

		बि एच ई एल  A4-11		PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS		PS/410/2057	
						REV: 01	
						PAGE 1 OF 23	
		PROJECTs:- (a) MAUDA 2X500MW UNIT 1 & 2 FGD (b) BARH – STG I, 3X660MW, UNIT 1 , 2 & 3 FGD (c) BARH – STG II, 2X660MW UNIT 4 & 5 FGD TECHNICAL SPECIFICATION FOR PURCHASE OF FIELDBUS (PROFIBUS) SYSTEM COMPONENTS For FGD PROJECT					
		REVISION:01		APPROVED			
				SD/- VIDYA S			
				PREPARED	CHECKED	ISSUED	DATE
				SD/- MUKESH KUMAR			
				SD/- HIMANSHU KRISHNA	SD/- S B BANIK	410	07/07/2020



PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 2 OF 23

REVISION HISTORY SHEET

REV No.	DATE	NATURE OF CHANGE	REASON	PREPD BY	CHKD BY	APRVD BY
00	07/07/2020	FIRST ISSUE		MK / HK	SBB	VS
01	07/08/2020	SECOND ISSUE	ANNEX-I,II,III QTY changed DUE TO INPUT	MK / HK	SBB	VS

REVISION:01

APPROVED

SD/-
VIDYA S

PREPARED
SD/-
MUKESH KUMAR

CHECKED

ISSUED

DATE

SD/-
HIMANSHU KRISHNA

SD/-
S B BANIK

410

07/07/2020

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



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 3 OF 23

CONTENTS

Sl. No	Description	Reference	Sheet
1	Scope of Supply	PS/410/2057	4 to 5
2	Technical Requirement	PS/410/2057	6 to 15
3	Profibus transmitter list for calculation of profibus components/modules	PS/410/2057	16 to 22

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

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 4 OF 23

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** ” 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	MAUDA 2X500MW 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	BARH – STG I, 3X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -II	-do-	-do-
3	BARH – STG II, 2X660MW FGD	TO BE CALCULATED BASED ON ANNEXURE -III	-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.

4. Superior Technical features proposed if any by the Bidder, over & above BHEL enquiry specification requirements cannot be given any special preference w.r.t. price, delivery and comparison with other Bidders.

5. No Deviations are permissible. Any deviations proposed by the bidder, shall be considered withdrawn, without claiming any commercial implications.

		बि एच ई एल  A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057
		REV: 01		
		PAGE 5 OF 23		
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		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. 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). 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. 9. <u>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 utilised in another project the terms and condition for warranty of material, services will remain unchanged and applicable to project under execution.</u>		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 6 OF 23
		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 <u>Technical Requirement</u> <u>A : Standard Section</u> <u>1. GENERAL</u> The purpose of this specification is general technical requirement for procurement of PROFIBUS system components / modules. 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. 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. 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 “Project specific section” in Annexure-I, II & III. <u>2. FIELDBUS (PROFIBUS) I/O SYSTEM TECHNICAL DETAILS</u> This specification covers broadly the requirement of FIELDBUS (PROFIBUS) based system component / modules with any 6/12/16 -Segment Motherboard, segment protector , 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 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 Annexure -IV(Exclusion) are considered in the offer to make the system complete.		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 7 OF 23
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		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 as per the projects mentioned. 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 All Gateways, Power supplies, Power conditioners, diagnostic module, surge suppressors etc. shall be DIN rail mountable. 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. Cable route length between field Mounted items and Control room mounted are mentioned in Annexure – I ,II & III depending on the projects mentioned.		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 8 OF 23
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		3. <u>SPARE REQUIREMENT</u> 3.1 Offered items shall be expandable. Various in-built spare capacity shall be calculated based on requirement in annexure-I , II and III depending on the projects as mentioned. I. Segment Spare capacity: 40% II. 5% components on overall basis 3.2 Mandatory Spare quantities, Apart from the required qty, for all items of Fieldbus system (including field accessories) : - I. 20% or 2 Nos. of each type, model and rating whichever is more subject to maximum of 40 nos of each type. II. Any other item, which vendor recommends is required for trouble free operation for 2 years and not covered above, shall also be indicated and included in the offer with optional price. NOTE: All mandatory spares items shall be quoted with Unit price along with required quantities, as per spec. 4. <u>SYSTEM REQUIREMENT</u> 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		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 9 OF 23
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		i. Field Instruments : Press Txr, Diff Pr Txr, Temp Txr, Flow Txr ,Level Txr ii. Operating Temperature** : 0-70 Deg C or better (continuous operation) iii. Diagnostics: Wire Break monitoring, Power supply healthiness etc. iv. Mounting : DIN Rail Mounting v. Accessories : All required Accessories to make the system complete , shall be provided vi. EMC: EN61326 Standard. ** 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. Vendor to provide Fieldbus devices specifications (maximum current drawn from bus, block execution speeds, power conditioner suitable for field barrier, etc.) & length of segments. 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. 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.		
		5. <u>QUALITY REQUIREMENT</u>		
		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 manual & Quality Plan indicating the system followed by the vendor shall be submitted to purchaser for his review along with the offer.		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 10 OF 23
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		The vendor shall give at least 15 days written advance notice to purchaser for witnessing the tests/inspection at various stages. The expenses for all such test/inspection shall be to Manufacturer's account except for the expenses of purchaser's representatives witnessing the test. The purchaser shall attend such test/inspection or advice that the manufacturer may proceed with the test, which shall be deemed to have in purchaser's presence and shall furnish relevant test result and test certificates to the purchaser for his review who will then issue Material Dispatch Clearance Certificate (MDCC) enabling supplier to dispatch the equipment. <u>6.0 TYPE TEST REQUIREMENT:</u> The Vendor shall give the type test report for the offered items and the test requirement shall cover CMRR, NMRR Verification. Submission of type test results and certificate shall be acceptable provided. i) The same has been carried out by the Vendor on exactly the same model / rating of equipment. ii) There has been no change in the components from the offered equipment & tested equipment. iii) The test has been carried out as per the latest standards along with amendments as on the date of Bid opening and as indicated below: <u>SPECIAL REQUIREMENT FOR SOLID STATE EQUIPMENTS/ SYSTEMS</u> The minimum type test reports, which are to be submitted for each of the major C&I systems shall be as indicated below: i) Surge Withstand Capability (SWC) for Solid State Equipment Systems All solid state systems/equipment shall be able to withstand the electrical noise and surges as encountered in actual service conditions and inherent in a power plant. All the solid state systems/equipment shall be provided with all required protections that needs the surge withstand capability as defined in ANSI 37.90.1/ IEEE-472. Hence, all front end cards which receive external signals like Analog input & output modules, Binary input & output modules etc. including power supply, data highway		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 11 OF 23
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		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. 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. ii) Dry Heat test as per IEC-68-2-2 or equivalent. iii) Damp Heat test as per IEC-68-2-3 or equivalent. iv) Vibration test as per IEC-68-2-6 or equivalent. v) Electrostatic discharge tests as per EN 61000-4-2 or equivalent. vi) Radio frequency immunity test as per EN 61000-4-6 or equivalent. vii) Electromagnetic Field immunity as per EN 61000-4-3 or equivalent. Test listed at item no. v, vi, vii, above are applicable for electronic cards only as defined under Item(i) above. 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. 7.0 <u>CONFIGURATION & DIAGNOSTIC SOFTWARE</u> 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. Supplier to provide all necessary technical support to establish communication between the offered system and BHEL's control system during FAT at purchaser works and during commissioning at project site. Any software OR		

A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 12 OF 23

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 comprehensive (parts + labour) on-site 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 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 as per projects site.	*Unit wise Visits

*Each visit is considered as minimum five working days.

Vendor to quote per visit cost for Slno A & B and an optional quote may be given for additional site visits for Slno B. This may be used based on site condition.

NOTE: All Technical services shall be quoted with Unit wise 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

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

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 13 OF 23
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		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 10.0 TRAINING <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 & 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. <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 11.0 DOCUMENTATION <u>11.1 Documents to be furnished along-with offer (1 set)</u> ➤ Technical write-up(functional) ➤ Technical literature/catalog of each component ➤ Configuration drawing/Segment design including power supply and monitoring scheme. ➤ Detailed bill of material with make & model ➤ Data sheet of each component offered ➤ Clause-wise confirmation/deviation list ➤ Reference List/Operating experience ➤ Quality Plan ➤ List of Software to be supplied ➤ Calculation considering various distances between different components. ➤ Clear list of items/software etc. NOT CONSIDERED but required to complete the system		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 14 OF 23
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		<u>11.2 Documents to be furnished after placement of order</u> <u>(for Approval by BHEL/ End User- 2 sets hardcopies + soft copy in PDF format) Technical write-up(functional)</u> ➤ Technical literature/catalog of each component ➤ Configuration drawing/segment design ➤ Detailed bill of material with make & model ➤ Data sheet ➤ Quality Plan ➤ List of Software to be supplied ➤ Type test reports for the Tests mentioned under clause 6.0 <u>11.3 Documents to be furnished before dispatch for review/ acceptance</u> <u>by M/s BHEL/End user (2 sets hardcopies + soft copy in .PDF format)</u> ➤ Visual/ Dimensional Test report ➤ Calibration report ➤ Test Report/Certificate/Type test reports <u>11.4 Final Operation & Maintenance Manual (O&M Manual) shall contain minimum of following:</u> ➤ Technical write-up(functional) ➤ Technical literature/catalog of each component ➤ Configuration drawing/segment design ➤ Detailed bill of material with make & model ➤ Data sheet ➤ Schematic diagram/Loop diagram including Termination details ➤ Details of Software being supplied ➤ Trouble shooting procedure and Maintenance guidelines ➤ O&M Manuals to be submitted at the Time of Dispatch. (2 sets hardcopies + 1 soft copy in .PDF format) <u>NOTES :</u> a. Vendor must furnish, all documents, in line with specification along with offer. Clause-wise specific acceptance/deviations shall be furnished. Deviations, if any,		

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057 REV: 01 PAGE 15 OF 23
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		must be clearly brought out in offer. Failure to provide Clause-wise acceptance/deviations may result in Technical disqualification. b. It is the responsibility of vendor to check for completeness of the offered system. If any additional component/software etc. is required during Engineering/Testing/Erection & Commissioning then same to be provided by the Vendor other than mentioned in exclusion IN Annexure-IV with NO EXTRA COST TO BHEL. c. <u>Vendor to validate the offered components with BHEL-DCS system by providing one set of each components on returnable basis at BHEL-Electronics division. The cost arising out of providing the components to be borne by vendor.</u> d. Any clarification required from BHEL side may be obtained during offer stage only.		



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 16 OF 23

MOUDA 2x500MW (2 nos) Unit-1 & 2 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	
	MOUDA 2x500MW				
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	1	1	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	11	11	AP02
	TOTAL		157	157	
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

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



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 17 OF 23

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

		20	24	ZP02
	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	13	ZP06
09		6	56	ZP07

Total Instruments in MOUDA 2x500MW (2 nos) Unit-1&2 FGD = 877



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 18 OF 23

ANNEXURE – II
(APPLICABLE FOR BARH STG-I 3x660MW (3 nos) Unit-1,2 & 3 FGD)

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	
	Barh Stg-I Unit-1,2 & 3					
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
			150	150	150	AP01
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
			160	160	160	AP02
COMMON SYSTEM						
03		2	12			ZP01
		15	9			ZP01
		17	19			ZP01
		21	24			
			64			
04		3	6			ZP02
		7	6			ZP02
		11	5			ZP02
		16	5			ZP02
		18	19			

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



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 19 OF 23

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

		20	24	
			65	
05		6	6	
		8	4	ZP03
		9	4	ZP03
		10	4	ZP03
		12	5	ZP03
			23	ZP03
06		2	21	ZP04
07		3	21	ZP05
08		6	20	ZP06
09		6	56	ZP07

Total Instruments in BARH STG-I 3x660MW (3 nos) Unit-1,2 &3 FGD = 1200



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 20 OF 23

ANNEXURE – III
(APPLICABEL FOR BARH STG-II 2x660MW (2 nos) Unit-4 & 5 FGD)

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	
	BARH STG-II 2x660MW				
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	1	1	AP02
		106	5	5	AP02
		107	72	72	AP02
		108	24	24	AP02
		109	11	11	AP02
	TOTAL		157	157	
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

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



A4-11

PURCHASE SPECIFICATION FOR PROFIBUS
COMPONENT FOR FGD PROJECTS

PS/410/2057

REV: 01

PAGE 21 OF 23

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

	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	13	ZP06
09		6	56	ZP07

Total Instruments BARH STG-II 2x660MW (2 nos) Unit-4 & 5 FGD = 877

		 A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057															
				REV: 01															
				PAGE 22 OF 23															
ANNEXURE-IV EXCLUSION FROM VENDOR'S SCOPE <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">SLNO</th> <th style="width: 60%;">DESCRIPTION</th> <th style="width: 30%;">REMARKS</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Fieldbus cable from field JB to field device.</td> <td></td> </tr> <tr> <td>2</td> <td>Cable between control room panel and field JB</td> <td></td> </tr> <tr> <td>3</td> <td>Cable between BHEL Master controller to DP/PA coupler.</td> <td></td> </tr> <tr> <td>4</td> <td>Profibus OLM - Multimode Glass Fiber</td> <td></td> </tr> </tbody> </table>					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	
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																		

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

		बी एच ई एल  A4-11	PURCHASE SPECIFICATION FOR PROFIBUS COMPONENT FOR FGD PROJECTS	PS/410/2057
		REV: 01		
		PAGE 23 OF 23		
		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		
		INTENTIONALLY LEFT BLANK		