REQUEST FOR QUOTATION - ONLINE BIDDING

MMI:PU:RF:003

BHARAT HEAVY ELECTRICALS LIMITED
Electronics Division
PB No. 2606, Mysore Road Bangalore - 560026
INDIA

RFQ NUMBER:
SAKE000022

[redacted]

Due Date/Day: [redacted]
Time : [redacted]

Please submit your lowest quotation subject to our terms and conditions attached for the material mentioned below. "Quotation to be submitted in E Procurement portal only"

(for all correspondence)
Purchase Executive : Santosh Kumar
Phone : 8004939865
Fax :
E-mail: kumar.santosh@bhel.in

Sl No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	ED7389917776 Profibus PA Cable Unarmoured * HSN/SAC : 8524 Test Certificate Profibus PA Cable Unarmoured As per specification PS4102062	14,000	NO	14,000	[redacted]
2	ED7389917784 Profibus DP Cable Unarmoured * HSN/SAC : 8524 Test Certificate Profibus DP Cable Unarmoured As per specification: PS4102063	14,000	NO	14,000	[redacted]

Total Number of Items - 2

1.
2.

NOTES:
1. This RFQ is governed by:
a) INSTRUCTIONS TO BIDDERS/SELLERS and GENERAL CONDITIONS OF CONTRACT FOR PURCHASE available at **http://edn.bhel.com (RFQ-PO Terms & Conditions)**
b) Any other specific Terms and Conditions mentioned. of offers are required to furnish authorization letter for the same.
2. Tender Result can be viewed in the website.
* The HSN/SAC no mentioned against the line items in the RFQ are indicative only.

For and On behalf of BHEL.

Santosh Kumar
Control Equipment

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PRE-QUALIFICATIONS REQUIREMENT FOR PROFIBUS DP CABLE-UNARMOURED

CHECKED BY	APPROVED BY
MALA SIBOO	S B BANIK

PREPARED	ISSUED	DATE
MUKESH KUMAR	410 ENGG	20.09.2021

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REVISION HISTORY SHEET

REV NO.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	APPROVED BY
00	20.09.2021	FIRST ISSUE	-------	MK	SBB

CHECKED BY	APPROVED BY
MALA SIBOO	S B BANIK

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1. Bidders are required to be Original Equipment Manufacturer (OEM) / Authorized Distributor of OEM / General Dealer. General Dealer should procure the item directly either from Authorized Distributor or OEM.

2. Documents to be submitted along with the technical bid:
   a) Authorized Distributor : Proof of Authorization
   b) General Dealers : Compliance to point 3(c)

3. Documents to be submitted during material supply:
   a) OEM : Certificate of Conformance(COC)
   b) Authorized Distributor : OEM / Authorized Distributor COC
   c) General Dealers :
      (i) OEM / Authorized Distributor COC / Dealer COC
      (ii) Certificate on Vendors letter head certifying procurement from OEM/Authorized distributor.

4. The bidder shall submit at least two unpriced PO copies of Profibus DP Cable - Unarmoured. The PO copy date should not be older than four year from the date of opening of bid.

5. If there are any queries regarding specification, it is bidder's responsibility to get the same clarified from the purchaser before submitting the offer.

Important note: In case Bidder does not submit details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily rejected and bidder's technical offers/proposals will not be evaluated.

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PURCHASE SPECIFICATION

OF

Fieldbus (PROFIBUS DP cable-Unarmoured)

REVISION:04	APPROVED			
	S B BANIK			
	PREPARED	CHECKED	ISSUED	DATE
	DINAKARA P	MUKESH KUMAR 27/2/24.	410	21/02/2024

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00	18/12/2020	FIRST ISSUE		MK	MS	SBB
01	18/11/2021	SECOND ISSUE	Minor	MK	MS	SBB
02	23/12/2021	THIRD ISSUE	Minor	DP	MK	SBB
03	16/02/2022	FOURTH ISSUE	Minor	DP	MK	SBB
04	21/02/2024	FIFTH ISSUE	Minor	DP	MK	SBB

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1.0 SPECIFICATION OF FIELDBUS (PROFIBUS DP) UNARMOURED CABLES:

The purpose of this specification is general technical requirement for procurement of Unarmoured Fieldbus cable specifically used for FIELDBUS (PROFIBUS DP) and shall be complying to IEC 61158, Type A. The cable construction shall meet EN 50288-7 standard for physical properties and the outer sheath shall be of FRLS/PVC as per EN 50290-2-22. Continuous operating temperature of Fieldbus cable shall be minimum 70 Deg C.

2.0 General Specification:

Mechanical, Geometrical, Transmission and Environmental characteristics should be as per relevant EN 50288-7, EN 50290-2-22 & complying to IEC 61158.

The cable shall be 1 X 2 X 0.64 Un-Armoured Profibus DP Cable for fieldbus system . The Cable shall be designed for the system-defined transmission rates of 9.6 kbit/s up to 12Mbit/s, the transmission characteristics shall conform to the system and guarantee a high operating security during the data transmission. The cable is intended for fixed installation.

Stripping ability: All layers easily removable with commercially available tools.

Marking: The cable should have identification marking at regular intervals of 1 meter which will be of permanent nature. The accuracy of the sequential marking should be within + 0.5%.

The PROFIBUS DP cable shall as a minimum have the following markings in every meter.

i) Type of Cable, ii) Running meter length, iii) Manufacturer's name

Immunity: Conductor shall be coated with protective materials / coatings and should not have any reaction with cladding or core materials.

Life of cable: The minimum expected life of the cable shall be 25 years.

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Cable Ends: Running end shall be provided with pulling eye & the other end shall be sealed with thermal shrink cap

Length of the cable drum: The length can be standard factory length. Care to be taken to minimize wastage while cutting to length by optimizing drum lengths in line with site requirement. Drum to have a tolerance of +5%.

Following parameter to detailed specification to be met.

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3.0 Detailed Technical Specifications

A.	GENERAL DETAILS
Cable Description	
Cable type	Profibus DP,Type A Unarmoured
Compliance Standard as per technical I Spec	IEC-61158-2,EN-50288-7,EN-50290-2-22
B.	**PHYSICAL PROPERTIES**
Conductor	
Conductor Material	As per EN 50288-7 . tinned annealed copper
Conductor Size (AWG)	As per EN50288-7 , Nominal : 22
Conductor Stranding	Single
Insulation	
No. of Cores / Pairs / Triads	1Pair
Insulation Material	As per EN50288-7 . FMPE
Nominal Insulation Diameter (mm)	2.68
Insulation Color Code Identification	(+)-Core:RED , (-)-Core:GREEN
Shielding	
Shielded/Unshielded	Overall foil shield +Tinned copper braid
Overall Shield Material	As per EN50288-7 (Al-mylar tape)
Overall Shield-Tinned copper braid (Coverage)	As per EN50288-7 : Nominal: 65%
Jacket / Sheath Material	
Jacket Material	FRLS/PVC
Nominal Jacket Thickness (mm)	As per EN50288-7. (Approx :0.9)
Nominal Diameter Over Jacket (mm)	As per EN50288-7 . Approx 8.0
Sheath material (colour)	VIOLET
Sheath type	As per 5028-7 - Extruded

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C. ELECTRICAL PROPERTIES	
Electrical characteristics :-	
Electrical properties	In compliance with IEC-61158-2, type A cable
Max operating Voltage Rating (V)	250
Max. Conductor Resistance @ 20°C (U/km)	55.4
Screen resistance nominal	12 ohm / km
Nominal Inductance	0.9mH/Km
Nominal Impedance (3MHz - 20MHz)	150
Max. Capacitance Core to Core (pF/m)	<30
Nom Velocity of Propagation	78%
Capacitance, unbalance to earth max	1.5 nF/km
Nominal Attenuation 0.2 MHZ	1.10 dB/100mtr
Nominal Attenuation @4 MHz	2.65 dB/100mtr
Nominal Attenuation 16 MHz	5.40 dB/100mtr
D. OTHER IMPORTANT PROPERTIES	
Other Technical Details	
Oxygen Index	Min 30% as per ASTM D 2863
Temperature Index	250 deg C(typical) as per ASTM D 2863
Temperature Rating	70 Deg C
Twisted Pair Lay Length	Shall not exceed 100mm
Min Bending Radius	15 times OD

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4.0 : DOCUMENTS TO BE GIVEN ALONG WITH QUOTATION

Detailed Technical data sheet and cable dimension details.

a. Clause-wise compliance to our specification to be furnished.

b. Deviations, if any, to our specification to be mentioned in Offer.

c. Vendor to furnish Test Certificate/ manufacturer's compliance certificate at the time of supply

d. Packaging & Forwarding - Acceptable tolerance is +5% per drum per standard packing length. Vendor shall ensure adequate packaging to protect the drums /other boxes against damage during transit.

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PRE-QUALIFICATIONS REQUIREMENT FOR PROFIBUS PA CABLE-UNARMOURED

CHECKED BY	APPROVED BY
MALA SIBOO	S B BANIK

PREPARED	ISSUED	DATE
MUKESH KUMAR	410 ENGG	20.09.2021

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CHECKED BY	APPROVED BY
MALA SIBOO	S B BANIK

PREPARED	ISSUED	DATE
MUKESH KUMAR	410 ENGG	20.09.2021

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1. Bidders are required to be Original Equipment Manufacturer (OEM) / Authorized Distributor of OEM / General Dealer. General Dealer should procure the item directly either from Authorized Distributor or OEM.

2. Documents to be submitted along with the technical bid:
   a) Authorized Distributor : Proof of Authorization
   b) General Dealers : Compliance to point 3(c)

3. Documents to be submitted during material supply:
   a) OEM : Certificate of Conformance(COC)
   b) Authorized Distributor : OEM / Authorized Distributor COC
   c) General Dealers :
      (i) OEM / Authorized Distributor COC / Dealer COC
      (ii) Certificate on Vendors letter head certifying procurement from OEM/Authorized distributor.

4. The bidder shall submit at least two unpriced PO copies of Profibus PA Cable - Unarmoured. The PO copy date should not be older than four year from the date of opening of bid.

5. If there are any queries regarding specification, it is bidder's responsibility to get the same clarified from the purchaser before submitting the offer.

Important note: In case Bidder does not submit details mentioned in above clauses or meet the requirements of Pre-qualification requirements, Offers will be summarily rejected and bidder's technical offers/proposals will not be evaluated.

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PURCHASE SPECIFICATION

OF

Fieldbus (PROFIBUS PA cable - Unarmoured)

REVISION:02	APPROVED			
	S B BANIK			
	PREPARED	CHECKED	ISSUED	DATE
	DINAKARA P	MUKESH KUMAR 21/2/24	410	21/02/2024

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02	21/02/24	THIRD ISSUE		DP	MK	SBB

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1.0 SPECIFICATION OF FIELDBUS (PROFIBUS PA) UNARMOURED CABLES:

The purpose of this specification is general technical requirement for procurement of Unarmoured Fieldbus cable specifically used for FIELDBUS (PROFIBUS PA) and shall be shielded twisted pair, complying to IEC 61158, Type A. The cable construction shall meet EN 50288-7 standard for physical properties and the outer sheath shall be of FRLS/PVC as per EN 50290-2-22. Continuous operating temperature of Fieldbus cable shall be minimum 70 Deg C.

2.0 General Specification:

Mechanical, Geometrical, Transmission and Environmental characteristics should be as per relevant EN 50288-7, EN 50290-2-22 & complying to IEC 61158.

The Cable shall be designed for the system-defined transmission rates of 31.25 Kbit/s, the transmission characteristics shall conform to the system and guarantee a high operating security during the data transmission. The cable is intended for fixed installation.

Stripping ability: All layers easily removable with commercially available tools.

Marking: The cable should have identification marking at regular intervals of 1 meter which will be of permanent nature. The accuracy of the sequential marking should be within + 0.5%.

The cable shall as a minimum have the following markings in every meter.

i) Type of Cable, ii) Running meter length, iii) Manufacturer's name

Immunity: Conductor shall be coated with protective materials / coatings and should not have any reaction with cladding or core materials.

Life of cable: The minimum expected life of the cable shall be 25 years.

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Cable Ends: Running end shall be provided with pulling eye & the other end shall be sealed with thermal shrink cap

Length of the cable drum: The length can be standard factory length. Care to be taken to minimize wastage while cutting to length by optimizing drum lengths in line with site requirement. Drum to have a tolerance of +5%.

Following parameter to detailed specification to be met.

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3.0 Detailed Technical Specifications

A.	GENERAL DETAILS
Cable Description	
Cable type	Profibus PA,Type A Unarmoured
Compliance Standard as per technical l Spec	IEC-61158-2,EN-50288-7,EN-50290-2-22
B.	**PHYSICAL PROPERTIES**
Conductor Details	
Conductor Material	As per EN 50288-7 . Stranded tinned annealed copper in accordance with class 2 of IEC 60228
Conductor Size (AWG)	As per EN50288-7 , Nominal : 18
Conductor Stranding (No. of Strands/Diameter)	7/26 AWG
Insulation	
No. of Cores / Pairs / Triads	1Pair
Insulation Material	As per EN50288-7 . XLPE
Insulation Color Code Identification	(-)-Core:BLUE , (+)-Core:ORANGE
Thickness of core Insulation	Nominal 0.85mm
Shielding	
Shielded/Unshielded	Overall foil shield +Tinned copper braid
Individual Shield-Drain Wire Material	18 AWG Tinned copper
Overall Shield Material	As per EN50288-7 (Al-mylar tape / Polyester tape)
Overall Shield-Tinned copper braid (Coverage)	Nom 100%
Jacket / Sheath Material	
Jacket Material	FRLS/PVC
Nominal Jacket Thickness (mm)	As per EN50288-7. (Approx :0.9)
Nominal Diameter Over Jacket (mm)	As per EN50288-7 . Approx 8.6
Sheath material (colour)	ORANGE
Sheath Type	As per EN50288-7 - Extruded

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C.	ELECTRICAL PROPERTIES
Electrical characteristics :-	
Electrical properties	In compliance with IEC-61158-2, type A cable
Max operating Voltage Rating (V)	300
Max. Conductor Resistance @ 20°C (U/km)	24 Ohms/KM @20Deg C
Nominal Inductance	0.9mH/Km
Nominal Impedance 31.25KHz	100 +/- 20 Ohms
Max. Capacitance Core to Core (pF/m)	<30
Nom Velocity of Propagation	65%
Capacitance, unbalance to earth max	4 nF/km
Max Attenuation @39KHz	3 dB/km
Max propagation delay change from 7.812Khx to 39.06 Khz	1.7 µ Sec/KM
D.	OTHER IMPORTANT PROPERTIES
Other Technical Details	
Oxygen Index	Min 30% as per ASTM D 2863
Temperature Index	250 deg C(typical) as per ASTM D 2863
Temperature Rating	70 Deg C
Twisted Pair Lay Length	Shall not exceed 100mm
Min Bending Radius	15 times OD

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Detailed Technical data sheet and cable dimension details.

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d. Packaging & Forwarding - Acceptable tolerance is +5% per drum per standard packing length. Vendor shall ensure adequate packaging to protect the drums /other boxes against damage during transit.