

**Technical Specifications**  
**Solar PVDC Cables and accessories required for solar power plants**

SL. No	Description and Technical Specification of the item	QTY	UNIT	Delivery
1	6 sq mm Cu EBXL XLPO Black 6 sq mm Cu EBXL XLPO Black (for Negative) cables - As per Annexure – 1.	2000.00	M	56 DAYS
2	6 sq mm Cu EBXL XLPO Black with Red line 6 sq mm Cu EBXL XLPO Black with red line (for Positive) cables - As per Annexure - 1	2000.00	M	56 DAYS
3	FEMALE AND MALE PV CABLE CONNECTOR MC4  Item Description: Rated voltage: 1000VDC Rated current: 39 Amperes or higher Rated Impulse Voltage: 12 kV Ambient Temperature: (-40°C to +85°C) Upper Limiting Temperature: +105°C Degree of protection: IP65 and above Contact resistance of plug connectors: should be less than or equal to 0.25 milli ohm  Cable OD range: Ø 6.0mm +/-2% Type of terminal: Crimping Contact material: copper, tin plated Insulation material: Polycarbide (PC)/ Polyamide (PA) Locking/Unlocking system: Manual type Flame class: UL94 V-O Material safety: RoHs, REACH Compliant or other equivalent International.	1000.00	NO	56 DAYS
4	PV DC FUSE (15AMPS)  Item Description: Item name: Photo voltaic DC fuse Rated voltage: 1000 VDC Ampere rating: 15Amps Fuse class: Photo voltaic Connection/terminal material: Tin Plated copper Connection/Terminal type: ferrule Product Diameter :10.414 mm +/- 1% Product Length: 38.1 mm +/- 1% Material safety: RoHs or other equivalent International standard.	400.00	NO	56 DAYS

5	<p>PV DC FUSE (3 AMPS)</p> <p>Item Description:  Item name: Photo voltaic DC fuse  Rated voltage: 1000 VDC  Ampere rating: 3 Amps  Fuse class: Photo voltaic  Connection/terminal material: Tin Plated copper  Connection/Terminal type: ferrule  Product Diameter :10.414 mm +/- 1%  Product Length: 38.1 mm +/- 1%  Material safety: RoHs or other equivalent International standard.</p>	50.00	NO	56 DAYS
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## ANNEXURE – 1

### Technical specification for Supply of 1 core x 6 sq-mm Cu, EBXL XLPO insulated and Sheathed Solar cables

**Item – 10:** 6 sqmm Cu EBXL XLPO Black cables (for Negative)

**Item – 20:** 6 sqmm Cu EBXL XLPO Black with red line cables (for Positive)

#### A. Common Technical specification

#	Particular	BHEL specification	Vendor Comments
1.0	Item description	Cable, 1 core x 6 sq-mm, 1.8 KV DC (maximum), Annealed tinned copper conductor, EBXL XLPO Insulated and Sheathed Solar Photovoltaic Cable.	
2.0	Application	Suitable for use in outdoor application for interconnection of solar photovoltaic (SPV) modules in SPV power plants.	
3.0	Applicable standard	EN 50618	
4.0	Voltage grade	Maximum permissible voltage = 1800 V DC (conductor – conductor, non-earthed system, circuit not under load)	
5.0	Type of cable	H1Z2Z2-K	
<b>6.0</b>	<b>Conductor</b>		
a)	Material	Flexible Annealed tinned copper conductor as per class 5 of IEC 60228	
b)	Cross sectional area (Nominal)	(i) 6 sq-mm	
c)	Maximum diameter of wires in the conductor	For 6 sq-mm: 0.31 mm	
d)	Maximum conductor resistance at 20 °C (DC)	For 6 sq-mm: 3.39 Ohm per Km	
e)	Current Carrying Capacity	As per EN 50618	
<b>7.0</b>	<b>Insulation</b>		
a)	Material	Electron beam cross link (EBXL) Cross-Linked Polyolefin (XLPO)	
b)	Minimum insulation thickness	0.7 mm	

c)	Max. conductor temperature	120°C – Normal continuous operation 250°C – Short circuit condition for 5 seconds	
<b>8.0</b>	Insulation color for identification	Natural or as per manufacturer's standard.	
<b>9.0</b>	<b>Outer Sheath</b>		
a)	Material	Electron beam cross link (EBXL) Cross-Linked Polyolefin (XLPO). <b>Cable shall be vermin proof with ANTI-RAT, ANTIRODENT &amp; ANTI-TERMITE technology.</b>	
b)	Minimum Thickness of outer sheath	0.8 mm	
c)	Colour of outer sheath	Black or Black with red lining, quantity as per individual item requirement of BHEL	
d)	Overall diameter of cable	Vendor shall indicate actual dimension, tolerance for 6 sq-mm cable.	

<b>10.0</b>	<b>Minimum bending radius</b>	Vendor shall indicate the same with applicable standard for 6 sq-mm cable.	
<b>11.0</b>	<b>Type Tests</b>	<p style="text-align: center;">As per EN 50618 Type test certificate / provisional certificate issued from NABL accredited laboratories to be submitted by the vendor along with the technical offer.</p>	
a)	Electrical Tests		
b)	Constructional and dimensional tests		
c)	Pressure test at high temperature at complete cable		
d)	Damp heat test		
e)	Resistance against acid & alkaline solution		
f)	Test of influence		
g)	Cold impact test at -40°C		
h)	Cold bending test		
i)	Ozone resistance test		
j)	Weathering/ UV-resistance test		
k)	Dynamic penetration test		
l)	Notch propagation test		
m)	Shrinkage test		
n)	Test under fire condition		

<b>12.0</b>	<b>Routine Tests</b>		
a)	High voltage Test	As per EN 50618	
b)	Conductor resistance test	As per EN/IEC 60228	
c)	Spark Test	As per EN 50618	
<b>13.0</b>	<b>Acceptance Tests</b>		
a)	Conductor resistance test	As per EN/ IEC 60228	
b)	High voltage Test	As per EN 50618	
c)	Insulation resistance test	As per EN 50618	
d)	Annealing test	As per EN/ IEC 60228	
e)	Thickness of insulation & sheath	As per EN 50618	
f)	Hot set test	As per EN 50618	
g)	Tensile and elongation at break test for insulation & sheath	As per IEC-60332-1, IEC-60754-1, ASTM D-2843, EN 50618	
h)	Flame retardant test	As per EN 50618	
i)	Ageing Test	As per EN 50618	
j)	Outer finish check	Manufacturers standard	
<b>14.0</b>	<b>Manufacturing Quality Plan / Quality Assurance Plan</b>	Vendor shall submit Manufacturing Quality Plan for BHEL/BHEL-customer approval within 1 week of placement of Order.	
<b>15.0</b>	<b>Test certificate</b>	Three copies of test certificate shall be supplied with BHEL PO number and date, BHEL specification number, Cable description, Manufacturer name, Part number, Size & Length of the cable, Batch / Lot number. Test certificate shall contain test description, measured values of dimensions and cable properties, and acceptance limits.	
<b>16.0</b>	<b>Cable identification</b>	<p>Printing/embossing shall be done on outer sheath with following information throughout the length of the cable:</p> <p>Manufacturer name, brand name or trade mark, Cable size, Voltage grade, Word 'FRNC' at every 5 meters and sequential marking of the length of cable.</p> <p>The printing/embossing shall be at an interval of 1 meter.</p> <p>Drum no/extrusion lot no. shall be printed/embossed on the outer sheath at least every 5 m of the cable length.</p>	

<b>17.0</b>	<b>Packing and marking</b>		
a)	Packing	Both the ends of the cables shall be properly sealed with heat shrinkable PVC/ rubber caps secured by 'U' nails so as to eliminate ingress of water during transportation, storage and erection. Alternatively, supplier can do alternative packaging of whole Drum/Spool to eliminate ingress of water during transportation, storage and erection. Wood preservative antitermite treatment shall be applied to the entire drum.	
b)	Drum	Drum shall be as per IS:10418-1972 or equivalent, with suitable size.	
c)	Marking on the drum	Each drum shall be marked with following information: BHEL PO number and date, Cable description, Manufacturer name, Part number, Size & Length of the cable, Cable code, Voltage grade, Approx gross mass, Year of manufacture.	
d)	Cable length in each drum	1000 Or 2000 meter +/- 5 %	

**B. Documents to be submitted along with offer without which offer is likely to be rejected.**

1. Type test certificate / provisional certificate as per EN 50618 issued from NABL or National/International accredited laboratories.
2. Filled in values/details wherever the same is asked for in BHEL technical specifications.
3. Vendor has to enclose the deviation sheet clause wise separately in case any deviations are sought by the vendor. Absence of any deviation sheet shall be taken as compliance of BHEL specification in total without any deviation.

**PR no: 89909340 date: 07.03.2025 –Solar PVDC Cables and accessories required for solar power plants**

**Pre Qualification Criteria**

For ITEM NO 10 and 20

S.No	Description	Vendor to confirm
1	The bidder shall be OEM or OEM authorized delater for the supply of EBXL XLPO copper cables for Solar plant applications. Incase of authorized dealer, authorization certificate from OEM shall be enclosed with the offer.	
2	Type test certificate / provisional certificate as per EN 50618 issued from NABL accredited laboratories or by National/International accredited laboratories <b>to be submitted.</b>	
3	The Vendor shall submit <b>any one PO copy</b> for supply of similar type of cables as mentioned in Sl.no.1 <b>in the past TEN years</b> from the date of opening the tender.	

For ITEM NO 30, 40 and 50

S.No	Description	Vendor to confirm
1	The bidder has to compulsorily meet the following requirements and the supporting documents should be furnished along with the offer, without which the offer will not be considered for technical evaluation;	
2	The vendor should have supplied similar electrical spares for Rooftop / Ground mounted solar plants in the past 10 years. The order copies for the same shall be submitted along with the offer.	

### Annexure – A- Special Conditions for GeM Enquiry

The terms and condition mentioned in this document are applicable in addition to the Buyer Added Bid Specific Additional Terms & Conditions and GeM General Terms and Conditions. Bidders shall furnish pointwise confirmation/details.

<u><b>To be filled by bidder</b></u>		
<b>Description of the item/Equipment:</b>		
<b>GeM Tender No. &amp; Date</b>		
<b>Name of the firm (Bidder)</b>	:	
<b>Address</b>	:	
<b><u>Contact person 1</u></b> <b>Name:</b> <b>Designation:</b> <b>Office Phone:</b> <b>Mobile:</b> <b>e-mail:</b>	<b><u>Contact person 2</u></b> <b>Name:</b> <b>Designation:</b> <b>Office Phone:</b> <b>Mobile:</b> <b>e-mail:</b>	
SI	Terms and conditions/Details required	Vendor's confirmation
1.	Indicate the MSME status of the bidder. MICRO/SMALL/MEDIUM/Non-MSME.  <b>Note:</b> Udyam certificate to be uploaded in proof of above. If it is indicated as "For availing benefits of Priority Sector Lending(PSL) ONLY" in Udyam certificate, then no MSME benefit will be considered for this tender.	
2.	Payment terms shall be as per clause 9 of Buyer Added Bid Specific Additional Terms & Conditions for this tender. Confirm your acceptance for the payment terms relevance to your MSME status indicated above.	
3.	Liquidated Damages shall be as per clause 18 of Buyer Added Bid Specific Additional Terms & Conditions. Confirm your acceptance.	
4.	Offers from Indigenous supplier will be considered only if they have a valid GST registration certificate. Please Indicate the GST registration number. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.	GST No. _____
5.	<b>Performance Bank Guarantee:</b> Not Applicable	
6.	HSN Code for the quoted items	HSN CODE : _____
7.	Rate quoted in GeM portal should be on FOR destination basis inclusive of all taxes, P&F, freight etc. Transit Insurance is under Supplier scope. <b>Please indicate how much GST percentage is included in quoted price.</b>	GST in %: _____
8.	All the terms and conditions in Buyer Added Bid Specific Additional Terms & Conditions of this tender are read, understood and agreed by the vendor without any deviation. <b>Vendor to confirm.</b>	
9.	Duly filled, signed and stamped copies of the annexures as indicated in clause 31 of Buyer Added Bid Specific Additional Terms & Conditions of the enquiry are to be provided in the letter head of the Supplier. Please fill the annexures with GeM enquiry number, Item description and your company name wherever required. Also please Tick the appropriate option wherever required.	
10.	<b>There will not be any RA (Reverse Auction). Hence suppliers to quote their best price while submitting their offer itself.</b>	

Vendor's Seal & Signature



**CHECK LIST**

**NOTE:** - Suppliers are required to fill in the following details in their Letterhead and no column should be left blank

<b>A</b>	<b>Name and Address of the Supplier</b>		
<b>B</b>	<b>GSTN No. the Supplier (Place of Execution of Contract / Purchase Order)</b>		
<b>C</b>	<b>Details of Contact person for this Tender</b>	Name: Mr./ Ms. Designation: Telephone No: Mobile No: Email ID:	
<b>D</b>	<b>EMD DETAILS</b>	<b>Not applicable</b>	
<b>E</b>	<b>DESCRIPTION</b>	<b>APPLICABILITY (BY BHEL)</b>	<b>ENCLOSED BY BIDDER</b>
i.	Whether <b>Pre - Qualification Criteria</b> is understood and provided proper supporting documents.	<b>Applicable/ Not Applicable</b>	YES / NO
ii.	Whether all pages of the Tender documents including annexures, appendices etc are read and understood	<b>Applicable/ Not Applicable</b>	YES / NO
iii.	Audited Balance Sheet and profit & Loss Account for the last three years	<b>Applicable/ Not Applicable</b>	YES / NO
iv.	Copy of PAN Card & GST registration	<b>Applicable/ Not Applicable</b>	YES / NO
v.	Submission of <b>Udyam certificate</b> as specified in Tender (applicable in case of MSME supplier)	<b>Applicable/ Not Applicable</b>	YES / NO
vi.	<b>Offer forwarding letter</b> / tender submission letter as per Annexure – 2	<b>Applicable/ Not Applicable</b>	YES / NO
vii.	Submission of <b>Certificate of No Deviation</b> as per Annexure – 3	<b>Applicable/ Not Applicable</b>	YES / NO
viii.	Declaration regarding <b>Insolvency/ Liquidation/ Bankruptcy Proceedings</b> as per Annexure – 4	<b>Applicable/ Not Applicable</b>	YES / NO
ix.	Declaration by <b>Authorized Signatory</b> as per Annexure – 5	<b>Applicable/ Not Applicable</b>	YES / NO
x.	Declaration by <b>Authorized Signatory regarding Authenticity</b> of submitted Documents Annexure – 6	<b>Applicable/ Not Applicable</b>	YES / NO
xi.	Submission of <b>Non-Disclosure Certificate</b> as per Annexure – 7	<b>Applicable/ Not Applicable</b>	YES / NO
xii.	Submission of <b>Integrity Pact</b> as specified in Tender as per Annexure – 8	<b>Applicable/ Not Applicable</b>	YES / NO
xiii.	Declaration <b>confirming knowledge about Site Conditions</b> as per Annexure – 9	<b>Applicable/ Not Applicable</b>	YES / NO

xiv.	Declaration reg. <b>Related Firms &amp; their areas of Activities</b> as per Annexure – 10	<b>Applicable/</b> <del>Not Applicable</del>	YES / NO
xv.	Declaration for <b>relation in BHEL</b> as per Annexure – 11	<b>Applicable/</b> <del>Not Applicable</del>	YES / NO
xvi.	Declaration reg. <b>minimum local content</b> in line with revised public procurement as per Annexure – 12	<del>Applicable/</del> <b>Not Applicable</b>	YES / NO
xvii.	Declaration regarding <b>compliance to Restrictions under Rule 144 (xi) of GFR 2017</b> as per Annexure – 13	<b>Applicable/</b> <del>Not Applicable</del>	YES / NO
xviii.	<b>Bank Account Details</b> for E-Payment as per Annexure – 14	<del>Applicable/</del> <b>Not Applicable</b>	YES / NO
xix.	<b>Power of Attorney</b> for submission of tender as per Annexure – 15	<del>Applicable/</del> <b>Not Applicable</b>	YES / NO
xx.	<b>Proforma of Bank Guarantee for Earnest Money</b> as per Annexure – 16	<del>Applicable/</del> <b>Not Applicable</b>	YES / NO

**NOTE:** Strike off 'YES' or 'NO', as applicable. Tender not accompanied by the prescribed **above applicable documents** are liable to be summarily rejected.

**DATE:**

**Sign. of the AUTHORISED SIGNATORY  
(With Name, Designation and Company seal)**

**CERTIFICATE OF NO DEVIATION**

(To be Typed & submitted in the Letter Head of the Company/Firm of Bidder)

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To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Subject: **No Deviation Certificate**

Ref: 1) GeM Bid No: .....

2) All other pertinent issues till date

We hereby confirm that we have not changed/ modified/materially altered any of the tender documents as downloaded from the website/ issued by BHEL and in case of such observance at any stage, it shall be treated as null and void.

We also hereby confirm that we have neither set any Terms and Conditions and nor have we taken any deviation from the Tender conditions together with other references applicable for the above referred GeM Bid.

We further confirm our unqualified acceptance to all Terms and Conditions, unqualified compliance to Tender Conditions.

We confirm to have submitted offer in accordance with tender instructions and as per aforesaid references.

Thanking you,

Yours faithfully,

**(Signature, date & seal of  
authorized representative of the  
bidder)**

Date:

Place:

**UNDERTAKING**

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

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**To,**

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir/Madam,

**Sub: DECLARATION REGARDING INSOLVENCY/ LIQUIDATION/ BANKRUPTCY PROCEEDINGS**

**Ref:** GeM Bid Specification No:

I/We, \_\_\_\_\_ declare that, I/We am/are not admitted under insolvency resolution process or liquidation under Insolvency and Bankruptcy Code, 2016, as amended from time to time or under any other law as on date, by NCLT or any adjudicating authority/authorities

**Sign. of the AUTHORISED SIGNATORY  
(With Name, Designation and Company seal)**

Place:

Date:

**DECLARATION BY AUTHORISED SIGNATORY OF BIDDER**

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder)

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To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

Sub: **Declaration by Authorised Signatory regarding Authenticity of submitted documents.**

Ref: 1) GeM Bid No. & Date: .....

2) All other pertinent issues till date

I/We, hereby certify that all the documents submitted by us in support of possession of "Qualifying Requirements" are true copies of the original and are fully compliant required for qualifying / applying in the bid and shall produce the original of same as and when required by Bharat Heavy Electricals Limited.

I / We hereby further confirm that no tampering is done with documents submitted in support of our qualification as bidder. I / We understand that at any stage (during bidding process or while executing the awarded contract) if it is found that fake / false / forged bid qualifying / supporting documents / certificates were submitted, it would lead to summarily rejection of our bid / termination of contract. BHEL shall be at liberty to initiate other appropriate actions as per the terms of the Bid / Contract and other extant policies of Bharat Heavy Electricals Limited.

Yours faithfully,

**(Signature, Date & Seal of Authorized  
Signatory of the Bidder)**

**Date:**

**NON-DISCLOSURE CERTIFICATE**

(To be Typed & submitted in the Letter Head of the Company/Firm of Bidder)

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I/We understand that BHEL, Trichy is committed to Information Security Management System as per their Information Security Policy.

Hence, I/We M/s ..... who are submitting offer for providing Supply/services to BHEL, Trichy against GeM Bid No..... hereby undertake to comply with the following in line with Information Security Policy of BHEL, Trichy.

- To maintain confidentiality of documents & information which shall be used during the execution of the Contract.
- The documents & information shall not be revealed to or shared with third party which shall not be in the business interest of BHEL, Trichy.

**(Signature, date & seal of Authorized Signatory of the bidder)**

**Date:**

**DECLARATION**

Date: \_\_\_\_\_

To,

(Write Name &amp; Address of Officer of BHEL inviting the Tender)

Dear Sir/ Madam,

**Sub: Details of related firms and their area of activities**

Please find below details of firms owned by our family members that are doing business/ registered for same item with BHEL, \_\_\_\_\_ (NA, if not applicable)

1	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	
2	Material Category/ Work Description	
	Name of Firm	
	Address of Firm	
	Nature of Business	
	Name of Family Member	
	Relationship	
...		

**Note: I certify that the above information is true and I agree for penal action from BHEL in case any of the above information furnished is found to be false.**

Regards,

(\_\_\_\_\_)

From: M/s

Supplier  
Code:

Address:

**DECLARATION FOR RELATION IN BHEL**

(To be typed and submitted in the Letter Head of the Company/Firm of Bidder failing which the offer of Bidder is liable to be summarily rejected)

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To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

**Sub: Declaration for relation in BHEL**

**Ref:** 1) GeM Bid Specification No: .....

I/We hereby submit the following information pertaining to relation/relatives of Proprietor/Partner(s)/ Director(s) employed in BHEL

**Tick (✓) any one as applicable:**

1. The Proprietor, Partner(s), Director(s) of our Company/Firm DO NOT have any relation or relatives employed in BHEL

OR

2. The Proprietor, Partner(s), or Director(s) of our Company/Firm HAVE relation/relatives employed in BHEL and their particulars are as below:

i.

ii.

**(Signature, Date & Seal of  
Authorized Signatory of the Bidder)**

Note:

1. Attach separate sheet, if necessary.
2. If BHEL Management comes to know at a later date that the information furnished by the Bidder is false, BHEL reserves the right to take suitable against the Bidder/Contractor.



**DECLARATION REGARDING COMPLIANCE TO RESTRICTIONS UNDER RULE 144 (xi) OF GFR 2017**

(To be typed and submitted in the Letter Head of the Entity/ Firm providing certificate as applicable)

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To,

(Write Name & Address of Officer of BHEL inviting the Tender)

Dear Sir,

**Sub:** Declaration regarding compliance to Restrictions under Rule 144 (xi) of GFR 2017

**Ref:** 1) GeM Bid Specification No: .....  
2) All other pertinent issues till date

I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India. I certify that \_\_\_\_\_ (**SPECIFY THE NAME OF THE ORGANIZATION HERE**), is not from such a country/ has been registered with the Competent Authority (*attach valid registration by the Competent Authority, i.e., the Registration Committee constituted by the Dept. for Promotion of Industry and Internal Trade (DPIIT)*).

I hereby certify that we fulfil all requirements in this regard and is eligible to be considered.

Thanking you,

Yours faithfully,

**(Signature, Date & Seal of  
Authorized Signatory of the Bidder)**

**Note:** Bidders to note that in case above certification given by a bidder, whose bid is accepted, is found to be false, then this would be a ground for immediate termination and for taking further action in accordance with law and as per BHEL guidelines.