


# REQUEST FOR QUOTATION - ONLINE BIDDING

	<b>BHARAT HEAVY ELECTRICALS LIMITED</b> Electronics Division PB No. 2606, Mysore Road Bangalore - 560026 INDIA	<b>RFQ NUMBER:</b> NKRE000634  <b>RFQ DATE :</b> 30.08.2022	Due Date/Day: 12.09.2022 MON Time : 13:00 HRS
MMI:PU:RF:003			
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 : Nilmani Kumar Phone : 26998663 Fax : E-mail: nilmanikumar@bhel.in	

SI No.	Description	Qty	Unit	Delivery qty	Delivery Date
1	SN0659420147 PROFIBUS ITEMS FOR NABINAGAR 4X250MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate <b>PROFIBUS ITEMS FOR NABINAGAR 4X250MW as per PS4102099.IO Quantities as per Annexure-II.</b>	1	NO	1	24.10.2022
2	SN0659420155 PROFIBUS ITEMS FOR NABINAGAR 3X660MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate <b>PROFIBUS ITEMS FOR NABINAGAR 3X660MW as per PS4102099. IO Quantities as per Annexure-I.</b>	1	NO	1	24.10.2022
3	SN0659420163 PROFIBUS ITEMS FOR RAMAGUNDEM STI,II FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate <b>PROFIBUS ITEMS FOR RAMAGUNDEM STG-I,II (3X200MW+3X500MW) as per PS4102099. IO Quantities as per Annexure-IV.</b>	1	NO	1	24.10.2022
4	SN0659420171 PROFIBUS ITEMS FOR BHILAI 2X250MW FGD * HSN/SAC : 7607 Doc No.- PS4102099 Rev - 00 Test Certificate <b>PROFIBUS ITEMS FOR BHILAI 2X250MW as per PS4102099. IO Quantities as per Annexure-III.</b>	1	NO	1	24.10.2022

Total Number of Items - 4

- 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.

Nilmani Kumar  
Control Equipment



A4 - 10

## PRE-QUALIFICATIONS REQUIREMENT

TW/410/03

REV. NO. 00

PAGE 01 OF 4

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### PRE-QUALIFICATIONS REQUIREMENT FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT

PROJECT : FGD PROJECT

CUSTOMER : M/s NTPC

CHECKED BY

MUKESH KUMAR

APPROVED BY

S B BANIK

PREPARED

DINAKARA P

RAVI KUMAR POGIRI

ISSUED

410

ENGG

DATE

22/08/2022



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# PRE-QUALIFICATIONS REQUIREMENT

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REV. NO. 00

PAGE 02 OF 4

## REVISION HISTORY SHEET

REV NO.	DATE	NATURE OF CHANGE	REASON	PREPARED BY	CHKD BY	APPROVED BY
00	22/08/2022	FIRST ISSUE	-----	DP /RKP	MK	SBB

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CHECKED BY

MUKESH KUMAR

APPROVED BY

S B BANIK

PREPARED

DINAKARA P

RAVI KUMAR POGIRI


ISSUED


410

ENGG

DATE

22/08/2022

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4		<div><div><div>COPY RIGHT AND CONFIDENTIAL</div><div>THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. 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				REV. NO. 00
				PAGE 04 OF 04
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		 <b>A4-11</b>	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS		PS/410/2099 REV: 01 PAGE 1 OF 25	
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<p><b>PROJECTs:-</b></p> <p>(a) NABINAGAR (3X660MW) FGD</p> <p>(b) NABINAGAR (4X250MW) FGD</p> <p>(c) BHILAI (2X250MW) FGD</p> <p>(d) RAMAGUNDEM STG-I,II (3X200MW, 3X500MW) FGD</p> <p style="text-align: center;"><b>TECHNICAL SPECIFICATION FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT</b></p>				
		REVISION:01	APPROVED  S B BANIK			
			PREPARED  DINAKARA P RAVI KUMAR ROGIRI	CHECKED  MUKESH KUMAR	ISSUED 410	DATE 22/08/2022





A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 2 OF 25

## REVISION HISTORY SHEET

REV No.	DATE	NATURE OF CHANGE	REASON	PREPD BY	CHKD BY	APRVD BY
00	12/08/2022	FIRST ISSUE		DP/RKP	MK	SBB
01	22/08/2022	SECOND ISSUE	General Revision	DP/RKP	MK	SBB


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REVISION:01

APPROVED

S B BANIK

PREPARED DINAKARA P RAVI KUMAR POGIRI	CHECKED MUKESH KUMAR	ISSUED 410	DATE 22/08/2022
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		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS		PS/410/2099			
					REV: 01			
					PAGE 2 OF 25			
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		REV No.	DATE	NATURE OF CHANGE	REASON	PREPD BY	CHKD BY	APRVD BY
		00	12/08/2022	FIRST ISSUE		DP/RKP	MK	SBB
		01	22/08/2022	SECOND ISSUE	General Revision	DP/RKP	MK	SBB
		REVISION:01		APPROVED				
				S B BANIK				
				PREPARED	CHECKED	ISSUED	DATE	
				DINAKARA P		410	22/08/2022	
				RAVI KUMAR POGIRI	MUKESH KUMAR			





A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 3 OF 25

CONTENTS

Sl. No	Description	Reference	Sheet
1	Scope of Supply	PS/ 410/ 2099	4 to 5
2	Technical Requirement	PS/ 410/ 2099	6 to 15
3	Profibus transmitter list for calculation of Profibus components/ modules	PS/ 410/ 2099	16 to 23
4	Exclusion	PS/ 410/ 2099	24

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COMPANY

A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 4 OF 25

Scope of Supply

This specification is bifurcated in two broad sections, one is the “**Standard Section** and another is “**Project specific section-Annexure-I ,II , III & IV** ” which can vary project to project.

The scope of supply for **PROFIBUS system components /modules** as follows.


S1. No	Project	Main supply Qty including additional 5% spare of total Qty	Mandatory spares Qty (20% or 2 nos subject to max 40 nos)	Technical services
1	NABINAGAR 3X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -I	As per clause-3.2 of Tech spec.	As per clause-9.1 of Tech spec.
2	NABINAGAR 4x250MW FGD	TO BE CALCULATED BASED ON ANNEXURE -II	-do-	-do-
3	BHILAI 2X250MW FGD	TO BE CALCULATED BASED ON ANNEXURE -III	-do-	-do-
4	RAMAGUNDAM STG-I&II (3X200MW, 3X500MW)	TO BE CALCULATED BASED ON ANNEXURE -IV	-do-	-do-


Technical Conditions.


1. In case of any query on the Technical matter w.r.t. BHEL Specification, Bidder shall contact BHEL, within 1 week of receipt of Enquiry for seeking clarifications. This shall not be used for seeking bid submission due date extension. No query will be entertained after Bid submission is completed.


2. Offers with incomplete information will not be considered for evaluation and are likely to be rejected outright without any further interaction with the Bidder.

3. After Bid submission, in case Bidder proposes Unsolicited Tender Modifications such as typographical mistakes etc., such modifications will not be considered for evaluation.


		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 5 OF 25
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<p>4. Superior Technical features proposed if any by the Bidder, over &amp; above BHEL enquiry specification requirements cannot be given any special preference w.r.t. price, delivery and comparison with other Bidders.</p> <p><b><u>5. No Deviations are permissible. Any deviations proposed by the bidder, shall be considered withdrawn, without claiming any commercial implications.</u></b></p> <p>6. In case of contradiction between any specification clause, vendor shall bring to BHEL's notice and BHEL's decision in this regard shall be final and binding. In the event of conflict, most stringent requirements shall be followed in general.</p> <p>7. Vendor shall give clause wise compliance to all the clauses of this main specification along with sub-specifications for individual items. Otherwise it is presumed that supplier is fully complying with the specifications. Deviations/clarifications are not allowed after placement of P.O. (Purchase Order).</p> <p>8. If any defect in the material during manufacturing process, transportation activities etc, Vendor is sole responsible for the replacement with in a period of 3 weeks from the supply/identified as defective.</p> <p><b><u>9. Vendor to consider multiple site-visits for Erection supervision and commissioning for each unit based on site readiness/customer requirements for the offered package on lump sum basis. Due to urgency of a project if the material supplied for one project is utilized in another project the terms and condition for warranty of material, services will remain unchanged and applicable to project under execution.</u></b></p>		


		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 6 OF 25
		<div data-bbox="135 577 231 1653" data-label="Text" style="writing-mode: vertical-rl; transform: rotate(180deg);"> COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY </div> <div data-bbox="643 521 1102 566" data-label="Section-Header"> <h2 style="text-align: center;"><u>Technical Requirement</u></h2> </div> <div data-bbox="264 638 574 674" data-label="Section-Header"> <h3><u>A : Standard Section</u></h3> </div> <div data-bbox="264 710 458 745" data-label="Section-Header"> <h4><u>1. GENERAL</u></h4> </div> <div data-bbox="306 777 1422 1070" data-label="Text"> <p>The purpose of this specification is general technical requirement for procurement of <b>PROFIBUS system components / modules</b>. This specification specifies broadly the requirement of Design, Engineering, Manufacturing, Testing of various components at vendor works. The items pertaining to control room shall be mounted in BHEL-DCS panel and the field items shall be mounted in the field. Vendor to provide supervision during engineering, testing, FAT, Erection and Commissioning, site acceptance of integrated Test (SAT) and protocol to be signed with end customer.</p> </div> <div data-bbox="306 1104 1422 1321" data-label="Text"> <p>The FIELDBUS (PROFIBUS PA protocol) based I/O modules of proven technology PROFIBUS PA protocol complying to IEC 61158 to be supplied by the vendor. This includes all remote I/O modules, power supplies, communication module, housing for remote I/O modules, diagnostic software and any other component, modules etc. not specifically mentioned but required to make the system complete for meeting the requirements specified here in.</p> </div> <div data-bbox="306 1355 1431 1462" data-label="Text"> <p>The proposed items shall be installed in Safe Zone of power plants for which BHEL is supplying main control system. The project names and scope are as per “<b>Project specific section</b>” in <b>Annexure-I, II,III &amp; IV</b>.</p> </div> <div data-bbox="258 1498 1236 1534" data-label="Section-Header"> <h4><u>2. a. FIELDBUS ( PROFIBUS) I/O SYSTEM TECHNICAL DETAILS</u></h4> </div> <div data-bbox="306 1565 1482 1957" data-label="Text"> <p>This specification covers broadly the requirement of FIELDBUS (PROFIBUS) based system component / modules with any 6/12/16 - segment protector, Segment Motherboard, Advanced Diagnostic Module, Fieldbus Power Hub, Gateway Motherboard, Gateway Module, Link cable between gateway motherboard and Power Hub motherboard., Surge Protector with base for field and control room, Stainless Steel(SS) JB (as per 2.b) along with Segment Protector mounted inside, Software user interface for Advanced Diagnostic Modules, configuration PC (Laptop) and any other component not specifically mentioned but required to make the system complete. It is the responsibility of the vendor to ensure that all the components other than those mentioned in <b>Annexure -V(Exclusion)</b> are considered in the offer to make the system complete.</p> </div>		


		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 7 OF 25
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<p>System shall be capable to acquire signals from PA device like Pressure transmitter, Diff Pressure Transmitter, Temperature Transmitter, Flow Transmitter etc. Details of total signals are attached as Annexure-I,II,III &amp; IV as per the projects mentioned.</p> <p>These PA devices shall be terminated in Field Junction Box housing 6/12/16 channel Segment Protector, Surge protector and terminator. All these Field components shall have operating Temperature range from 0 – 70 Deg C or better. Other Communication components shall be housed in a control panel located in control room. All these Control Room components shall have operating Temperature range from 0 – 60 Deg C or better</p> <p>All Gateways, Power supplies, Power conditioners, diagnostic module, surge suppressors etc. shall be DIN rail mountable.</p> <p>The proposed items will be connected to BHEL's controller as master through interface module located in main control room. All communication cable from field and control room mounted panels are in the scope of BHEL however the vendor shall supervise the engineering of cabling and proper distribution to meet the intent of specification requirement. Location of field Mounted items and Control room mounted are mentioned in Annexure – I, II, III &amp; IV depending on the projects mentioned.</p> <p><b>2.b Profibus SS JB IP66 with Field Items</b></p> <p>Profibus Stainless Steel JB IP66 &amp; below Technical Requirements: Material of JB: SS316L, Thickness of material: 1.5mm Protection Class: IP66 or better Type of JB: Standard Hinge type with lockable door on front side. SS TAG plate fitted on the door with Tagnames engraved (It is the responsibility of the bidder to obtain Tagnames from Purchaser before Manufacturing) Finish: Electro polished (outside) Protection Class: IP66 or better Materials to be fitted inside JB: Profibus Segment protectors (suitable for connecting upto 16 devices), Profibus Surge protector, Profibus terminator, other accessories as required by vendor for system completion. Glands &amp; Plugs: Suitable SS glands and Blind Plugs to be provided in JB. (Additionally Blind Plugs to be provided loose on over-all basis , Qty shall be 20% of total mounted cable gland ) Junction Box to be complete with all the materials mounted in the JB and internal wirings done of the materials fitted.</p>		

			PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099
		A4-11		REV: 01
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			<p><b>3. <u>SPARE REQUIREMENT</u></b></p> <p>3.1 Offered items shall be expandable. Various in-built spare capacity shall be calculated based on requirement in annexure-I , II ,III and IV depending on the projects as mentioned.</p> <ul style="list-style-type: none"> <li>I. Segment Spare capacity: 40%</li> <li>II. 5% components on overall basis (This also includes Segment protectors, Surge protector with base and Terminator mounted inside JB)</li> </ul> <p><b>3.2 Mandatory Spare quantities,</b></p> <p>Apart from the required qty, for all items of Fieldbus system (including field accessories ) : -</p> <p>20% or 2 Nos. of each type, model and rating whichever is more subject to maximum of 40 nos of each type.</p> <p><b>NOTE: All mandatory spares items shall be quoted with Unit price along with required quantities, as per spec.</b></p> <p><b>4. <u>SYSTEM REQUIREMENT</u></b></p> <p>Offered system shall be of latest proven technology. Vendor to submit, for the offered system's reference list and operating experience of the listed services in thermal power plants/any other industries, for more than 1 years with similar kind of application. Any other reference letters from the user of the system/any other industry etc. may also be submitted for information. Operating experience / reference list of Individual components forming the whole system may also be furnished. All field mounted components in offered system shall meet following requirements, as minimum</p>	



		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 9 OF 25
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<div data-bbox="416 555 1481 918"> <ul style="list-style-type: none"> <li>i. Compatibility with Profibus based Field Instruments : Press Txr, Diff Pr Txr, Temp Txr, Flow Txr ,Level Txr</li> <li>ii. Operating Temperature** : 0-70 Deg C or better ( continuous operation)</li> <li>iii. Diagnostics: Wire Break monitoring, Power supply healthiness etc.</li> <li>iv. Mounting : DIN Rail Mounting</li> <li>v. Accessories : All required Accessories to make the system complete , shall be provided</li> <li>vi. EMC: EN61326 Standard.</li> </ul> </div> <p data-bbox="309 987 1481 1238">** Control room mounted equipment shall be suitable for operating temperature up to 60 Deg C or better. (continuous operation) with all requirements of latest version of standards for FIELDBUS (PROFIBUS) viz. IEC 61158. All required libraries to execute various tasks like the design of fieldbus interfacing scheme, from field to Controller shall comply data acquisition, control/protection etc shall be provided. Redundant host/ master card and redundant power supply along with diagnostic module shall be provided.</p> <p data-bbox="309 1272 1481 1346">Vendor to provide Fieldbus devices specifications (maximum current drawn from bus, block execution speeds, power conditioner suitable for field barrier, etc.)</p> <p data-bbox="309 1379 1481 1559">Vendor to provide all standard functional blocks for all FIELDBUS (PROFIBUS) devices as per latest FIELDBUS (PROFIBUS) version and standard guidelines for engineering by purchaser. Fieldbus components including power supply, terminators, isolators, etc. provided by vendor shall comply to IEC 61158 and other standard Fieldbus guidelines.</p> <p data-bbox="309 1592 1481 1704">Redundant host/ master card and redundant power supply along with advance diagnostic module shall be provided. All required libraries to execute various tasks like data acquisition, control/protection etc. shall be provided.</p>		
		<p data-bbox="256 1805 683 1843"><b>5. <u>QUALITY REQUIREMENT</u></b></p> <p data-bbox="304 1877 1481 1984">The items covered under this specification shall be subject to vendor's Quality Plan to be approved by M/s BHEL/ End user before start of manufacture. To ensure that quality is in-built in each equipment the Quality Assurance System</p>		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 10 OF 25
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		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 11 OF 25
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<p>data links shall be provided with protections that meets the surge withstand capability as defined in ANSI 37.90.1/ IEEE-472. Complete details of the features incorporated in electronics systems to meet this requirement, the relevant tests carried out, the test certificates etc. shall be submitted along with the proposal.</p> <p>As an alternative to above, suitable class of EN 61000-4-12 which is equivalent to ANSI /37.90.1/IEEE-472 may also be adopted for SWC test.</p> <ul style="list-style-type: none"> <li>ii) Dry Heat test as per IEC-68-2-2 or equivalent.</li> <li>iii) Damp Heat test as per IEC-68-2-3 or equivalent.</li> <li>iv) Vibration test as per IEC-68-2-6 or equivalent.</li> <li>v) Electrostatic discharge tests as per EN 61000-4-2 or equivalent.</li> <li>vi) Radio frequency immunity test as per EN 61000-4-6 or equivalent.</li> <li>vii) Electromagnetic Field immunity as per EN 61000-4-3 or equivalent.</li> </ul> <p>Test listed at item no. v, vi, vii, above are applicable for electronic cards only as defined under Item(i) above.</p> <p><b>Note: If Type Tests and other tests (as specified under 6.0) have been conducted with reference to standards different than what have been specified in the specification, then vendor to clearly indicate these specification with equivalent specifications in the offer.</b></p> <p><b>7.0 <u>CONFIGURATION &amp; DIAGNOSTIC SOFTWARE</u></b></p> <p>1.0 All software required for configuration of the offered FIELDBUS (PROFIBUS) system shall be considered and offered. Similarly, software for Diagnostics /Troubleshooting is also to be part of offer. Any license, if required, to be considered on Project/Site basis and not on Unit basis. System Configuration PC (Laptop) required to load these software will be provided by purchaser. Configuration of PC (Laptop) shall be carried out by vendors with latest configuration software with all the required basic software/operating system. All these software along-with necessary device description files to be supplied in CD or any other storage media only, even though it may be available in Supplier's Web Site or otherwise. Any cable required for communication during configuration also be considered in the offer.</p> <p>Supplier to provide all necessary technical support to establish communication between the offered system and BHEL's control system during FAT at</p>		



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 12 OF 25

purchaser works and during commissioning at project site. Any software OR Configuration file etc. required for establishing meaningful communication shall be part of the Offered system

### **8.0 WARRANTY**

The offered items shall be guaranteed for satisfactory operation of 18 months from the date of commissioning OR 24 months from the date of supply whichever is earlier.

All the products / components quoted for this tender shall carry three years warranty after the completion of the above period.

Equipment will be at BHEL/EDN for a period of two/three months for configuration and project engineering/demonstration to end customer. Subsequently it will be sent to respective project as mentioned in Annexure-I ,II III & IV depending on the projects as mentioned.

### **9.0 ENGINEERING, TESTING, ERECTION & COMMISSIONING (Technical services) SCOPE**

#### **9.1 Technical services:**


A	Technical Services to be provided at BHEL/EDN, Bangalore.	* One Visit per project
B	Technical Services to be provided at Project location within India as per Annexure-I,II,III & IV as per projects site.	* Unit wise Visits


\*Each visit is considered as minimum five working days.

**Vendor to quote for Slno –A & B**


**NOTE: All Technical services shall be quoted with per project separate Lump-sum price in the offer.**

9.2 Vendor has to depute their Engineer to BHEL-EDN during detailed engineering & FAT to establish communication with Host DCS system etc. Vendor to indicate per unit separate Lump-sum price for this activity in the offer as mentioned in clause 9.1

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 13 OF 25
COPY RIGHT AND CONFIDENTIAL THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICAL LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANYWAY DETERMINED TO THE INTEREST OF THE COMPANY		<p>9.3 Vendor has to depute their Engineer to Project site located within India. Project details will be indicated by BHEL along with PO. Site visit should be inclusive of travel, stay and other expenses of vendor personnel. Vendor has to complete the activity by demonstration, documentation and making MOM with Customer / BHEL site Engineers. Vendor to indicate per unit separate Lump-sum price for this activity in the offer as mentioned in clause 9.1</p> <p><b>10.0      <u>TRAINING</u></b></p> <p><u>Pre-engineering</u> : The Vendor shall provide training separately to employer's personnel and also separately to the end customer personnels on following aspects of fieldbus (i) Hardware &amp; Software features (ii) System design, diagnostic and testing (iii) maintenance, troubleshooting and fault analysis. This training shall be provided by certified training personnel of Profibus foundation and it shall be provided before approval of basic design and engineering document.</p> <p><u>On Site</u> : Vendor to provide Two days on-site training per unit to BHEL and End User's engineers on all aspects of the FIELDBUS (PROFIBUS) system being offered/supplied. Tentatively 10-15 Engineers will participate in this training. Training shall necessarily include Technical details of FIELDBUS (PROFIBUS) system, Operating principle, system configuration supplied, system trouble-shooting and maintenance, as minimum requirement</p> <p><b>11.0      <u>DOCUMENTATION</u></b></p> <p><b><u>11.1 Documents to be furnished along-with offer (1 set)</u></b></p> <ul style="list-style-type: none"> <li>➤ Technical write-up(functional)</li> <li>➤ Technical literature/catalog of each component</li> <li>➤ Configuration drawing/Segment design including power supply and monitoring scheme.</li> <li>➤ Detailed bill of material with make &amp; model</li> <li>➤ Data sheet of each component offered</li> <li>➤ Clause-wise confirmation/deviation list</li> <li>➤ Reference List/Operating experience</li> <li>➤ Quality Plan</li> <li>➤ List of Software to be supplied</li> <li>➤ Calculation considering various distances between different components.</li> <li>➤ Clear list of items/software etc. NOT CONSIDERED but required to complete the system</li> </ul>		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 14 OF 25
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		<p><b><u>NOTES :</u></b></p>		
		<p>a. Vendor must furnish, all documents, in line with specification along with offer. Clause-wise specific acceptance/deviations shall be furnished. Deviations, if any, must be clearly brought out in offer. Failure to provide Clause-wise acceptance/deviations may result in Technical disqualification.</p>		



		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2099 REV: 01 PAGE 15 OF 25
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A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 16 OF 25

ANNEXURE – I  
(APPLICABLE NABINAGAR 3X660MW FGD)**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SLNO	PROJECT NAME	LOCATION	Number of PA devices			DCS CONTROLLER NAME
			UNIT-1	UNIT-2	UNIT-3	
	NABINAGAR 3X660MW					
01		101	8	8	8	AP01
		103	36	36	36	AP01
		105	17	17	17	AP01
		107	50	50	50	AP01
		108	28	28	28	AP01
		109	11	11	11	AP01
	TOTAL		150	150	150	
02		102	8	8	8	AP02
		104	36	36	36	AP02
		105	4	4	4	AP02
		106	5	5	5	AP02
		107	72	72	72	AP02
		108	24	24	24	AP02
		109	11	11	11	AP02
	TOTAL		160	160	160	
COMMON SYSTEM						
03		2	12			ZP01
		15	9			ZP01
		17	19			ZP01
		21	24			ZP01
	TOTAL		64			
04		3	6			ZP02
		7	6			ZP02
		11	5			ZP02
		16	5			ZP02
		18	19			ZP02
		20	24			ZP02
	TOTAL		65			

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A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 17 OF 25

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COMPANY

05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
TOTAL			23	
06		2	21	ZP04
07		3	21	ZP05
08		6	20	ZP06
09		6	56	ZP07

Total Instruments in NABINAGAR 3X660MW FGD = 1200



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 18 OF 25

**ANNEXURE – II**  
**(APPLICABLE NABINAGAR 4X250MW FGD)**

**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SL NO	PROJECT NAME	LOCATION	Number of PA devices				DCS CONTROLLER NAME
			UNIT-1	UNIT-2	UNIT-3	UNIT-4	
	<b>NABINAGAR 4X250MW</b>						
<b>01</b>		101	8	8	8	8	AP01
		103	36	36	36	36	AP01
		105	17	17	17	17	AP01
		107	50	50	50	50	AP01
		108	28	28	28	28	AP01
		109	11	11	11	11	AP01
	<b>TOTAL</b>		<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	
<b>02</b>		102	8	8	8	8	AP02
		104	36	36	36	36	AP02
		105	4	4	4	4	AP02
		106	5	5	5	5	AP02
		107	72	72	72	72	AP02
		108	24	24	24	24	AP02
		109	11	11	11	11	AP02
	<b>TOTAL</b>		<b>160</b>	<b>160</b>	<b>160</b>	<b>160</b>	
<b>COMMON SYSTEM</b>							
<b>03</b>		2	12				ZP01
		15	9				ZP01
		17	19				ZP01
		21	24				ZP01
	<b>TOTAL</b>		<b>64</b>				
<b>04</b>		3	6				ZP02
		7	6				ZP02
		11	5				ZP02
		16	5				ZP02
		18	19				ZP02
		20	24				ZP02
	<b>TOTAL</b>		<b>65</b>				

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## PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS

**PS/410/2099**

**REV: 01**

**PAGE 19 OF 25**

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05		6	6			ZP03
		8	4			ZP03
		9	4			ZP03
		10	4			ZP03
		12	5			ZP03
	TOTAL		23			
06		2	21			ZP04
07		3	21			ZP05
08		6	20			ZP06
09		6	56			ZP07

**Total Instruments in NABINAGAR 4X250MW FGD = 1510**



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 20 OF 25

ANNEXURE – III  
(APPLICABLE BHILAI 2X250MW FGD)**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SLNO	PROJECT NAME	LOCATION	Number of PA devices		DCS Controller NAME
			UNIT-1	UNIT-2	
	BHILAI 2x250MW				
01		101	8	8	AP01
		103	36	36	AP01
		105	17	17	AP01
		107	50	50	AP01
		108	28	28	AP01
		109	11	11	AP01
	TOTAL		150	150	
02		102	8	8	AP02
		104	36	36	AP02
		105	4	4	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	11	11	AP02
	TOTAL		160	160	
COMMON SYSTEM					
03		2	12		ZP01
		15	9		ZP01
		17	19		ZP01
		21	24		ZP01
	TOTAL		64		
04		3	6		ZP02
		7	6		ZP02
		11	5		ZP02
		16	5		ZP02
		18	19		ZP02
		20	24		ZP02
	TOTAL		65		

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A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 21 OF 25

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05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
	TOTAL		13	
06		2	21	ZP04
07		3	21	ZP05
08		6	11	ZP06
09		6	56	ZP07

Total Instruments in BHILAI 2X250MW FGD = 890



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 22 OF 25

**ANNEXURE – IV**  
**(APPLICABLE RAMAGUNDAM 3X200MW + 3X500MW FGD)**

**B. Project specific section**

All components to be calculated based on the number of devices and based on spare philosophy as mentioned in clause no 3.

SL NO	PROJECT NAME	LOCATION	Number of PA devices				DCS CONTROLLER NAME
			3X200 MW UNIT-1,2,3	500MW UNIT-4	500MW UNIT-5	500MW UNIT-6	
	<b>RAMAGUNDAM 3X200MW + 3X500MW</b>						
<b>01</b>		101	8	8	8	8	AP01
		103	36	36	36	36	AP01
		105	17	17	17	17	AP01
		107	50	50	50	50	AP01
		108	28	28	28	28	AP01
		109	11	11	11	11	AP01
	<b>TOTAL</b>		<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	
<b>02</b>		102	8	8	8	8	AP02
		104	36	36	36	36	AP02
		105	4	4	4	4	AP02
		106	5	5	5	5	AP02
		107	72	72	72	72	AP02
		108	24	24	24	24	AP02
		109	11	11	11	11	AP02
	<b>TOTAL</b>		<b>160</b>	<b>160</b>	<b>160</b>	<b>160</b>	
<b>COMMON SYSTEM</b>							
<b>03</b>		2	12				ZP01
		15	9				ZP01
		17	19				ZP01
		21	24				ZP01
	<b>TOTAL</b>		<b>64</b>				

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A4-11

PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 23 OF 25

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04		3	6	ZP02
		7	6	ZP02
		11	5	ZP02
		16	5	ZP02
		18	19	ZP02
		20	24	
	TOTAL		65	
05		6	6	ZP03
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
	TOTAL		23	
06		2	21	ZP04
07		3	21	ZP05
08		6	20	ZP06
09		6	56	ZP07

Total Instruments in RAMAGUNDAM 3X200MW + 3X500MW FGD = 1510



PURCHASE SPECIFICATION FOR PROFIBUS  
COMPONENT FOR FGD PROJECTS

PS/410/2099

REV: 01

PAGE 24 OF 25


A4-11

ANNEXURE-IV

EXCLUSION FROM VENDOR'S SCOPE

SLNO	DESCRIPTION	REMARKS
1	Fieldbus cable from field JB to field device.	
2	Cable between control room panel and field JB	
3	Cable between BHEL Master controller to DP/PA coupler.	
4	Profibus OLM - Multimode Glass Fiber	

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				REV: 01
				PAGE 25 OF 25
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