

	Bill of Material Cum Price Bid format [for Main Supply + Mandatory Spares + Services]	Annexure - [A] of PY56405 Rev.00
	Fire Detection & Alarm System	
	BHEL ENQUIRY NO : _____ Vendor Offer ref no: _____ Ref. date: _____ Ref. date: _____	
NOTES ::		
A	This document details the price schedule format for the enquiry. No other format will be entertained. Applicable taxes and duties shall be indicated separately in commercial offer.	
B	Duly signed & stamped un-priced price schedule format shall be submitted by vendor in the technical offer as a token of concurrence that price schedule would be submitted in this format. Any tampering / modification / additions, etc. are NOT allowed and not considered binding and is liable for rejection of the offer.	
C	Bidders shall be evaluated on overall L1 basis.	
D	For addition/reduction of quantity, unit rate quoted in the present offer shall be considered during order execution and shall be valid up to execution of the contract to the extent of + 30%, - 50% of overall order Value. These would include the cost up to engineering, installation of the item, wiring up in the panel and seamless integration with main system at works/site without any cost implications. All accessories as required for this purpose also shall be included in the Price Quoted	
E	Components/Items for addition/deletion, spares shall be identical to the main equipment.	
F	Billing will be as per BOM of actual supplied main equipment (including accessories) & spares.	
G	Unit Rates of the individual package items shall be derived by multiplying the "Unit Price Fixing Factor" with the Lumpsum Price quoted. Unit Rates of the Individual items thus arrived, shall be binding on the bidder, in case of any repeat order/Ammendment of order as per BHEL policies. Observations / Objections, if any, of the Bidder, to the "Unit Price Fixing Factor" shall be brought to the notice of BHEL, during Pre-Bid Stage. No Observations / Objections shall be entertained after the Techno-Commercial Bid is opened.	
H	Bidder to indicate "Quoted" in the column "Bidder's Confirmation" as a confirmation of their bid to the respective item.	
I	The Bid Evaluation is on Overall L1 Basis. Each and Every item of the Package shall be quoted by the bidder. Partial offers will not be considered for evaluation and the same are liable for rejection.	
J	Bidders will be required to quote the Lumpsum quotation including P&F and Freight; only GST to be excluded (For Main items and Mandatory spares)in Price Bid Form in the e-procurement portal, considering all items as per this Price Format. Basic Prices of various line items shall be calculated by BHEL by multiplying the quoted Total Basic Price with the Weightages mentioned in this Price Format against the respective line items.	

		Price Bid format [for Main Supply + Mandatory Spares+Services]					Annexure -[C] of PY56405	
		Fire Detection & Alarm System					Rev.00	
S. No	Material Code	Item Description	Quantity [I]	Unit	Unit Rate (Rs.) [II]	TOTAL PRICE (Rs.) [I*II]	Weightage (%) for Calculation of Line Item Prices by BHEL (Refer Note-G)	REMARKS

[A] MAIN SUPPLY

1	PY9756405007	Main Supply- Fire Detection & Alarm System Components	1	Set			87.575	
MAIN SUPPLY Total prices (Sub-total of [A]) (Rs.) ::							----- [1]	

[B] MANDATORY SPARE

1	PY9756405015	Mandatory Spares- Fire Detection & Alarm System Components	1	Set			7.068	
MANDATORY SUPPLY Total prices (Sub-total of [B]) (Rs.)=							----- [2]	

[C] SERVICES

1	PY9856405025	Supervision of Erection & Commissioning Services charges at site including lodging, boarding, local travel, insurance, etc. [Unit Rate = Per man day charges]	105	Days			4.532	----- [3]
2	PY9856405033	Supervision of Erection & Commissioning visit charges [i.e. travel expenses like travel to & fro from vendors work to site, clearance charges like visa fee, etc.] [Unit rate = per visit travel expenses]	21	Visits			0.825	----- [4]
Total prices for overall L1 evaluation ([1]+[2]+[3]+[4]) (Rs.) ::								

		Bill of material [for Main Supply] & Price bid Format			Annexure -[A] of PY56405	
		Fire Detection & Alarm System			Rev 00	
		Material code :: PY9756405007				
S. No.	Item Description	Quantity	Unit	Remarks	Weightage (%) for Calculation of Line Item Prices by BHEL (Refer Note-G)	Bidders Confirmation
1	Fire Alarm Panel (Each panel shall have 6 Loops)	7	No.'s	Location: FGD Control Room	4.458	
2	Repeater Panel	7	No.'s	Location: Fire Station	2.109	
3	Multisensor Detectors with detector base and mounting back box (analogue addressable)	3394	No.'s		17.160	
4	Response Indicators	281	No.'s		0.082	
5	Heat Detectors with detector base and mounting back box (analogue addressable)	94	No.'s		0.475	
6	Analogue addressable Beam Detectors	76	No.'s	If addressable detector is not available in offered make, then Module (1 Input + 1 Output) with IP-65 enclosure to be provided along with detector.	6.853	
7	Indoor Manual Call Points with mounting back box [Analog Addressable type]	186	No.'s		1.088	
8	Hooter cum Strobe with mounting back box [Analog Addressable type]	418	No.'s	If addressable Hooter cum strobe is not available in offered make, then Module (1 Input + 1 Output) with IP-65 enclosure to be provided along with Hooter cum strobe.	4.274	
9	Outdoor Manual call points with mounting back box (IP-65 min.) [Analog Addressable type]	299	No.'s		4.296	
10	Exit Sign (Self illuminating)	239	No.'s		0.432	
11	Digital LHS Cable for Cable Galleries	65700	Meter		20.990	
12	Module for LHS Cable for Cable Galleries (2 Input + 1 Output) with IP-65 enclosure	171	No.'s		1.141	
13	End of Line Resistance with Terminal Box for Cable Galleries	342	No.'s		0.292	
14	Digital LHS Cable for Conveyors	21900	Meter		6.997	
15	Module for LHS Cable for Conveyors (2 Input + 1 Output) with IP-65 enclosure	70	No.'s		0.467	
16	End of Line Resistance with Terminal Box for Conveyors	140	No.'s		0.119	
17	JB's for LHS Cable Joint (LHS Cable Connectors) (IP-65 min)	169	No.'s		0.193	
18	Module for Tripping (1 Input + 1 Output)	84	No.'s		0.561	
19	Module for Interface with DCS (1 Input + 1 Output) with IP-65 enclosure	87	No.'s		0.581	
20	Module for HVSS Deluge Valve (2 Input + 1 Output) with IP-65 enclosure	41	No.'s		0.274	
21	Module for MVSS Deluge Valve (2 Input + 1 Output) with IP-65 enclosure	79	No.'s		0.527	
22	Operator Workstation & A4 size color laser Printer along with Graphic software i.e., (GUI) Software	7	No.'s		4.891	
23	Furniture for Operator Workstation & Printer	7	Sets		0.391	
24	Mini-UPS for Operator Workstation & Printer (To be sized by bidder)	7	No.'s		0.616	
25	8 core Armoured single mode Optical Fiber Cable with 2" rodent proof HDPE conduits (for fire alarm panels and PC networking)	16900	Meter	Refer Note-9, 10 below & Item SI no 1 for panel locations	2.578	
26	Erection & Termination hardware for Optical Fibre cables	7	Lot	For BOQ refer item SIno 25 and Note-9, 10		

		Bill of material [for Main Supply] & Price bid Format			Annexure -[A] of PY56405	
		Fire Detection & Alarm System			Rev 00	
		Material code :: PY9756405007				
27	All hardware & Software required (including OPC Licenses etc.) required for establishing the networking between all fire alarm panels, repeater panels, DCS, PCs, Printers etc shall be considered.	7	Lot		5.730	
28	Cable Tags for 1P x 1.5 Sqmm Cable	84	No.'s			
29	Cable Tags for 2C x 2.5 Sqmm Cable	84	No.'s			
30	Cable Saddle + Saddle Bars along with fixing screws and rawl plugs for 1P x 1.5 sqmm Cable	73425	No.'s			
31	Cable Saddle + Saddle Bars along with fixing screws and rawl plugs for 2C x 2.5 sqmm Cable	40000	No.'s			
32	Nylon Cable Tie for 1P x 1.5 sqmm Cable	44000	No.'s			
33	Nylon Cable Tie for 2C x 2.5 sqmm Cable	33300	No.'s			
34	Mounting Accessories & Erection Hardware for all above items	7	Lot	Refer Note-7		

		Bill of material [for Mandatory Spares] & Price bid Format			Annexure -[A] of PY56405	
		Fire Detection & Alarm System			Rev 00	
		Material code :: PY9756405015				
S. No.	Item Description	Quantity	Unit	Remarks	Weightage (%) for Calculation of Line Item Prices by BHEL (Refer Note-G)	Bidders Confirmation
1	Multisensor Detectors with detector base and mounting back box (analogue addressable)	352	No.'s		1.780	
2	Indicators assembly for smoke detectors provided in false ceiling (Response indicator)	70	No.'s		0.020	
3	LHS cable for conveyors	2190	Meter		0.700	
4	Pre fabricated cables of each type (1 No. of each type, Size and model)	7	Lots		0.162	
5	Pre fabricated cable connectors (1 No. of each type, Size and model)	7	Lots		0.032	
6	8 core Armoured single mode Optical Fiber Cable with 2" rodent proof HDPE conduits	1400	Meter		0.214	
7	Module (1 Input + 1 Output) with IP-65 enclosure	69	No.'s		0.461	
8	Module (2 Input + 1 Output) with IP-65 enclosure	39	No.'s		0.260	
9	Catridge for Printers	14	No.'s		0.053	
10	Spares for Fire Alarm Panel(FAP) & Repeater Panel(RP)					
10.1	Fuses (100% of population)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.065	
10.2	Indicating Lamps (100% of population)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.019	
10.3	Push Buttons (10 Nos of each type and rating)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.065	
10.4	Power supply Modules (10% or 1 Nos of each type and rating whichever is more)	14	No.'s	7 No's for FAP and 7 No's for RP	0.728	
10.5	Control modules (10% or 1 Nos of each type and rating whichever is more)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.093	
10.6	Loop cards modules (10% or 1 Nos of each type and rating whichever is more)	7	Lots	7 Lots for FAP	0.271	
10.7	Isolator cards (10% or 1 Nos of each type and rating whichever is more)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.362	
10.8	LCD display of each type unit of panel (1 No / project)	14	Lots	7 Lots for FAP and 7 Lots for RP	1.041	
10.9	Auxiliary / output relay modules (10% or 1 No. of each type whichever is more.)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.093	
10.10	Supervisory control modules (10% or 1 No. of each type whichever is more.)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.093	
10.11	Any other electronic modules (10% or 1 No. of each type whichever is more.)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.093	
10.12	LED's of each type (100% of population / project)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.010	
10.13	Power Supervision relay (4 Nos of each type)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.388	
10.14	Fire screen/Alarm buzzer (1 Nos of each type)	14	Lots	7 Lots for FAP and 7 Lots for RP	0.065	
Technical Notes for BOM [Applicable for Main supply & Mandatory spares]:						
1)	Battery sizing of FDA panels is in the scope of bidder. Bidder to considering the panels in fully loaded condition while sizing batteries. The standby power source (battery bank to power fire detection and alarm system) should be sized for 24 hours of continuous load or 30 minutes in alarm condition (at least 25% devices considered active in alarm condition).					
2)	Power supply to all the detectors/components specified in the BOQ above, should be extended from the Fire alarm Panels Only. Sizing of powersupply modules, batteries size for secondary power, calculation of notification appliance circuit voltage drops, selection of internal components of FDA Panels etc. to be carried out by bidder & panel model need to be selected accordingly. Battery & Power supply calculation sheet verified by OEM and to be submitted to BHEL during detailed Engg for approval.					
3)	In case the bidder offered system is having multiple variants of loop cards, bidders are advised to select loop cards which cater to largest distance.					
4)	Bidder to note that all the above detectors/devices shall be loop powered. In case loop powered devices are not available in the make offered, bidder shall consider the necessary modules as per above BOM.					
5)	Each addressable loop device (Detectors, MCP, Module etc) shall have inbuilt short circuit isolator suitable for Class A wiring.					

6)	Fire alarm panels shall be floor mounted only.
7)	All erection hardware including back box, fixing screws, lugs, glands, clamps, structural steel, anchor fastner, chains, J-bolts/J-hook, nuts, bolts, flanges etc. for the above items shall be considered in the offer by the bidder. In addition to this, an additional 10% of all erection hardware shall be considered in the scope of bidder. Post order, the vendor need to submit detailed erection document indicating BOQ of erection hardware for each variety of detector/device etc. i.e., Erection hardware for detectors/devices - calculation sheet to be furnished during detailed Engg stage.
8)	All interface modules shall be provided with enclosure suitable for outdoor application.
9)	Also necessary erection hardware (jointing kits, termination kits, LIU, patch card, media converter, pit tails, etc) for FO cable shall be considered in the scope bidder. In addition, splicing and termination of FO cable and it's accessories are in bidder scope. Minimum BOM for meeting this requirement is: Splicing tool kit=1 Set, LIU / Media converters=4 No's / panel, Pigtailes = 4 No's / Panel, Network interface card= 2 No's / Panel, bidder to add other items (if any) for completeness of the system.
10)	Fire alarm panels, repeater panels specified in the BOM are to be connected in ring topology using fiber optic cable. Quantity of Single Mode Optical Fiber cable (for networking of Fire Alarm Panels, Repeater Panels, Workstations, Printers etc) is indicated in the BOQ.
11)	For Interface / integration of FDA system with DCS redundant OPC Connectivity through FO Cable- necessary hardwares + softwares are to be included in the scope.
12)	LIUs (Fiber Patch Panels / Light interface units) - are to be used for routing, terminating and managing optical cable terminations and should be mounted inside the FAPs & Repeater Panel enclosures
13)	Please consider alarm Temperature of LHS cable as 60 Deg (min.) for cable galleries and 80 Deg (min.) for conveyors.
14)	Supply items for which no definite "make/brand" is indicated, shall be procured only from reputed makes & models having proven records of accomplishment and requires purchaser approval.
15)	FAP, Repeater panel, Detectors, Devices, Modules etc. shall be under regular manufacturing range of OEM and have proven track record.
16)	Information/Status of all panels shall be available in all the workstations using GUI Software
17)	All the network switches shall be of high quality and shall be sized to meet the functional requirements as specified. The common switch to which all networks are connected shall be Layer-III switch/router. All the interconnecting cables between network switches shall be fiber optic only. All fiber optic cables shall be terminated directly to network switches through optical fiber port without using media converters.
18)	Bidder to derive the BOM for hardware material based on the make and model components selected for main FDA panel. Accordingly, mandatory spares quantities shall be derived / populated based on definition against mandatory spares sheet . The quantities will be verified during detailed Engg.

Project Wise breakup of Bill of material [for Main Supply]											Annexure -[A] of PY56405
Fire Detection & Alarm System											Rev 00
Material code :: PY9756405007											
S. No.	Item Description	3x660MW NTPC North karanpura	2x500MW NTPC Mauda Stage-I	NTPC Korba	3x660MW NTPC Nabinagar	4x250MW BRBCL project	NTPC Barh-I	NTPC Barh-II	Total Quantity [H=A+B+C+D+E+F+G]	Unit	Remarks
		Quantity [A]	Quantity [B]	Quantity [C]	Quantity [D]	Quantity [E]	Quantity [F]	Quantity [G]			
1	Fire Alarm Panel (Each panel shall have 6 Loops)	1	1	1	1	1	1	1	7	No.'s	Location: FGD Control Building
2	Repeater Panel	1	1	1	1	1	1	1	7	No.'s	Location: Fire Station
3	Multisensor Detectors with detector base and mounting back box (analogue addressable)	420	436	668	280	665	475	450	3394	No.'s	
4	Response Indicators	27	36	72	24	72	25	25	281	No.'s	
5	Heat Detectors with detector base and mounting back box (analogue addressable)	10	10	20	11	20	12	11	94	No.'s	
6	Analogue addressable Beam Detectors	6	8	16	11	14	11	10	76	No.'s	If addressable detector is not available in offered make, then Module (1 Input + 1 Output) with IP-65 enclosure to be provided along with detector.
7	Indoor Manual Call Points with mounting back box [Analog Addressable type]	16	33	24	28	22	33	30	186	No.'s	
8	Hooter cum Strobe with mounting back box [Analog Addressable type]	52	54	80	64	68	50	50	418	No.'s	If addressable Hooter cum strobe is not available in offered make, then Module (1 Input + 1 Output) with IP-65 enclosure to be provided along with Hooter cum strobe
9	Outdoor Manual call points with mounting back box (IP-65 min.) [Analog Addressable type]	52	27	58	39	48	40	35	299	No.'s	
10	Exit Sign (Self illuminating)	21	36	38	36	33	40	35	239	No.'s	
11	Digital LHS Cable for Cable Galleries	7200	4500	12000	6000	12000	12,000	12,000	65700	Meter	
12	Module for LHS Cable for Cable Galleries (2 Input + 1 Output) with IP-65 enclosure	20	14	29	18	30	30	30	171	No.'s	
13	End of Line Resistance with Terminal Box for Cable Galleries	40	28	58	36	60	60	60	342	No.'s	
14	Digital LHS Cable for Conveyors	6500	2200	3000	3000	2500	2,500	2,200	21900	Meter	
15	Module for LHS Cable for Conveyors (2 Input + 1 Output) with IP-65 enclosure	20	8	9	10	8	8	7	70	No.'s	
16	End of Line Resistance with Terminal Box for Conveyors	40	16	18	20	16	16	14	140	No.'s	
17	JB's for LHS Cable Joint (LHS Cable Connectors) (IP-65 min)	24	24	24	24	24	25	24	169	No.'s	
18	Module for Tripping (1 Input + 1 Output)	12	12	12	12	12	12	12	84	No.'s	
19	Module for Interface with DCS (1 Input + 1 Output) with IP-65 enclosure	12	12	12	12	12	15	12	87	No.'s	
20	Module for HVSS Deluge Valve (2 Input + 1 Output) with IP-65 enclosure	4	3	9	4	10	8	3	41	No.'s	
21	Module for MVSS Deluge Valve (2 Input + 1 Output) with IP-65 enclosure	10	15	15	8	15	10	6	79	No.'s	
22	Operator Workstation & A4 size color laser Printer along with Graphic software i.e., (GUI) Software	1	1	1	1	1	1	1	7	No.'s	
23	Furniture for Operator Workstation & Printer	1	1	1	1	1	1	1	7	Sets	
24	Mini-UPS for Operator Workstation & Printer (To be sized by bidder)	1	1	1	1	1	1	1	7	No.'s	
25	8 core Armoured single mode Optical Fiber Cable with 2" rodent proof HDPE conduits (for fire alarm panels and PC networking)	2400	2400	2400	2400	2400	2500	2400	16900	Meter	Refer Note-9, 10 below & Item sl no 1 for panel locations
26	Erection & Termination hardware for Optical Fibre cables	1	1	1	1	1	1	1	7	Lot	For BOQ refer item S/No 25 and Note-9, 10

		Project Wise breakup of Bill of material [for Main Supply]									Annexure -[A] of PY56405
		Fire Detection & Alarm System									Rev 00
		Material code :: PY9756405007									
27	All hardware & Software required (including OPC Licenses etc.) required for establishing the networking between all fire alarm panels, repeater panels, DCS, PCs, Printers etc shall be considered.	1	1	1	1	1	1	1	7	Lot	
28	Cable Tags for 1P x 1.5 Sqmm Cable	12	12	12	12	12	12	12	84	No.'s	
29	Cable Tags for 2C x 2.5 Sqmm Cable	12	12	12	12	12	12	12	84	No.'s	
30	Cable Saddle + Saddle Bars along with fixing screws and rawl plugs for 1P x 1.5 sqmm Cable	12000	7300	10125	10000	12000	12000	10000	73425	No.'s	
31	Cable Saddle + Saddle Bars along with fixing screws and rawl plugs for 2C x 2.5 sqmm Cable	6000	4000	6000	6000	6000	6000	6000	40000	No.'s	
32	Nylon Cable Tie for 1P x 1.5 sqmm Cable	8000	6000	6000	6000	4000	8000	6000	44000	No.'s	
33	Nylon Cable Tie for 2C x 2.5 sqmm Cable	6000	4000	6000	4000	3300	6000	4000	33300	No.'s	
34	Mounting Accessories & Erection Hardware for all above items	1	1	1	1	1	1	1	7	Lot	Refer Note-7 below

		Project Wise breakup of Bill of material [for Mandatory Spares]								Annexure -[A] of PY56405	
		Fire Detection & Alarm System								Rev 00	
		Material code :: PY9756405015									
S. No.	Item Description	3x660MW NTPC North karanpura	2x500MW NTPC Mauda Stage-I	NTPC Korba	3x660MW NTPC Nabinagar	4x250MW BRBCL project	NTPC Barh-I	NTPC Barh-II	Total Quantity [H=A+B+C+D+E+F+G]	Unit	Remarks
1	Multisensor Detectors with detector base and mounting back box (analogue addressable)	43	45	69	30	69	49	47	352	No.'s	
2	Indicators assembly for smoke detectors provided in false ceiling (Response indicator)	10	10	10	10	10	10	10	70	No.'s	
3	LHS cable for conveyors	650	220	300	300	250	250	220	2190	Meter	
4	Pre fabricated cables of each type (1 No. of each type, Size and model)	1	1	1	1	1	1	1	7	Lots	
5	Pre fabricated cable connectors (1 No. of each type, Size and model)	1	1	1	1	1	1	1	7	Lots	
6	8 core Armoured single mode Optical Fiber Cable with 2" rodent proof HDPE conduits	200	200	200	200	200	200	200	1400	Meter	
7	Module (1 Input + 1 Output) with IP-65 enclosure	9	9	12	10	11	9	9	69	No.'s	
8	Module (2 Input + 1 Output) with IP-65 enclosure	6	4	7	4	7	6	5	39	No.'s	
9	Catridge for Printers	2	2	2	2	2	2	2	14	No.'s	
10	Spares for Fire Alarm Panel(FAP) & Repeater Panel(RP)										
10.1	Fuses (100% of population)	2	2	2	2	2	2	2	14	Lots	
10.2	Indicating Lamps (100% of population)	2	2	2	2	2	2	2	14	Lots	
10.3	Push Buttons (10 Nos of each type and rating)	2	2	2	2	2	2	2	14	Lots	
10.4	Power supply Modules (10% or 1 Nos of each type and rating whichever is more)	2	2	2	2	2	2	2	14	No.'s	
10.5	Control modules (10% or 1 Nos of each type and rating whichever is more)	2	2	2	2	2	2	2	14	Lots	
10.6	Loop cards modules (10% or 1 Nos of each type and rating whichever is more)	1	1	1	1	1	1	1	7	No.'s	
10.7	Isolator cards (10% or 1 Nos of each type and rating whichever is more)	2	2	2	2	2	2	2	14	Lots	
10.8	LCD display of each type unit of panel (1 No / project)	2	2	2	2	2	2	2	14	No.'s	
10.9	Auxiliary / output relay modules (10% or 1 No. of each type whichever is more.)	2	2	2	2	2	2	2	14	No.'s	
10.10	Supervisory control modules (10% or 1 No. of each type whichever is more.)	2	2	2	2	2	2	2	14	No.'s	
10.11	Any other electronic modules (10% or 1 No. of each type whichever is more.)	2	2	2	2	2	2	2	14	No.'s	
10.12	LED's of each type (100% of population / project)	2	2	2	2	2	2	2	14	Lots	
10.13	Power Supervision relay (4 Nos of each type)	2	2	2	2	2	2	2	14	Lots	
10.14	Fire screen/Alarm buzzer (1 Nos of each type)	2	2	2	2	2	2	2	14	Lots	

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