

- a. Air Break Switch : IS 9921
- b. For Porcelain insulator : IS: 2544
- c. Metal fittings for insulators, General requirement & tests.: IS: 2486, Part-1
- d. Insulator fittings : IS: 2486, Part-2
- e. Material for nuts : IS: 1367/1980, Part-6
- f. Quality of Zinc for galvanizing : IS: 209/1992
- g. Uniformity & weight of Zinc coating : IS: 2633/1986
- h. Method of galvanizing all ferrous materials except spring washers & nuts : IS: 2633/1986
- i. Method of galvanizing spring washers : IS: 5358/1969
- j. Testing of spring washers : IS: 1573/1986
- k. Testing of nuts : IS: 1367/1980- Part-6
- l. Mass of zinc coating for nut : IS: 1367/1980, Part-13
- m. Copper rods and bars for electrical purposes : IS 613 : 2000

**4. ATMOSPHERIC CONDITIONS:**

All parts and fittings shall be suitable for use in atmospheric condition given below and shall be inherently resistant to atmospheric corrosion or be suitably protected against corrosion both during storage & in service.

- a. Max. Ambient temperature :50 degree centigrade
- b. Min. Ambient temperature : 5 degree centigrade
- c. Daily avr. Ambient temperature :50 degree centigrade
- d. Max. humidity :100%
- e. Average number of Thunder storm days :50 per annum
- f. Average number of storm per annum :55 per annum
- g. Max. rain fall per annum :4500mm (approx.)
- h. Average rain fall per annum :3000mm (approx.)
- i. Limits of variation of ambient temperature  
Over a period of 24 hours :15 degree peak
- j. Wind pressure :150 kg/sq. meter
- k. Altitude : up to1000m above MSL

**5. DRAWING AND TYPE TEST CERTIFICATE:**

The detailed drawing of AB Switch complete with all fittings and accessories and all the rated guaranteed technical particulars (vide Annexure II) shall conform to the drawings with the type certificates. The AB Switch supplied should be of identical types. There

*[Handwritten Signature]*  
11/12/15

should not be any omission of details in the drawing. The AB Switch supplied shall conform to the purchase order and approved drawing and GTP. Supplies, which do not conform to the purchase order specifications, approved drawings and GTP are liable to be rejected.

#### 6. TYPE

The isolating switches specified herein are for installation in the 11kV outdoor switch yard of the Kerala Power Grid and shall conform to the requirement of IS: 9921 and its latest amendments. They shall be of 3 pole single vertical break, pantograph type mounted on channel iron base. They shall be suitable for being mounted on steel horizontal. Three numbers single unit 11kV post type insulators shall be provided on each phase. The insulators shall be suitable for a BIL of 75 KVp. Adjustable Arcing Horns (G.I.Rod type) shall be provided one each isolator.

The isolators shall be designed for being suitably mounted on the associated supporting structures. The centre-to-centre phase-to-phase distance of the isolators shall be 760mm and 460mm in between phase and center of the supporting post. The insulation between the open contacts of a pole shall be at least 15% more than the insulation between the live parts of a pole to ground so that if any flashover occurs when switch is open, it will be to the ground.

#### 7. OPERATION

The switches shall be provided with an operating mechanism, for satisfactory manual operation from ground level and will open or close all the three phases simultaneously. Facility will be provided to lock the operating handle in both the closed and open position. Tinned copper with Brass/ B.M.clamps or any other suitable materials shall be provided for terminal pad. The isolators shall be capable of resisting in closed position the dynamic and thermal effects of maximum possible short circuit current. The isolating distance of the AB should be at least 310mm. Operation of AB at any point should not result in breaking of any of the insulators due to physical contact with another.

#### 8. BASE CHANNEL

The base channel shall be provided at the bottom side and be of minimum size of 75X40 mm ISMC channel and shall be galvanized as per IS: 209/1992 after fabrication. There is two numbers of holes of size 18mm shall be provided in each pole

#### 9. INSULATOR

The insulator used shall be of post type porcelain and the voltage level is as follows:

Rated voltage of the insulators in kV rms	Rated lightning impulse withstand voltage		Rated one minute power frequency withstand voltage
	To earth and between poles	Across the isolating distance	
12	75 kVp	85 kVp	28 kVp
			Across the isolating distance
			32 kVp

- i. Insulation to ground, insulation between open contacts and the insulation between phases of the completely assembled isolators switch shall be capable of with standing the dielectric test voltage specified as above. Insulation between open contacts of a pole shall at least be 15% more than the insulation between the live parts of a pole to ground so that any flash over occurs when switch is open, it shall be to the ground.
- ii. The solid core post insulators shall have an ultimate bending strength of 6KN and shall conform to IS.2544 or other internationally recognized standards. The insulators selected shall be for use at normally polluted atmosphere creepage distance of 25mm/KV min. and shall be specifically suited to meet the particular requirements of ultimate torsional strength and cantilever loads which they will be called upon to resist during service the rated voltages. The guaranteed data and particulars of the insulators adopted for the equipment offered by the tenderer should be given.

- iii. The insulating material shall be homogenous and free from all cavities and flaws. Design of the insulators shall ensure ample insulation, mechanical strength and rigidity for satisfactory operation under site conditions. The design shall also ensure that the losses caused by capacitive currents or conduction through dielectric are minimum and that the leakage due to moist and dirty insulator surface is least.
- iv. All the insulators should be interchangeable with each other.
- v. The mounting base flange of the insulator should be 80mm dia and with PCD 57mm.
- vi. The top of the insulator should be of 80mm dia and with PCD 57mm.
- vii. The porcelain insulator shall be sound, free from defects, thoroughly vitrified and smoothly glazed. The glaze shall be of brown in colour.
- viii. The rated short time withstand current for one second shall be 16kA and the rated peak withstand current shall be 40 kA

All metal caps and supports shall be cemented to the porcelains or supported to the composite insulator, where as the blades and contact blocks shall be bolted on the metal parts of insulator thus making the replacement of damaged insulator easy.

#### 10. PANTOGRAPH

The pantograph used shall be of rugged in construction and is made of minimum 20x3mm thick GI strip. The length of the pantograph is 530mm. The pantograph is suitable for carrying flexible braided copper.

#### 11. FLEXIBLE BRAIDED COPPER

Flexible braided copper should be of current carrying current density of 1.3A/sqmm of AB Switch.

#### 12. CONTACTS

The fixed and arcing contacts horns using GI rods are used for reducing the arcing of main contacts during switching operation.

- i. The fixed and moving contacts shall be silver plated and secured tight by phosphor bronze springs. The fixed contacts shall be made of hard drawn electrolytic copper. Electrodynamics withstands ability during short circuits without any risk of repulsion of contacts.
- ii. Thermal withstand ability during short circuits.
- iii. The minimum contact area of the contact shall be 1800sqmm for 400A Constant contact pressure even when the live parts of the insulator stacks are subject to tensile stresses due to linear expansion of connected bus bar or flexible conductors either because of temperature, variation of strong winds.
- iv. Wiping action during closing and opening.
- v. Self alignment assuring closing of the switch without minute adjustments
- vi. The current density of the contacts shall be 1.3A/sqmm

The switch blade shall be made of hard silver plated drawn electrolytic copper flats with ends silver-plated and the switch contacts shall be of the spring loaded jaw type. All current carrying contacts shall be of the multi-bolt type using bolts and nuts of suitable nonrusting, non-magnetic materials with suitable locking arrangements.

#### 13. TERMINALS

Each isolator shall be provided with terminal connectors made from 50X6 mm tinned copper strip and having two holes of size 13mm dia for accommodating 95 mm<sup>2</sup> cable lug.

#### 14. CONNECTING ROD AND MECHANISM

The connecting rod used should have rugged in construction and is be of 25 mm GI square rod. The mechanism connecting the square rod and connecting pipe shall strong enough to carry mechanical loading during switching operations. The central insulator of the AB is suitable for vertical breaking of the contacts through the connecting rod. Roller assembly with side plate and brass bush shall be provided. Provision for fine adjustment for the roller assembly at site should be given.

#### 15. CONNECTING PIPE

The Length of down pipe shall be 6m and a diameter of 20mm class 'B'. No welded joint pipe shall use for this purpose. The nuts shall be provided with spring washer or split pins. All iron parts shall be hot dip galvanized.

#### 16. HANDLE

The operating handle shall be of Galvanized iron and is insulated with epoxy resin cast compound after it's fabrication. The insulation thickness provided in the handle such that it should have to withstand 6.5kV.

#### 17. LOCKS AND LOCKING ARRANGEMENT

The AB Switches are suitable for locking at both ON and OFF position using 8mm dia pad lock. The supplier should provide a 8mm dia pad lock along with the AB switch.

#### 18. PACKING

All insulators (with or without metal fittings) shall be packed in wooden crates suitable for easy but rough handling and acceptable for rail and road transport.

Where more than one insulator is packed in a crate, wooden separators shall be fixed between the insulators to keep individual insulators in position without movement within the crate. Also packing with suitable material is to be provided to avoid any damages to the insulator.

Metal fittings can be packed in a separate wooden crate.

The wooden crates shall be provided with steel hoop and bends for strength and durability to withstand rough handling. The bends shall have descriptive marking of the firm thereon.

It is the responsibility of the manufacturer/ supplier to ensure the delivery of items without any damages to the consumer's store or other designated places mentioned by the customer. The customer can inspect or do any or all acceptance tests at the customer's premise after the delivery. If any failure or damage is noticed, the lot can be rejected fully or partially.

The firm shall provide at its cost, lead seal and wire on each wooden crate to facilitate sealing by the inspection authority of KSEB after acceptance of the lot at manufacturer's premises.

Delivery without any damages will be the responsibility of the supplier and if any failure is noticed the lot can be rejected.


  
Deputy Chief Engineer (SCM)  
with powers of Chief Engineer

GUARANTEED TECHNICAL PARTICULARS TO BE FURNISHED BY THE BIDDER FOR  
11KV, 400 A AB SWITCHES

1.	Makers Name, Address and Brand Name	UMLEC United Electrical Industries Ltd Manakkrada, P.O. Pallikonda, Kottam SE 892071, RA 9524, IS 2408 Part-1 Part-2, IS 1987, 1993, Part 0, 15, 899 1992, IS 2033/1995, IS 5353/1992, IS 1572/1990, IS 185/1995, Part 0, 15 1971/1989 Part 0, 15, 307/1989, Part-1
2.	Applicable Standards	
3.	Nominal Operating Voltage kV	11KV
4.	Maximum operating voltage kV	27KV
5.	Frequency Hz	50
6.	Number of phases	3
7.	Type	3 pole single vertical break type
8.	Construction use	postograph
9.	Short time current rating	45 Degree Celsius (55.0 C)
10.	Phase to phase distance mm	1554 mm for 1.0 sec
11.	Phase to pole centre distance mm	150
12.	Fixed Contacts	400
13.	(a) Type	Female type
14.	(b) Material	Electrolytic copper
15.	(c) Surface treatment (plating thickness)	Silver plating 2.5 micron
16.	(d) Continuous Current Rating amp	400
17.	(e) Current density	1.46amp/cm <sup>2</sup>
18.	(f) Spring used size and material	12 SWG Phosphor Bronze
19.	(g) Moving Contacts	
20.	(a) Type	Male type
21.	(b) Material	Electrolytic copper
22.	(c) Size of moving contact	Area 1800mm <sup>2</sup>
23.	(d) Surface treatment	Silver plated
24.	(e) Contact silver plate of mm	
25.	(f) Continuous Current Rating amp	400A
26.	(g) Current density	1.34amp/cm <sup>2</sup>
27.	(h) Number of contacts	03
28.	Number of operations when the switches can withstand without deterioration of contacts	1500 operations per year
29.	Arcting horn	
30.	(a) Material	Galvanize M.S. Flat
31.	(b) Size	8mm dia
32.	Location and type of mechanism	Live can be operated from below the transformer
33.	Torque required to operate the switch	As per IS

*Amal Kumar*  
11/12/15

17.	Details of safety cage provided	Stop stud provide on chains
18.	Technical particulars of Insulators	
(a)	Flash voltage kV	12kV
(b)	Make and drawing number	Toping make 93 per drawing IER AC
(c)	Maximum shed diameter (mm)	120-122
(d)	Height (mm)	153
(e)	Crossing distance (mm)	242
(f)	Shedding distance (mm)	310
(g)	Shedding strength	850
(h)	Tensile strength	54N
(i)	Torsional strength	2083
(j)	Compression strength	As per standards
(k)	Lift lower frequency arc limits withstanding strength kV (rms)	25 per standards
(l)	Wind power frequency arc limits withstanding strength arc rms	35
(m)	Dry power frequency flash over voltage 25 (rms)	80
(n)	Wet power frequency flash over voltage 25 (rms)	55
(o)	Impulse withstand voltage kV peak	
	Positive wave	75kV Peak, 1.2/50µs (with permission tolerance) 75kV 1.2/50µs 75kV/1.2/50µs
	Negative wave	To earth and between poles 75kV/1.2/50µs Access line 50kV/1.2/50µs
(p)	Impulse flash over voltage kV peak Positive wave	
(q)	Positive wave	
(r)	Flash over voltage kV	10kV rms
(s)	Wet discharge test kV	5kV rms
(t)	Top PCD (mm)	37
(u)	Bottom PCD (mm)	0
(v)	Weight approx	3.305 kg
(w)	Type and material of strong conductors	Alale & Fibreglass Tinned copper strip
(x)	Rated short time current	
(y)	Rated peak withstand current	1825
19.	Base channel size	40x50
20.	Connecting pipe	75x40x3.50 (dia) long
(a)	Material	Galvanized iron
(b)	Size, class and length	20mm, class B, 861
(c)	Grade of pipe	Top class as per IS
21.	Hardware	
(a)	Material	M.S Galvanizing
(b)	Insulator	50kV resin
22.	Terminals	
(a)	Size of connecting wire	50x50mm tinned copper strip for 95mm <sup>2</sup> cable lug
(b)	Tinned or not	Tinned
(c)	Number and size of holes in such terminal	2 holes, 11mm dia for accommodating for 50mm <sup>2</sup> cable lug
23.	Braided flexible copper	
(a)	Tinned or not	Tinned
(b)	Size	35x35x10mm
24.	Pantograph	
(a)	Material used	Galvanized MS
(b)	Length	530mm
25.	Connecting rod	
(a)	Size	35x25x180mm
(b)	Thickness of galvanization	93 per IS 2063:1997

  
 Deputy Chief Engineer (SCM)  
 with powers of Chief Engineer