

KARNATAKA POWER TRANSMISSION CORPORATION
LIMITED

**TECHNICAL SPECIFICATIONS OF 11KV CLASS, 400
AMPS, DOUBLE BREAK ISOLATOR**

1.0 SCOPE:

This specification covers the design, manufacture, testing at manufacturers works and supply of 11kV isolator of 400 Amps capacity double break complete with accessories such as operating pipe, connecting pipes, supporting insulators, link work, terminal, connector and locking arrangements, etc.

2.0 The equipment offered shall confirm to IEC: 62271-102 and latest amendments there off. The switches shall be suitable for horizontal upright mounting.

3.0 CONSTRUCTION:

3.1 The base shall be made of robust rolled M.S channel section of size 75 x 40 mm. All ferrous parts shall be hot dip galvanized and all copper parts shall be silver plated. The rotating parts shall be fitted with suitable bearing.

3.2 Fixed & moving contacts:

3.2.1 The fixed and moving shall be of best quality electrolytic copper and shall be capable of carrying rated current continuously without exceeding the temperature limits specified in IS/IEC.

3.2.2 Current density to be adopted for all parts of isolator & terminal connector shall not exceed the following limits.

Copper – 1.6A/Sq.mm

Aluminium – 1.0A/Sq.mm

3.3 The insulators shall be of pedestal post type brown glazed porcelain stacking type design E.22 as per IS:5350 with tap screws and spring washers and to technical specifications enclosed conforming to IS:2544 with amendments thereof. Only the insulators baked in temperature controlled kilns shall be used.

3.4 The operating pipe shall consist of tandem pipe of length 2450 mm and vertical pipe of length 5400mm. The tandem and vertical pipes shall be of 32mm dia, class 'C'. The tandem pipe length is furnished for a phase to

phase width of 920mm. If the length of pipe required is more, the same shall be offered. The G.I Pipe used shall conform to IS:1239 and amendments thereof. A guide to the vertical pipe of the operating pipe shall be providing to arrest its lateral movement. Necessary fixture for fixing the guide to the pole shall also be supplied.

3.5 **Terminal Connector:** C-Type wedge connector-Coyote 2 hole paddle ACSR conductor shall be provided. The exact size of ACSR Conductor will be confirmed during approval of drawings.

3.6 All the Iron parts shall be hot dipped galvanized and shall conform to the following IS's.

- a) IS 209/1969 Quality of Zinc for galvanization.
- b) IS 2629/1966 Hot dip galvanization.
- c) IS 2633/1972 Testing of Zinc coating on galvanised parts.
- d) IS 5358/1969 Hot dip galvanised coating on fasteners.
- e) IS 4759/1969 Hot dip galvanised coating on structural parts.
- f) IS 6745/1972 Determination of weight of zinc coating on galvanised iron and steel parts with latest amendments if any.

3.7 **ARCING HORNS :**

The switches shall be supplied with hot dip galvanised arcing horns so that arcing takes place between arcing horns while opening/closing the G.O.S and not between the contacts.

3.8 **LOCKING ARRANGEMENTS:**

Suitable locking arrangements shall be provided for the operating handle.

4.0 **CHARACTERISTICS :**

- a) System voltage – 11KV
- b) Rated voltage – 12 KV
- c) Rated insulation level :
 - i) To earth and between poles 75 KV (Peak)
 - ii) Across isolating distance 85 KV
- d) Rated one minute power frequency with stand test voltage.
 - i) To earth and between poles 28 KV
 - ii) Across isolating distance 85 KV
- d) Rate normal current – 400 Amps
- e) Rated duration of short circuit – 3 sec
- f) Rated short time withstand current – 25kA
- g) Dynamic short time withstand current – 62.5kAp
- h) Type of break – horizontal, double break.
- i) Minimum creepage distance (mm) : 25mm/kV

5.0 **TYPE TEST CERTIFICATES:**

Type tested Isolators shall be offered. The type test reports shall not be older than Five (5) years as on the last date of submission of bid.

a) For Isolators manufactured in India:

- i. The type tests on indigenous equipment for which testing facility is available in India, should have been conducted in any independent laboratories approved by the Government or the laboratories accredited by the National accreditation body of the country like Central Power Research Institute (CPRI), Electrical Research and Development Association (ERDA), etc.
- ii. The type tests on indigenous equipment, for which testing facility is not available in India, should have been conducted in a laboratory of foreign country accredited by National accreditation body of that country.
- iii. The type tests conducted in-house by a manufacturer shall also be acceptable provided the laboratory is accredited by National accreditation body of the country and the tests has been conducted in the presence of a representative of NABL accredited laboratory or any of the purchasing utilities or CEA in that order. Such type test reports shall record the details of such witness including the signature/authentication in the type test report.

b) For Isolators manufactured Abroad:

- i. Type tests on imported equipment should have been conducted in an Indian Laboratory or foreign laboratory accredited by National accreditation body of the country where the Type test has been conducted.
- ii. The type tests conducted in-house by a manufacturer shall also be acceptable provided the laboratory is accredited by National accreditation body of the country and the tests has been conducted in the presence of a representative of accredited laboratory or any of the purchasing utilities or CEA in that order. Such type test reports shall record the details of such witness including the signature/authentication in the type test report.
- ii. In case of in-house type tested imported equipment of foreign OEM, the term “Purchasing Utility” covers the foreign Utility who has purchased that equipment

The following type tests shall be conducted.

- i) Impulse voltage dry test
- ii) Power frequency voltage dry test
- iii) Power frequency voltage wet
- iv) Temperature rise test
- v) Measurement of resistance
- vi) Short time withstand current and peak withstand current

- vii) Operation test
- viii) Mechanism endurance test

6.0 ROUTINE TESTS :

The routine tests shall be conducted as per IS:9221 and test certificates shall be submitted duly signed by a responsible officer of the tenderers before dispatch of consignments.

7.0 DRAWINGS :

The bid shall contain the drawings for general arrangements, details of contacts, terminal connector, insulator etc., successful bidder shall furnish.

8.0 PACKING :

The Isolator shall be securely packed to withstand rough handling during transit and storage.

9.0 NAME PLATE :

The group operating switch shall be provided with the name plate legibly and indelibly marked with the following information.

- a) Name of material.
- b) Name of Manufacturer and trade mark
- c) Purchase order number and date.
- d) Serial No.
- e) Rated current
- f) Rated Voltage.