

This file has been cleaned of potential threats.

To view the reconstructed contents, please SCROLL DOWN to next page.



प्लाज़्मा अनुसंधान संस्थान
INSTITUTE FOR PLASMA RESEARCH
परमाणु ऊर्जा विभाग, भारत सरकार का एक सहायता



प्राप्त संस्थान

An Aided Institute of Department of Atomic Energy,
Government of India

इन्दिरा पुल के पास, भट, गांधीनगर - 382 428 भारत

दूरभाष: (079) 2396 2020/2021/2028

फैक्स: 91-079-23962277

वेब: www.ipr.res.in

NEAR INDIRA BRIDGE, BHAT

DIST. GANDHINAGAR - 382 428 (INDIA)

Phone: (079) 2396 2020/2021/2028

Fax : 91-079-23962277

Web : www.ipr.res.in

ENQUIRY

ENQUIRY NO : IPR/EQL/19-20/297

Date : 05-11-2019

Due on : 05-12-2019 by 1:00 PM IST

Please send your offer in sealed envelope specifying Enquiry No, Date & Due Date,
ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your
queries (if any) to localpurchase@ipr.res.in

Please ensure your sealed quotation reaches this office not later than above mentioned
due date and time.

Kindly go through the following documents properly before quoting which are available on
the IPR web portal i.e., http://www.ipr.res.in/documents/tender_terms.html / attached
herewith.

- 1) Instructions to the bidders & Terms and conditions (refer Form No: **IPR-LP-01.V4**)
- 2) Bidding format

GST for Goods and Services (IGST/CGST/SGST TAX BENEFITS): Please refer **clause no: 8** of Form No: **IPR-LP-01.V4**

QUOTATION SHOULD BE ADDRESSED TO PURCHASE OFFICER ONLY

Sr No	Description	Quantity
1	Supply of 3 core, 150 sqmm, Aluminium conductor, XLPE insulated, FRLS, Armoured HT power cable suitable for rated voltage at 11000 volts grade Earthed system and confirming to IS:7098, Part:2 and as per specification.	500.0 Mtrs.

Note: Note : (1) Unsigned quotations are not acceptable.
Quotation should be submitted duly signed on ALL PAGES
invariably
(2) TDS as per CGST Act : As per provisions of section
No. 51 of the CGST Act 2017, TDS @ 2% (IGST 2% or
CGST 1% and SGST 1%) will be deducted while making
payment to the suppliers where total value of
orders/contracts/work orders exceeds Rs. 2.5 Lakhs, in
the event of order in Indian Rupees

delivery time:-02 months
Encl: As Per Attachment

Sd/-

Mr. D. Ramesh
Purchase Officer-II

Information to Vendors: We are working towards a single platform for our future requirement. Hence, please refer IPR website i.e,
<http://www.ipr.res.in/documents/tendersenq.html> for our future requirement.

SPECIFICATIONS FOR 11 kV GRADE, 150 Sqmm X 3 CORE SIZE, XLPE, FRLS, ARMoured POWER CABLES

1. SCOPE:

This specification scope covers supply, inspection and testing as per scheduled quantity of 11(E) kV voltage grade Power Cables having single and 3.5 cores, Aluminium stranded conductors, XLPE insulated, screened, extruded type PVC inner sheathed, strip wire armoured (round armored for single core) and overall extruded FRLS PVC outer jacket for use in earthed electrical system having continuous maximum voltage of 11 kV AC.

2. CODES AND STANDARDS:

The design, material, manufacture, inspection, and testing of XLPE power cables shall comply with all currently applicable statutes, regulations and safety codes in the locality where the equipment shall be installed. Indian Standard for XLPE power cable as per relevant IEC and IS standards, some of the reference standards are listed below:

Parameters	Applicable standards
Conductor	Stranded class -2 – Aluminum – IS 8130 / IEC 60228
Conductor screen	Extruded semi-conducting compound – IS 7098, IEC 60502
Insulation	XLPE – IS 7098 – 2, IEC 60502
Insulation non-metallic screen	Extruded semi-conducting compound – IS 7098, IEC 60502
Insulation metallic screen	Aluminum wire / strip – IS 7098-2, IEC 60502
Filler	Non hygroscopic PVC / Polypropelene fiber
Inner sheath	PVC ST 2 as per IS 7098 – 2, IEC 60502
Armour	IS 7098 – 2, IEC 60502
Outer sheath	PVC ST 2, FRLS – IS 7098, IEC 60502

3. DESIGN & CONSTRUCTION FEATURES:

i. General:

The cable shall maintain their insulating properties as required by the operating conditions when subjected to maximum ambient temperature of 50 °C and a maximum conductor temperature of 90 °C. Also the conductor temperature during short circuit shall not exceed 250 °C. Cables shall be suitable for short time overloads. The cables shall maintain its required insulating properties when exposed environment and mechanical stresses resulting during installation and operation. Cables shall be suitable for installation on multi-tier ladder type cable trays running horizontally or vertically in the buildings as well as in concrete cable trenches, RCC hume/GI pipes, outdoor cable trays with restricted

ventilation. No forced ventilation is envisaged for the cables. Cables shall also be suitable for lying underground directly.

ii. Core conductor:

The cable conductor shall be either class 1 or class 2 of High density aluminum alloy comply with relevant IS and IEC standards

iii. Conductor Screening:

Conductor screening shall be non-metallic and shall consist of a layer of extruded Semi conducting compound, which shall be firmly bonded to the inner surface of the insulation. The contact of the semi-conducting shields with the cable insulation must be perfect without void creation at the inner surfaces. The interfaces must be smooth in a regular geometric shape and the semi conducting compound must have homogeneous structure particularly at the interfaces. For single core cables, the non-magnetic armor shall constitute the metallic part of the insulation screening

iv. Insulation

Electrical grade cross linked polyethylene (XLPE) shall be extruded in simultaneous extrusion of conductor screening layer and insulation screening layer and shall be suitably cured.

The nominal thickness of the XLPE insulation shall as per IEC 60502 and shall be guaranteed by the manufacturer to withstand the specified system voltages.

v. Insulation Screening

The insulation screening shall consist of a layer of extruded semi-conducting compound provided over the insulation simultaneously with the extrusion of the insulation or in combination with semi-conducting tape with suitable overlap over the extruded semi-conducting layer extruded simultaneously with extrusion of insulation.

vi. Filler and Inner-Sheath

Sheath shall be of extruded PVC complying with IEC 60502. The sheath shall be suitable to withstand the site conditions and the desired temperature. The material of fillers and inner-sheath shall be compatible with temperature rating of the cable.

vii. Armour:

Three core and single core cables must be armoured with a layer of galvanized steel layer of aluminium wires according to IEC 60502.

viii. Outer-Sheath:

The outer sheath shall be of low smoke fire resistant of extruded PVC material over the armour. PVC material shall conform to IEC 60502

4. CONSTRUCTION FEATURES:

- i. The cable shall be manufactured and tested in accordance with IS 7098 and IEC 60502 standard (latest revision).
- ii. The conductor shall be circular having aluminium strand, smooth, uniform in quality, free from scales, spill, inequalities and other defects. The stranded conductor shall be of reasonably uniform size, shape, clean and its surface shall be free from sharp edges. Conductors shall conform to the latest IS and IEC standard.
- iii. The conductor insulation shall be of extruded cross-linked polyethylene (XLPE) material meeting requirement of IS and IEC. For 3 core cables, the cores shall be identified by red, yellow, blue and black color strips.
- iv. For 11kV grade cables screening shall be provided for both conductor and conductor insulation complying with relevant IS and IEC standards. For conductor, the screening shall consist of non-metallic extruded semiconductor compound. For insulation, the screening shall consist of non-metallic extruded semiconductor compound and copper tape screening.
- v. For all multicore cables armoured used shall be galvanised strip steel wire, single core cable armoured used shall be round steel wire and shall conform to the latest version of IEC and IS.
- vi. The cables shall be jacketed overall by extrusion of FRLS PVC. The thickness and tolerance of the outer sheath should be in accordance to IEC and IS. The PVC inner and FRLS PVC outer sheath should be of grade ST2 as per IS and IEC standards. The FRLS PVC sheath material should have the following properties :

Sr. No.	Description	Data
1.	Minimum critical oxygen Index value at room temperature of 45 °C when tested as per ASTM-D-2863.	29
2.	Minimum temperature Index	250 °C
3.	Maximum Halogen content by weight when tested as per IEC:754 (part I)	20%
4.	Maximum smoke density rating when tested as per ASTM-D-2843	60%

5. Principal Parameters:

i. General

11kV (E) grade XLPE, 3-core, power cable shall be high conductivity, stranded compacted, H.D. aluminum circular shaped conductor with XLPE insulation and shielding of extruded semi-conducting materials over conductor and XLPE insulation,

laid together and provided with common covering PVC inner sheath (extruded). Overall galvanized steel strip armour and PVC outer sheath shall be provided

ii. Current Rating

Sr.No	Cable Size (sq mm)	Core	Continuous Current Carrying capacity (A)		Short Circuit Current Ratings @ 1s (kA)
			Air	Ground	
1.	150	3	295	245	14.10

iii. Technical parameter:

Parameters	Unit	11kV
1) Voltage grade [U _o /U (U _m)	kV	6 / 11 (12)
2) Cores	#	3
3) System frequency	Hz	50± 5
4) Maximum allowable temperature of conductor during continuous normal operation at rated full load	°C	90
5) Maximum allowable temperature under short circuit condition	°C	250
6) 1.2/50 microsecond lightning impulse withstand voltage	KVp	75
7) 5 min power frequency withstand voltage	kV rms	21
8) System earthing		Effectively earthed

6. SCHEDULE OF QUANTITY:

Sr. No.	Type of Cable	Quantity(meter)	Drum size
	11 kV Grade:		
1.	3 C x 150 sq. mm. AL, XLPE, FRLS	500	500 mtr x 1

7. TESTS:

- i. Type tests certificates carried out as per IS 8130 / IEC 60502 within last 5 years for 11kV shall be submitted along with the bids. Or else the same shall be carried out.
- ii. Routine and acceptance tests shall be carried out, as per relevant IS & IEC standard in presence of the purchaser.

8. LENGTH:

The cable shall be supplied in standard drum length, $\pm 5\%$ tolerance for all the size of cables. Overall tolerance in total quantity of ordered cables shall be $\pm 2\%$.

9. CABLE DRUMS:

Cable shall be supplied in specified non-returnable drums. The bidder shall indicate in the Offer the minimum length for each size of cable, which can be furnished on one drum. However, before packing the cables on drums, the successful bidder will be required to obtain purchaser's approval for the drum lengths.

The drums shall be of metal fabrication. All ferrous parts used shall be treated with a suitable rust preventive finish or coating to avoid rusting during transit or storage.

10. PACKING AND TRANSPORT:

The cable shall be placed on drums in such a manner that it will be protected from injury during transit. Each end of the cable shall be firmly and properly secured to the drum. The end of each length shall be sealed before shipment. The drums shall be secured firmly in position so that they will not shift during transit.

The labels shall be securely attached to each end of the drum indicating the purchaser's order number, length of cable, size of conductor, number of cores, type of cable and voltage grade for which it is suitable. A tag containing the same information shall be attached to the leading end of the cable inside the lagging. An arrow and suitable accompanying wording shall be marked on one end of the drum indicating the direction in which it should be rolled. The number of each drum shall be either branded at the end of the drum or stamped on metal discs to an end of the drum. Packing and marking shall be in accordance with IS : 7098 (PART - I).

11. PREFERRED LIST OF MAKES:

Sr. No.	Item	Make
1.	11 kV Grade XLPE Power Cables	KEC, Polycab, Havells, KEI

ANNEXURES

A-DATA SHEET FOR XLPE POWER CABLES

(Please fill the data separately for individual cable sizes, grade and types offered)

Sr. No.	Parameters	IPR Specification	Vendor's Reply " Kindly use technical values avoid using words "yes/complied/ok/agree/confirm" "
1.	Cable Manufacturer's name		
2.	Applicable standard	IS 7098, Part-2	
3.	Voltage Grade (kV)	11 kV	
4.	Earthed or Unearthed system	Earthed	
5.	Conductor Material	Aluminium	
6.	Conductor Size	150 Sqmm	
7.	Number of Core	3 Cores	
8.	Conductor Screening required	Yes	
9.	Conductor insulation material	XLPE	
10.	Inner sheath material	PVC ST-2	
11.	Insulation screening required	Yes	
12.	Armour	Flat strip Galvanized Strip	
13.	Outer sheath material	FRLS PVC ST-2	
14.	Cable Drum	Iron drum	
15.	Cable length per drum	500 Mtr	

B - PRICE BID FORMAT

(Bidders are requested to offer their price bids in the following format)

Sr.	Description	Qty	Basic Rate	Packing	Applicable	Rate	Total
-----	-------------	-----	------------	---------	------------	------	-------

No.		units	(In ₹)	and Forwarding (P&F)	GST	(Incl. P&F and GST)	Amount (In ₹)
		(a)	(b)	(c)	(d)	e= b+c+d	F= a x e
1.	Supply of 11 kV grade, 150 sq.mm x 3 core size, Aluminium stranded conductors, XLPE insulated, armoured, FRLS, HT Power cable	500 Mtrs					

Bidder's official stamp and sign
Date: