



BHARAT HEAVY ELECTRICALS LIMITED

TRANSMISSION BUSINESS ENGINEERING MANAGEMENT

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TYPE OF DOC.	TECHNICAL SPECIFICATION			SIGN			
TITLE FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD				NAME	AR	SKS	SKS
				DATE	19.06.18	19.06.18	19.06.18
				GROUP	TBEM	W.O. No	83010
CUSTOMER	NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC LTD.)						
EPC VENDOR	NTPC BHEL POWER PROJECT LTD. (NBPPL)						
PROJECT	1x500MW FEROS GANDHI UNCHAHAR THERMAL POWER PLANT, Stage IV - 220/400kV SWITCHYARD						
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	<u>Drawings</u> LAYOUT OF FIRE DETECTION & ALARM SYSTEM INSIDE NEW EXTENSION CONTROL ROOM BUILDING. DRG. NO. 1450-001R-SWYD-PVM-F-019 REV.00						
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SECTION 1**INTENT, SYSTEM REQUIREMENT, DESIGN CRITERIA AND SCOPE****1.0 INTENT OF SPECIFICATION**

- 1.0.0 This specification is intended to cover following activities and services in respect of all the equipment of the **Fire detection System to be provided for New Extension Control Building at 220KV switchyard of 1 x 500 MW Feroze Gandhi Unchahar Thermal Power Plant Stage IV of National Thermal Power Corporation (NTPC).**
- i) Complete manufacturing including shop testing.
 - ii) Providing and O & M manuals as per specified format etc. for owners/purchaser's review, approval and records.
 - iii) Packing and transportation from the manufacturer's works to the site including customs clearance/port clearance, if required.
 - iv) Fabrication, pre-assembly, if any, erection testing and putting into satisfactory operation all the equipment including successful completion of trial operation.
 - v) Performance and Guarantee tests after successful completion of trial operation.
- 1.0.1 The requirements specified under SECTION 2, SECTION 3, SECTION 4 & SECTION 5 of the specification shall be considered as part of this section. In the event of any conflict between the various sections/sub-sections of this specification, SECTION-1 shall prevail. However firefighting system scope for switchyard shall be strictly as per Sec-1.
- 1.0.2 It is not the intent to specify herein all the details of design and manufacture. However, the equipment and the system shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to Purchaser/ Owner, who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material, which in his judgment is not in full accordance herewith.
- 1.0.3 **The Contract shall be on unit rate basis for the quantities furnished by BHEL. Variations (upward/ downward) in quantities during contract stage shall be settled on the basis of unit rates furnished in the bid.**
- 1.0.4 **During contract stage, quantities of various items of BOQ may vary to any extent and same rates will be applicable so far the resultant variation in total contract value is within $\pm 30\%$. Variations beyond $\pm 30\%$ shall be negotiated mutually.**
- 1.0.5 The Bidder shall deem to have understood completely all the tender drawings and documents and quoted accordingly.
- 1.0.6 **Deviation:** There shall preferably be no deviation on technical specification. The bidder shall sign and stamp the "Certificate for No Deviation" enclosed in Schedule-2, Section-5 towards confirmation. Except for these deviations/variations covered under Deviation Schedules which are accepted by the Purchaser before the award of the Contract, it will be the responsibility of the Bidder to fully meet the intent and the requirements of the specification within the quoted price. *Deviations in any other form including clarifications / assumptions / etc will not be considered and it will be construed that the bid conforms strictly to the specification.*
- 1.0.7 The Bidder to note carefully that the parameters, estimated capacities of equipment indicated and the tender drawings in the specification are only for the guidance of the Bidder. The system shall

be designed as per relevant standards/ codes and exact capacities and quantities are to be estimated by the Bidder. All such estimations and design calculations shall be submitted for Purchaser's approval.

- 1.0.8 It is the responsibility of the successful Bidder to obtain necessary approval/ clearance from statutory organizations wherever applicable for the equipment/ systems under the scope specified.
- 1.0.9 The term '**Owner**' appearing in this specification shall refer to **National Thermal Power Corporation (NTPC)**, the term '**Purchaser**' shall refer to **BHEL** and the term '**Contractor**' shall refer to the **successful Bidder**.

2.0 FIRE FIGHTING REQUIREMENTS FOR VARIOUS AREAS

The makes/models and technical features offered for various firefighting system components/ equipment shall comply with the standards of TAC/ BIS/ UL/ VDs and FM / NFPA/ FOC as applicable. The key elements of fire protection cum detection scheme and the related areas are presented as under:

System	Areas Protected
Addressable Fire Detection & Alarm System	New Extension Control Building at 220KV switchyard
Portable Fire Extinguisher	New Extension Control Building at 220KV switchyard
Mandatory Spares for switchyard area	As per Annexure-M

3.0 SYSTEM REQUIREMENT & DESIGN PHILOSOPHY

This system shall be designed to provide fire detection and protection services for Switchyard control Building. Design criterion shall be based on "**Ordinary Hazard Occupancies**" classification as described in Tariff Advisory Committee's (TAC) guidelines. All equipment or systems in the designed fire detection cum protection arrangement shall be completely in compliance with the regulations of Tariff Advisory Committee (TAC) of India/ Loss Prevention Association (LPA) / National Fire Protection Association (NFPA)/ LPCB/ VDs.

DETECTION SYSTEM IN NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD AREA

- The system shall consist of addressable manual call points, addressable intelligent multisensor detectors and addressable interface units as required for the complete system with associated cabling and cabling accessories, fire sirens, etc. **However existing microprocessor based fire alarm panel is placed at a distance of approximate 1500m in auxiliary control building and shall be supplied by purchaser.**
- Contractor shall integrate these detection system with the existing Fire alarm panel as per approved drawing enclosed in section-5.
- The number of detectors, spacing and their locations shall comply with NFPA 72E/BS 5839, Part 1 / IS 2189/ Rules for fire alarm system.

- d. In air conditioned areas of control room where false ceiling is present, the detectors shall be installed both above and below false ceiling. For above false ceiling detectors a response indicator shall be provided below false ceiling for the purpose of detector's alarm status indication.
- e. Addressable multi-sensor type smoke detectors shall be provided below false ceiling areas of control building except for the Battery rooms.
- f. Photo electric smoke detectors for above false ceiling for areas.
- g. The design coverage area for smoke detectors to be considered shall not exceed 25 Sq.M. per each type of detector.
- h. **All the detectors in the new extension control building of 220KV yard under present scope shall be looped into existing Fire Alarm Panel (Stand Alone Panel with Network Card-IP CXF of SCHRACK SECONET Make) situated in the auxiliary control building at 400KV yard.**
- i. All the circuits from the detectors to the panels and the circuits from the panels to the actuating devices shall be closed loop type and shall be supervised for open and short circuiting.
- j. Facilities shall be provided on the fire alarm panel for simulating fire conditions, sensitivity adjustment, isolation of detectors etc. from the panel.
- k. All devices shall be individually identifiable for its type, its zone location, and alarm set value, alarm and trouble indication by a unique alpha numerical label.
- l. The detectors shall be self-compensating for ambient temperature and humidity.
- m. The detectors shall display a steady LED when in the alarm state. The LED shall flash when in standby or normal mode.
- n. Each floor shall be provided with one electronic hooter besides the staircase.
- o. All detectors and interface units for detectors which do not have response indicators shall be provided with local LED response indicators which will light up steadily when the detectors sense a fire and operates.
- p. However other factors like beam depth and area separation criterion shall also be implemented in deciding coverage of each of the detectors.
- q. Incipient fires sensed by these detectors shall trigger an alarm at the FAP.
- r. The detector cable and other control cable shall be armoured, screened and twisted FRLS type in external areas and for inside building.
- s. The wiring shall be of style 7 as per NFPA - 72 with loop/short circuit isolators.

t. **INTERFACES**

All the detectors in the new extension control building of 220KV yard under present scope shall be looped into existing Fire Alarm Panel (Stand Alone Panel with Network Card-IP CXF of SCHRACK SECONET Make) at approximately 1500m away situated in the auxiliary control building at 400KV yard.

Portable Fire Extinguishers

- The switchyard control building including cable vault shall be provided with:
 - Carbon dioxide of 4.5 kg capacity portable fire extinguisher conforming to IS 15683.
 - Dry chemical powder type 6 kg capacity portable fire extinguishers conforming to IS 15683.
- Location of installation of fire extinguishers for the various rooms of the new extension control building shall be done in accordance with TAC guidelines. However Bidder needs to follow the below extinguisher schedule for supply and erection:

Sl No.	Type of extinguisher	Quantity	Area to be protected
1.	Carbon dioxide of 4.5 kg capacity portable fire extinguisher	03 Nos.	1 no. for battery room, 1 no. for Control Room and 1 no. for Cable Vault
2.	Dry chemical powder type 6 kg capacity portable fire extinguishers	02 Nos.	1 no. for Control Room and 1 no. for Cable Vault

List of Mandatory Spares (For Supply Only)-Annexure-M

Sl. No.	Item Description	Quantity
1	FIRE HOSE WITH COUPLING	NEW AGE INDUSTRIES Make
1.1	15 m long fire hoses (external) with end connectors	3 Nos.
2	BRANCH PIPE WITH NOZZLE	M/S SHAH BHOGILAL & JETHALAL & BROS/ M/S New Age Industries
2.1	Nozzle with branch pipes & quick coupling end connectors (external)	2 Nos.
3	DELUGE VALVE ASSEMBLIES	M/s Carrier Air Conditioning and Refrigeration Ltd (Kidde Brand)
3.1	Complete deluge valve assembly along with internals and accessories	
3.1.1	150 NB	1 No.
3.1.2	100 NB	1 No.
3.2	Clapper assembly complete (consisting of clapper seat rubber, screws, etc.)	
3.2.1	150 NB	1 No.
3.2.2	100 NB	1 No.
3.3	Solenoid Coils	
3.3.1	150 NB	1 No.
3.3.2	100 NB	1 No.
4	VALVES (GATE/ BUTTERFLY)	H. SARKER & COMPANY for Gate Valve & FlowServe for Butterfly Valve
4.1	Complete valves	1 No. 150NB GV & Butterfly Valve and 1 No. 100NB GV & Butterfly Valve

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

4.2	Disc (butterfly)	1 Set for 150NB and 1 Set for 100NB Size
4.3	Gate (Gate valve)	1 Set for 150NB and 1 Set for 100NB Size
4.4	Stem (all types)	1 Set for 150NB and 1 Set for 100NB Size
4.5	Seal rings (all types)	1 Set for 150NB and 1 Set for 100NB Size
4.6	Gaskets	1 Set for 150NB and 1 Set for 100NB Size
4.7	Bearing(Butterfly valve)	1 Set for 150NB and 1 Set for 100NB Size
5	Y-TYPE STRAINERS for HVWS System	OTOKLIN Make
5.1	Strainer elements with o-rings and stiffeners.	
5.1.1	Y- Type strainer	1 Set for 150NB and 1 Set for 100NB Size
6	HVW SPRAY SYSTEM	
6.1	Spray nozzles (H.D. Fire Protect. Pvt. Ltd Make)	K-23-6 Nos. & K-18-3 nos.
6.2	QB Detectors (TYCO Make)	5 Nos.
7	HYDRANT VALVE	M/S SHAH BHOGILAL & JETHALAL & BROS/ M/S New Age Industries Make
7.1	Hydrant valve complete (external) single headed with instantaneous female coupling	3 Nos.
7.2	Spindle with nuts of Hydrant valve	2 Sets
7.3	Bonnet, gland nut, rubber assembly of hydrant valve	2 Sets
7.4	Seat, check nut, washer assembly of hydrant valve	2 Sets
7.5	Rubber washer for female coupling	2 Sets
7.6	Instantaneous female coupling assembly complete for hydrant valve	2 Sets
7.7	Lock pin assembly for hydrant valve	2 Sets
8	FIRE DETECTORS	SCHRACK SECONET Make
8.1	Multisensor detectors (Addressable)	4 Nos.
8.2	Indicators assembly for smoke detectors provided in false ceiling (Response indicator) (M/s Venus Engineering Make)	2 Nos.
8.3	Manual pull stations (SCHRACK SECONET Make)	2 Nos.
9	PORTABLE EXTINGUISHERS	SAFEX Make
9.1	4.5 Kg CO ₂ Type	2 Nos.
9.2	6 Kg Dry Chemical Type (DCP)	2 Nos.
10	FIRE ALARM PANEL (Stand Alone Panel With Network Card-IP CXF)	SCHRACK SECONET Make
10.1	Fuses for power supply	1 No.
10.2	LCD display of each type unit of panel	1 No. B9-CII (All these items shall be inbuilt part of Display B9-CII)
10.3	LED's of each type	

10.4	Fire screen/ alarm buzzer	
10.5	Indicating lamps	
10.6	Push Button	
10.7	Power supply modules	1 No. B9-PSU (All these items shall be inbuilt part of Power supply module B9-PSU)
10.8	Power supervision relay	
10.9	Control modules, loop cards modules, isolator cards	1 No. Mother board with inbuilt loop card
10.10	IO module BX-O2I4	
A	Addressable Relay Module (Model-BX-O2I4)	1 No.
B	Addressable Monitor Module (Model-BX-O2I4)	1 No.
10.11	Electronic Hooter	1 No.
10.12	Network Module (Model-B5-NET2-FXS)	1 No.
11	Pressure Switch (Trafag Controls India Pvt Limited Make & Model-PV16 SS 2SPDT 7PIN :- 903.AA79.805.00.YY)	1 No.
12	Pressure Gauge (H.GURU Make & Model-6PSSWA2)	1 No.
13	Limit Switches (Honeywell Make)	1 No.

4.0 SCOPE OF SUPPLY & SERVICES

4.1. All requirements have been furnished in different clauses of this specification. Bidder should special care of all the clauses while quoting for the item mentioned in the BOQ under clause-9.0, section-1 of this specification. The scope of the work under the contract shall be deemed to include all such items, hardware, fixtures etc. which although not specifically mentioned in the bid documents and/or in the bidder's proposal, but are required to make the equipment/system complete for its safe, efficient, reliable and trouble free operation. Prices of such items are deemed to be included in their offered price against BOQ items.

4.2. Bidders shall consider makes for various equipments as mentioned under clause 9.0 of this section.

4.3. **Bidder shall also consider the following while quoting for the system:**

- i) Power & Control cables for fire protection system (except for cable for detection and alarm system) will be supplied on free issue basis to contractor.
- ii) Since laying & termination of all power & control cables is in contractor's scope, supply of cable accessories such as lugs, glands, cable tags & markers etc. shall be included by the bidders in their offers alongwith supply of cable (2C X 1.5 sq.mm, FRLS, twisted pair, armoured Cu cable) for fire detection and alarm system.
- iii) Necessary cable trays will be supplied on free issue basis to the contractor, however necessary hardware for fixing the same on walls or elsewhere shall be included by the bidders in their offers.
- iv) Earthing material viz. GS flat & wire will also be supplied on free issue basis to contractor, if required.
- v) Bidder shall ensure that sufficient quantities of commissioning spares are made available for timely completion of commissioning of the system. The bidder shall furnish a list of Commissioning spares that will be brought by him. The unused commissioning spares shall be returnable to the bidder.

- vi) Conducting performance guarantee tests as per approved procedure to the satisfaction of Owner / Purchaser and handing over an operational system to the owner. Procedure for performance guarantee test shall be submitted by contractor for customer review and approval.

4.4. Scope of services

A. Erection, Testing & Commissioning (ETC) requirements

The scope of ETC shall include handling of equipment/ material at site, erection of equipment excluding mandatory spares at site including fabrication, equipment and system testing, commissioning of the system as per specification, conducting performance guarantee tests to the satisfaction of Owner / Purchaser and final handing over to the owner of the entire system.

B. With Other Electrical System

- i) Laying & Termination of detection Control cables for the equipment under the scope of this specification. Bidders shall include all cable accessories like lugs, glands, cable tags, markers etc in their respective bids.
 - ii) Earthing of all installations (to the nearest earth mat/ earthing pad) supplied under the scope of this specification, if required.
- C. Obtaining, "As Built" certification from purchaser or owner on applicable drawings. Completing documentation as per specification requirement.
- D. Obtaining customer's written acceptance of satisfactory completion of job. (Acceptance of PG and handing over mandatory spares).
- E. Any other service not explicitly illustrated herein but which may be required to complete the system with its desired functionality or in the spirit of contract shall also deemed to be under the scope of bidder.

5.0 Exclusions

Receipt of material at site, unloading & safe storage of material.

Supply of necessary cable trays for laying power and control cables, however hardware for fixing the same on wall trenches or elsewhere shall be included by the bidder in his bid.

7.0 OPERATION & MAINTENANCE (O&M) MANUAL

Operation and Maintenance manuals shall be specifically compiled for the project by the bidders. The draft O&M manual shall be submitted along with the supply of the items. The O&M manual shall contain the following information:

- a. Description of the system and equipment with design particulars.
- b. Instruction for erection.
- c. Instruction for operation, maintenance and repair.
- d. Recommended inspection practices and inspection schedule.
- e. Ordering information for all replaceable parts.

8.0 Handing & Taking Over

It is the responsibility of the contractor to maintain the plant till it is handed over. Any defect noted during the period shall be rectified by the contractor without any price implication to BHEL. Also suitable PG tests shall be conducted by the contractor to show the achievement of guaranteed parameters in line with the requirements of specification/ standards/ codes and to the satisfaction of Purchaser/ Owner.

9.0 Various Heads to be quoted for

Based on the above input it is recommended that the bidders shall submit their offers in the prescribed format only

<u>BOM of Main items of Firefighting System-220KV Switchyard</u>				
<u>Area</u>				
Sl. No.	Item Description	Quantity	Supply	ETC
1	Fire Detection and Alarm System (Addressable System)	SCHRACK SECONET Make		
1.1	Addressable Multi Sensor Smoke Detector With Base (Model- MTD 533X)	12 Nos.	YES	YES
1.2	Addressable Heat Detector (Model- MTD 533X)	02 Nos.	YES	YES
1.3	Addressable Manual Call Points (Model-MCP 545X)	04 Nos.	YES	YES
1.4	Electronic Hooter (Model-BX-SOL)	05 Nos.	YES	YES
1.5	Response Indicators (M/s Venus Engineering Make)	04 Nos.	YES	YES
1.6	2-C X 1.5 sq.mm Copper, Armoured, screened & twisted pair FRLS Control Cable. (M/s Delton Make)	1700 Mts.	YES	YES
2	Extinguishers	SAFEX Make		
2.1	6.0 Kg DCP type Portable Fire extinguishers	02 Nos.	YES	YES
2.2	4.5 Kg CO2 type Portable Fire extinguishers	03 Nos.	YES	YES
<u>BOM of Mandatory Spares of Firefighting System-Switchyard</u>				
<u>Area</u>				
Sl. No.	Item Description	Quantity	Supply	ETC
1	FIRE HOSE WITH COUPLING	NEW AGE INDUSTRIES Make		
1.1	15 m long fire hoses (external) with end connectors	3 Nos.	YES	NA
2	BRANCH PIPE WITH NOZZLE	M/S SHAH BHOGILAL & JETHALAL & BROS/ M/S New Age Industries		
2.1	Nozzle with branch pipes & quick coupling end connectors (external)	2 Nos.	YES	NA
3	DELUGE VALVE ASSEMBLIES	M/s Carrier Air Conditioning and Refrigeration Ltd (Kidde Brand)		
3.1	Complete deluge valve assembly along with internals and accessories		YES	NA
3.1.1	150 NB	1 No.	YES	NA
3.1.2	100 NB	1 No.	YES	NA

3.2	Clapper assembly complete (consisting of clapper seat rubber, screws, etc.)		YES	NA
3.2.1	150 NB	1 No.	YES	NA
3.2.2	100 NB	1 No.	YES	NA
3.3	Solenoid Coils		YES	NA
3.3.1	150 NB	1 No.	YES	NA
3.3.2	100 NB	1 No.	YES	NA
4	VALVES (GATE/ BUTTERFLY)			
		H. SARKER & COMPANY for Gate Valve & FlowServe for Butterfly Valve		
4.1	Complete valves	1 No. 150NB GV & Butterfly Valve and 1 No. 100NB GV & Butterfly Valve	YES	NA
4.2	Disc (butterfly)	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
4.3	Gate (Gate valve)	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
4.4	Stem (all types)	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
4.5	Seal rings (all types)	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
4.6	Gaskets	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
4.7	Bearing(Butterfly valve)	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
5	Y-TYPE STRAINERS for HVWS System			
		OTOKLIN Make		
5.1	Strainer elements with O-rings and stiffeners.		YES	NA
5.1.1	Y- Type strainer	1 Set for 150NB and 1 Set for 100NB Size	YES	NA
6	HVW SPRAY SYSTEM		YES	NA
6.1	Spray nozzles (H.D. Fire Protect. Pvt. Ltd Make)	K-23-6 Nos. & K-18-3 nos.	YES	NA
6.2	QB Detectors (TYCO Make)	5 Nos.	YES	NA
7	HYDRANT VALVE			
		M/S SHAH BHOGILAL & JETHALAL & BROS/ M/S New Age Industries Make		
7.1	Hydrant valve complete (external) single headed with instantaneous female coupling	3 Nos.	YES	NA
7.2	Spindle with nuts of Hydrant valve	2 Sets	YES	NA
7.3	Bonnet, gland nut, rubber assembly of hydrant valve	2 Sets	YES	NA
7.4	Seat, check nut, washer assembly of hydrant valve	2 Sets	YES	NA
7.5	Rubber washer for female coupling	2 Sets	YES	NA
7.6	Instantaneous female coupling assembly complete for hydrant valve	2 Sets	YES	NA
7.7	Lock pin assembly for hydrant valve	2 Sets	YES	NA
8	FIRE DETECTORS			
		SCHRACK SECONET Make		

8.1	Multisensor detectors (Addressable)	4 Nos.	YES	NA
8.2	Indicators assembly for smoke detectors provided in false ceiling (Response indicator) (M/s Venus Engineering Make)	2 Nos.	YES	NA
8.3	Manual pull stations (SCHRACK SECONET Make)	2 Nos.	YES	NA
9	PORTABLE EXTINGUISHERS	SAFEX Make		
9.1	4.5 Kg CO ₂ Type	2 Nos.	YES	NA
9.2	6 Kg Dry Chemical Type (DCP)	2 Nos.	YES	NA
10	FIRE ALARM PANEL (Stand Alone Panel With Network Card-IP CXF)	SCHRACK SECONET Make		
10.1	Fuses for power supply	1 No.	YES	NA
10.2	LCD display of each type unit of panel	1 No. B9-CII (All these items shall be inbuilt part of Display B9-CII)	YES	NA
10.3	LED's of each type			
10.4	Fire screen/ alarm buzzer			
10.5	Indicating lamps			
10.6	Push Button			
10.7	Power supply modules	1 No. B9-PSU (All these items shall be inbuilt part of Power supply module B9-PSU)	YES	NA
10.8	Power supervision relay			
10.9	Control modules, loop cards modules, isolator cards	1 No. Mother board with inbuilt loop card	YES	NA
10.10	IO module BX-O2I4			
A	Addressable Relay Module (Model-BX-O2I4)	1 No.	YES	NA
B	Addressable Monitor Module (Model-BX-O2I4)	1 No.	YES	NA
10.11	Electronic Hooter	1 No.	YES	NA
10.12	Network Module (Model-B5-NET2-FXS)	1 No.	YES	NA
11	Pressure Switch (Trafag Controls India Pvt Limited Make & Model-PV16 SS 2SPDT 7PIN :- 903.AA79.805.00.YY)	1 No.	YES	NA
12	Pressure Gauge (H.GURU Make & Model-6PSSWA2)	1 No.	YES	NA
13	Limit Switches (Honeywell Make)	1 No.	YES	NA

Note: Bidder should note that the make of mandatory spares shall be similar of main equipment.

10.0 Inspection & Testing

All the equipments shall be inspected prior to dispatch in line with relevant IS, approved GTP/ drawing and technical specification, BHEL/ customer approved QAP.

SECTION - 2**EQUIPMENT SPECIFICATION****2.0 CODES AND STANDARDS**

The design, manufacture, inspection and testing of complete system shall comply with the latest applicable Indian/British/American standards. The equipment shall conform to the latest edition to the following standards:

- a. "Fire Protection Manual" - Issued by the Regional Committees of Tariff Advisory Committee (TAC).
- b. Underwriters Laboratories of USA
- c. LPCB – United Kingdom
- d. National Fire Codes of National Fire Protection Association (NFPA) of USA.

2.1 GENERAL DESIGN AND CONSTRUCTIONAL REQUIREMENT

It is not the intent to specify herein all the details of design and manufacture. However the equipment and the system shall conform in all respects to high standards of design engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser /Owner who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgment is not in full accordance herewith.

2.3 EQUIPMENT DETAILS OF EQUIPMENTS**A. Fire Alarm Panel**

Existing Fire Alarm Panel is having two loop analogue addressable type with UL/FM approval. All devices like detectors, MCP, hooters etc shall be looped into the FAP, which continuously monitor the status of each detector and shall directly pinpoint the seat of fire depending upon the individual address of detectors.

B. Multisensor Smoke Detectors

- i. Incorporate two or more sensors of different of different types and processes the signals to produce one output on which the decision fire/no fire is based.
- ii. Possesses micro-processors in the detector head to carry out this processing
- iii. Uses an algorithm for processing of the signals which are written by the manufacturer.

C. Photoelectric Smoke Detector

- i. Detectors shall be housed or mounted in suitable enclosures in such a way that their performance is in no way affected.
- ii. The detectors shall be located where the largest combustion gas concentration can be expected
- iii. All detectors shall be provided with built in response indicating lamp /LED which shall give local visual indication, in dense smoke condition when it will operate. The failure of lamps shall not prevent the function of detector.
- iv. When the detectors are mounted above the false ceiling response indicators with test switch shall be mounted directly below the detector (on the false roof).

D. Rate-of-Rise and Fixed Temperature Heat Detector

- i. The detector shall be solid thermal detector.
- ii. It shall operate on electronic principle to provide precise fire detection.
- iii. The detector shall be of integrated circuit design enclosed in a robust moulded base.
- iv. It shall be completely moisture proof and air tight with exposed metal part specially treated to allow the device to be used in particularly corrosive atmospheres.
- v. The detector shall work on rate-of-rise and fixed temperatures modes of operation.
- vi. It shall have no moving mechanical parts.
- vii. The detector shall be either surface mounted or with the body concealed above the ceiling and only the detecting element in view.
- viii. The rate-of-rise detector shall function when the rate of temperature increase exceeds a pre-determined value, around 7 to 8 Deg C per min. This detector shall be designed to compensate with the normal changes in ambient temperature, less than 6.7 Deg C per min., which are expected under non-fire conditions.

E. Manual Call Point

- i. Each Manual Call Point unit shall comprise of a push button of reputed make enclosed in a M.S Box. The push button shall have minimum 1 NO and 1 NC contact. The push button shall not be shrouded and the same shall be projected out from surface the MS Box. This whole assembly of push button in MS box shall again be enclosed in an external MS enclosure with all sides covered except the front side. The front side shall be sealed with breakable glass cover using neoprene or equivalent gasket. The glass cover shall be fixed in such a way that the actuating push button is kept depressed (with NC contact closed and NO contact Open) so long as the glass cover is intact. In case of fire, when glass cover is broken to give fire warning, the push button shall be released due to spring action hence giving remote fire alarm through NC contact which is now changed over.
- ii. The MS Box and the external MS enclosure shall be completely dust, weather and vermin proof. The housing of the electronic circuitry shall have minimum IP 65 protection.
- iii. The complete unit shall be suitable for wall/column mounting with necessary mounting accessories.
- iv. Clear inscription reading (in English) "FIRE ALARM – IN CASE OF FIRE BREAK GLASS" shall be provided for each manual call point unit, either on the MS enclosure or on a separate metal mounted behind the glass cover. The metal plate for inscription shall not tarnish under the atmospheric conditions.

2.4 EQUIPMENT DETAILS OF FIRE EXTINGUISHERS

- i. All the extinguishers offered by the bidder shall be reputed make and should have been approved by tariff advisory committee of India or any other international authorities like FOC-London /NFPA-USA. Certificates to this effect shall be furnished by the bidder. All extinguishers shall be ISI marked.
- ii. All the portable extinguishers shall be of freestanding type and shall be capable of discharging freely and completely in upright position.
- iii. Each extinguisher shall have the instructions for operating extinguishers on its body itself.

- iv. All extinguishers shall be supplied with initial charge and accessories as required.
- v. Portable type extinguishers shall be provided with suitable clamps for mounting on walls or columns.
- vi. All extinguishers shall be painted with durable enamel paint of fire red colour conforming to relevant Indian standards.
- vii. Dry chemical powder type extinguisher shall conform to IS: 15683.
- viii. Carbon dioxide type extinguisher shall conform to IS: 15683.
- ix. Pressurized Water Type CO₂ extinguishers shall conform to IS: 15683.

2.5 SHOP & SITE TESTS

2.5.1 SHOP TESTS

All acceptance and routine tests in accordance with relevant IS codes/standards shall be carried out by the contractor/manufacturer as per BHEL/ Customer approved QAP. Charges for all these routine and acceptance tests for all the equipment & components shall be deemed to be included in the bid price.

Contractor shall submit the QP for all such equipments calling inspection/ testing for purchaser's approval in the prescribed format enclosed as Schedule-5 in Section 5 of the technical specification. This Owner/Purchaser approved QP shall be the basis of inspection/ testing.

2.5.2 SITE TESTS

The Contractor shall prepare and submit detailed field quality plans in the format prescribed, setting out the quality practice and procedures to be adopted by him for assuring quality of each equipment/material from the receipt of material at site, during storage erection, pre-commissioning to final commissioning of the system. These procedures shall necessarily include all checks/tests conducted at site for preservation, assembly, alignment, positioning of equipment, foundation preparation, welding/bolting heat treatment, non-destructive examination, hydraulic test, running test, performance test etc.

Performance test and guarantee

After erection at site, the Fire Protection system shall be subjected to tests to show achievement of guaranteed parameters in line with the requirements of specification/ standards/ codes and to the satisfaction of Purchaser/ Owner.

The Contractor shall take full responsibility for the safe and efficient operation of each of the equipment as well as the whole system. If the shop/ site tests indicate failure of the equipment or if the system does not meet the guarantee in any respect, the Contractor may be required to make alterations in the system/ equipment. Such alterations shall be carried out after purchaser's/ Owner's approval at no extra cost to purchaser. Additional tests required to show the effect of such alterations should also be performed at no extra cost to Purchaser. Above mentioned tests shall be carried out separately for each sub-system. All the testing instruments shall be tested/ calibrated in accordance with the applicable codes & standards. Under PG testing, interlocks, protections, vibrations & noise levels shall also be checked. Detailed procedure for PG test shall be submitted by the contractor in advance. The Contractor shall give guarantee of satisfactory and trouble free operation of the equipment/ systems for a duration described in Section-3 of this specification.

The following codes and standards shall be applicable for conducting test unless otherwise modified or supplemented by the enclosed procedure and mutually agreed to between the

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

purchaser and contractor.

1. NFPA – 72 E3: Standard on Automatic Fire Detectors.
2. Fire Protection manual of TAC (Latest edition) IS 3034: Fire safety

SECTION - 3**PROJECT DETAILS GENERAL TECHNICAL REQUIREMENTS****3.0 GENERAL**

This section stipulates the General Technical Requirements under the Contract and will form an integral part of the Technical Specification.

The provisions under this section are intended to supplement general requirements for the materials, equipments and services covered under other respective sections and are not exclusive. However in case of conflict between the requirements specified in this section and requirements specified under other sections, the requirements specified under respective sections shall hold good.

PROJECT INFORMATION AND SYSTEM PARAMETERS

	Particular	Details
a)	Customer/ Owner	NTPC Ltd.
b)	EPC Vendor	NBPPL (NTPC BHEL Power Projects Pvt. Ltd.)
c)	Project Title	Feroze Gandhi Unchahar Thermal Power Station Stage IV : 400/220kV Switchyard
d)	Project Location	Place: Bounded by Khnapur, Faridpur & Khaliqpur villages. District: Raebareli State: U.P.
e)	Latitude & Longitude	North: 25°54'50" and East: 81°19'50"
f)	Nearest Railway Station	Unchahar
g)	Distance of project location from the Railway station	2 Km (approx.)
h)	Nearest Major Town	Mustafabad
i)	Distance of the town from the project site	3 Km.
j)	Nearest commercial airport	Lucknow
k)	Distance of airport from the project site	110 Km
	<u>SITE CONDITIONS</u> (for design purposes)	
a)	Design ambient temperature	50°C
b)	Maximum Relative humidity	95 %
c)	Height above mean sea level	Less than 1000 meters
d)	Pollution Severity	Heavily polluted (With Coal dust & Fly ash) and Highly Corrosive environment.
e)	Criteria for Wind Resistant design of structures and equipment	Standard Applicable - IS 875 (Part 3) 1987
f)	Basic Wind speed "Vb" at ten meters above the mean ground level.	47 m/ sec
g)	Category of terrain	Cat -2
h)	Risk Coefficient "K1"	1.07

Final Submission of drawings and documents:

The Contractor shall furnish the following after approval of all drawings /documents and test reports:

- a. List of drawings bearing the Employer's and Contractor's drawing number.
- b. Two (2) bound sets alongwith 4 CD-ROMs of all drawing.
- c. All documents/designs in two (2) copies as noted above.
- d. Contractor shall also furnish two (2) bound sets of all as-built drawings including the list of all as-built drawings bearing drawing numbers. The Contractor shall also furnish one (1) sets of film reproducibles or CD-ROMs of all as-built drawings as decided by the Employer.
- e. The Contractor shall also furnish three (3) copies of instruction manuals (after approval) for all the equipments.

TEST REPORTS

Two (2) copies of all test reports shall be supplied for approval before shipment of Equipment. The report shall indicate clearly the standard value specified for each test to facilitate checking of the reports. After final approval seven bound copies of all type and routine test reports shall be submitted to Employer.

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

SECTION- 4

GENERAL TECHNICAL PARAMETERS

1x500MW FGUTPP , Stage IV-220/400KV Switchyard

NTPC Document No: 1450-001R-SWYD-PVI-Y-008

Customer:		NTPC Limited A Govt. of India Enterprise
EPC		NTPC BHEL Power Projects Limited
Vendor:		
Contractor:	TBEM 	BHEL Transmission Buisness Group

Document Title :

TDS & GA For Addressable Fire Detection Items

[illegible]

TDS & GA For Addressable Fire Detection Items	
ITEM	MULTISENSOR DETECTORS
PROJECT :	1x500MW FGUTPP , Stage IV-220/400KV Switchyard
OWNER/CLIENT:	NTPC Limited
EPC CONTRACTOR	NTPC BHEL Power Projects Limited (NBPPL)

1	Manufacturer	SCHRACK
2	Model No	MTD 533x
3	Type	Addressable
4	Operating Voltage	12 to 30 VDC (without modulation amplitude)
5	Quiescent Current	120 µA
6	Alarm Current	Min. 0.5 mA, max.10mA
7	Principle Of Function	Combined smoke/heat detector (Tyndall effect and/or NTC sensor)
8	Protection class	IP 44
9	Ambient Temperature	(-) 25° to (+) 60° C
10	Rel Humidity	Permanent, without condensation:
	at ≤34 °C:	10... 95% rel/F
	at >34 °C	Max. 35 g/m3 min. 10 % rel/F
11	Air Velocity	Max. 20m/s
12	Dimensions	As per attached catalogue
13	Case Colour	White similar to RAL 9003
14	Case Material	ABS/PC
15	Weight	125 g
16	Detector Base	USB 501-6
	Detector Base material	ABS / PC, FR90
	Detector Base Protection class	IP 44
	Detector Base Catalogue	Attached
17	Sensitivity	Smoke acc. To EN 54-7, Heat acc. To EN 54-5; (Classes A1, A2 and B (Index S and R)
18	Plug in type detector to be provided	Yes
19	No of terminals on detector on mounting base	6 pole terminal
20	Area covered by single detector	25 Sq.m per detector
21	Inbuilt indicating lamp to indicate operation of the detector provided	Yes
22	Material of detector body	ABS\PC
23	Approval	Vds
24	Application area	Lab, Office, ACDC, Battery Room, Battery Charger Room, Store etc.
25	Quantity	As per approved drawing
26	Catalogue	Attached
27	Inspection	ICL

Mehrfachsensormelder MTD 533X. Multiple Sensor Detector MTD 533X.



Beschreibung

Der Mehrfachsensormelder MTD 533X kann je nach Bedarf und Anwendung als Rauch-, als Temperatur-, oder als kombinierter Melder eingesetzt werden und wird jeweils entsprechend seinem Einsatzgebiet anlagen-spezifisch programmiert und eingestellt. Er erkennt frühzeitig Schmelbrände und offene Brände, indem er sowohl die Brandkenngroße Rauch (mittels Tyndall-Prinzip) als auch Wärme (NTC-Sensor-Prinzip) detektieren und auswerten kann. Die Empfindlichkeit kann über Software im Rahmen der EN 54 angepasst werden.

Der Melder verfügt über einen integrierten Kurzschluss-isolator, der es im Kurzschlussfall auf einer Ringleitung ermöglicht, das schadhafte Leitungselement zu isolieren und den Betrieb aller Melder aufrecht zu erhalten.

Ein dynamischer Alarmfilter dient zum Erkennen und Ausfiltern von Täuschungsgrößen, darüber hinaus kann bei Bedarf ein Voralarm ausgewertet und an die Zentrale weitergeleitet werden. Wechselnde Umwelteinflüsse werden kompensiert, indem sich der Melder in regelmäßigen Abständen automatisch an seine Umgebung anpasst.

Die Montage und Installation des MTD 533X erfolgt mittels der Montagesockel-Serie USB 501.

Für die Projektierung gelten die länderspezifischen Richtlinien für Planung und Einbau von automatischen Brandmeldeanlagen. Für kombinierte Brandmelder können zusätzliche Richtlinien gelten, sofern dauernd oder zeitweise eine der Detektionseigenschaften abgeschaltet wird.

- ein Melder für alle Anwendungen • Branderkennung immer mittels Rauch- und Temperaturewertung • optimierte Rauchkammer • Rauchvoralarm bei 30 % und bei 75 % der Alarmschwelle • Speicherung aller Melderdaten und Ereignisse • dynamische Anpassung an Umgebungsbedingungen • 2-stufige Verschmutzungserkennung • parametrierbare Wärmeklassen gemäß EN 54 • LED Alarmanzeige 360° sichtbar • integrierter Kurzschlussisolator • VdS-Zulassung

- one detector for all applications • fire detection always carried out by means of smoke and temperature evaluation • optimized smoke chamber • Smoke pre-alarm at 30 % and at 75 % of the alarm threshold • all detector data and events are stored • adapts dynamically to surrounding conditions • 2 stage pollution detection • adjustable temperature classes acc. to EN 54 • LED alarm indicator 360° visible • integrated short circuit isolator • VdS-approval

Description

The MTD 533 multiple sensor detector can be used as a smoke detector, as a heat detector or as a combined smoke/heat detector upon demand and is programmed and set-up specifically for the environmental conditions that it is part of. It detects smouldering and open fires at an early stage by being able to detect and evaluate the characteristics of fire and smoke (Tyndall principle) as well as heat (NTC sensor principle). The sensitivity of the detector can be adjusted using software within the scope of EN 54.

The detector provides an integrated short circuit isolator that, in case of a short circuit on the loop, enables the isolation of the faulty element while maintaining the operation of all other detectors.

A dynamic alarm filter is used to detect and filter out deceptive alarms, furthermore a pre-alarm can be evaluated and forwarded to the control panel, if required. To compensate changing environmental influences, the detector adjusts itself at periodic intervals to its surroundings.

The assembly and installation is done by means of the mounting base series USB 501.

For planning and installation, the country-specific guidelines for planning and installation of automatic fire alarm systems apply. It could be possible, that additional guidelines and regulations for combined fire detectors must be taken into account, if continuously or temporarily one of the detection principles is switched off.

FIRE ALARM

7 Integral X-LINE

7.1 Automatic fire detectors & detector bases



No.: 30-5000003-01

Multiple sensor detector MTD 533X

Combined scattered light smoke detector and temperature detector for early detection of smouldering or open fires with or without smoke formation.. The detector can be programmed and used, depending on the type of system and depending on the area in which it is to be deployed, as a smoke detector, as a temperature detector or as a combined detector. For use in areas where there are difficult prevailing conditions, the MTD 533X CP version is available with greater protection against increased air humidity. It is shipped including a protective dust cap.

- Fire alarm triggered by smoke, heat or heat and warmth
- Smoke sensor with CUBUS levelling® for automatic adaptation to environmental conditions without time-consuming setting of parameters
- Sensitivity towards smoke and heat class can be set acc. to EN 54
- temperature-based smoke evaluation
- Pre-alarm evaluation at 30% and 75% of the alarm threshold
- 2 level contamination detection
- Integrated short circuit isolator
- Adjustment of alarm thresholds to compensate for environmental influences
- Alarm filter for reducing the number of deceptive alarms
- Alarm output for external indication of alarms
- Operating time and contamination level values can be read out

Operating voltage:	12 to 30 VDC (without modulation deviation)
Quiescent current:	120 µA typ.
Alarmausgang:	programmable: 0,1 mA/1 mA/5 mA
Alarm-LED active:	2,5 mA max.
Alarm current:	min. 0,5 mA, max. 10 mA
Output voltage:	X-LINE: 5 V, Loop: 6,8 V
Functional principle:	Tyndall-Effekt/NTC Sensor
Detector base:	series USB 501-x
Signal transmission:	serial, 2 wire technology
Short circuit isolator:	integrated
Smoke sensitivity:	acc. to EN 54-7
Heat sensitivity:	acc. to EN 54-5 (A1, A2, B (Index S+R))
Protection category:	IP 44 (with base USB 501-1/-6)
Ambient temperature:	-20° to +60°C
Rel. air humidity:	10 to 95 % rel/F
Air speed:	max. 20 m/s
Dimensions with base:	118 x 67,5 mm (DxH)
Case:	ABS/PC, white similar to RAL 9003
Weight:	125 g
VdS-Approval:	G210115
CPD-Approval:	0786-CPD-20993

Description	Type	Art. No.
MTD 533X Multiple Sensor Detector	MTD 533X	30-5000003-01
MTD 533X CP Multiple Sensor Detector	MTD 533X CP	30-5000003-51
MTD 533X colour black, RAL 9005	MTD 533X SW	FG030500
MTD 533X MC (other RAL colours)	MTD 533X MC	upon request
Sticker grey ring (20 pcs.) when used as heat detector	S GR	FG28422
Dust protection cap for MTD 533X (spare part)	DDC 533	FG030398



No.: FG030126



No.: FG030700



No.: FG030132

Detector bases USB 501-1 and USB 501-6

For connecting automatic fire detectors to the Integral X-LINE, set up for surface mounting with a built-in 6 pole terminal block. An additional 4 pin terminal block can be fitted in the designated snap-fit holder to form additional isolation points. The detector is attached by means of a bayonet fitting. When using the USB 501-1, the installation can be checked easily even when detectors are not used, using an integrated automatic circuit closing mechanism built into the terminal block, while the USB501-6 does not possess such a circuit closing mechanism, with the loop circuit only being closed when the detector is inserted.

Area for deployment:	dry and wet rooms
Installation type:	Surface mounting
Connection:	screw-type terminals, max. 2 x 1.5 mm ²
Protection class:	IP 44
Ambient temperature:	-20° to +70°C
Rel. air humidity:	briefly without condensation 95% rel/F permanent without condensation 70%rel/F
Dimensions:	118 x 28 mm (DxH)
Case colour:	electrical white (all RAL colours upon request)
Case material:	ABS / PC, FR90
Weight:	65 g
VdS-Approval:	G204106
CPD-Certificate:	0786-CPD-20246

Description	Type	Art. No.
Detector base USB 501-1	USB 501-1	FG030126
Detector base USB 501-1 SW (black, RAL 9005)	USB 501-1 SW	FG030164
Detector base USB 501-1 MC (all RAL colours)	USB 501-1 MC	upon request
USB 501-6 detector base without base contact	USB 501-6	FG030700
Detector base USB 501-6 SW (black, RAL 9005)	USB 501-6 SW	FG030701
Detector base USB 501-6 MC (all RAL colours)	USB 501-6 MC	upon request
Isolation point terminal block for USB 501-x	KL USB501	FG030132



No.: FG030135

Countersunk base for fitting in cavity ceilings USB 501-2

For connecting automatic fire detectors to the Integral X-LINE, suitable for installation in standard cavity ceilings, consisting of standard base USB 501-1, fitting ring with fastening clips, collar and bezel ring. Apertures and pre-determined breaking points are present in the fitting ring for feeding in the cable, while the bezel ring is fitted together with the detector.

Area for deployment:	dry rooms, cavity ceiling installation
Connection:	screw-type terminals, max. 2 x 1.5 mm ²
Protection class:	IP 44
Ambient temperature:	-20° to +70°C
Rel. air humidity:	briefly without condensation 95% rel/F permanent without condensation 70%rel/F
Dimensions:	158 x 52,5 mm (DxH)
Colour of bezel ring:	white
Case material:	ABS / PC, FR90
Weight:	100 g
VdS-Approval:	G204106
CPD-Certificate:	0786-CPD-20246

Description	Type	Art. No.
USB 501-2 detector base for cavity ceilings	USB 501-2	FG030135
Isolation point terminal block for USB 501-x	KL USB501	FG030132

TDS & GA For Addressable Fire Detection Items	
ITEM	MANUAL CALL POINT
PROJECT :	1x500MW FGUTPP , Stage IV-220/400KV Switchyard
OWNER/CLIENT:	NTPC Limited
EPC CONTRACTOR	NTPC BHEL Power Projects Limited (NBPPL)

1	Manufacturer	SCHRACK SECONET
2	Model No	MCP 545X
3	Operating Voltage	7 TO 31 VDC
4	Quiescent current	Max. 120 µA at 30 VDC
5	Alarm Current	2.5 mA
6	Connection	Integral X-LINE
7	Screw terminals	Max.2.5 mm2
8	Housing colour	Red, RAL 3001
9	Housing material	Plastic, glass fibre-reinforced
10	Application	Substation bldg
	Protection Class	IP 24
	Weight	110 g
11	Approval	VDS, no. G210092
12	Catalouge	Attached
13	Quantity	As per approved Drawings
14	Inspection	ICL
15	Dimension	As per Attached Catalouge

Handfeuermelder MCP 545X. Manual callpoint MCP 545X.



- einfache Installation • Gehäuse in rot, blau oder gelb • Schutzart IP 24 bis IP 67 • Alarmanzeige mittels LED • Störungsmeldung bei Bauteilausfall • Melder einzeln abschaltbar • integrierter Kurzschlussisolator • geprüft nach EN 54-11 & EN 54-17.

- easy installation • case available in red, blue or yellow • IP protection class from IP 24 up to IP 67 • alarm indication by LED • fault message in the event of a component failure • detectors can be individually disabled • integrated short circuit isolator • approved according to EN 54-11 & EN 54-17.

Beschreibung

Die Handfeuermelder MCP 545X sind geeignet zum Anschluss an die Integral X-LINE.

Die drei verschiedenen Ausführungen unterscheiden sich lediglich durch ihre Gehäuseform (IP-Schutzart). Elektronik, Anschaltung und Funktion ist bei allen Typen ident.

Die Melder enthalten einen Kurzschlussisolator und eine rote Alarm-LED. Die Alarmauslösung erfolgt durch Eindrücken der Glasscheibe bzw. Drücken des Kunststoff-Plättchens. Der Alarm bleibt bis zum Wiedereinsetzen einer neuen Glasscheibe bestehen bzw. resetieren des Kunststoff Plättchen bestehen. Ein Prüfungsschlüssel dient zur Funktionsprüfung.

Der MCP 545X-1 ist geeignet für Innenanwendungen und wird Aufputz montiert. Die Dose wird mit zwei Schrauben an der Wand befestigt, dabei müssen die Befestigungspunkte für den Tasterteil waagrecht sein. Eventuell nötige Kabeleinführungen für AP-Installationen müssen aufgebohrt werden.

Der MCP 545X-2 ist geeignet für Innenanwendungen und wird direkt in eine handelsübliche Unterputzdose Größe 1 (rund od. viereckig) eingebaut. Der Befestigungsloch-Abstand beträgt 60 mm waagrecht.

Der MCP 545X-3 ist auch für Außenanwendungen geeignet und wird Aufputz montiert. Der Melder verfügt über Schutzart IP 67 (wasserfest); die Kabeleinführung erfolgt mittels Kabelverschraubung M 20 von unten oder oben. Die Dose des Melders wird mit drei Schrauben an der Wand befestigt.

Description

The manual call points MCP 545X are suitable for the connection to the Integral X-LINE.

The three different versions differ only from the shape of the housing (IP protection category).

Electronics, connection and function are the same for all types.

The detectors contain a short circuit isolator and a red alarm LED. An alarm is released directly when the glass pane is broken or the plastic pane is pressed. The alarm condition remains active, until the glass pane is replaced by a new one or the plastic pane is reset. A test key is available for function test.

The MCP 545X-1 is suitable for indoor applications and surface-mounting. The surface-mounted box is fastened to the wall with two screws. The fastening points for the switch part must be horizontal. Any necessary cable entries for surface-mounted installations must be drilled.

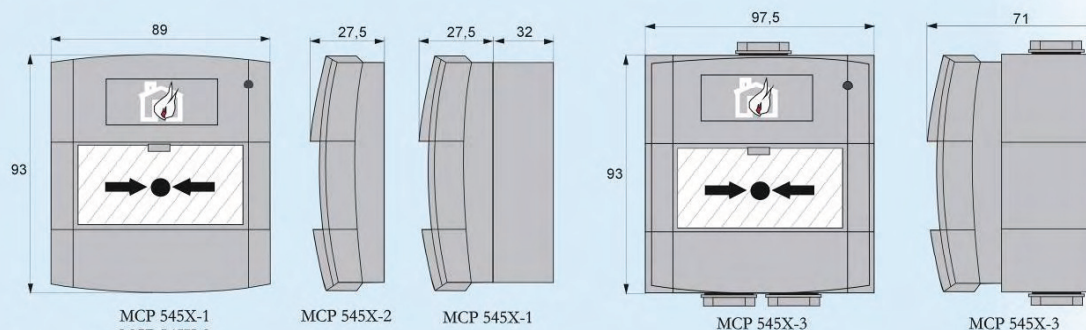
The MCP 545X-2 is suitable for indoor applications and is mounted in a commercial flush-mounted box (size 1; round or square). The horizontal distance between the mounting holes is 60 mm.

The MCP 545X-3 is also suitable for outdoor applications and surface-mounting. The detector has protection category IP 67 (waterproof); the cable entry is carried out by means of cable gland M20 from the bottom. The mounting box is attached to the wall with three screws.

FIRE ALARM

Handfeuermelder MCP 545X. Manual callpoint MCP 545X.

Abmessungen Dimensions



Alle Maße in mm
All dimensions in mm

Technische Daten

Betriebsspannung:	7 bis 31 VDC
Ruhestrom:	max. 120 µA bei 30 VDC
Alarmstrom:	2,5 mA
Anschaltung:	Integral X-LINE
Schraubanschlüsse:	max. 2,5 mm ²
Signalübertragung:	seriell, 2-Leiter-Technik
Schutzart	
MCP 545X-1/2:	IP 24
MCP 545X-3:	IP 67
Umgebungstemperatur:	-20° bis +50°C
Gehäuse Farbe:	rot, RAL 3001 gelb, RAL 1006 blau, RAL 5002
Gehäuse Material:	Kunststoff, glasfaserverstärkt
Gewicht	
MCP 545X-1/2:	160 g/110 g
MCP 545X-3:	240 g
Zulassung:	rot, G210092 (EN 54-11: 2001, EN 54-17: 2005) gelb, entsprechend (EN 54-11: 2001, EN 54-17: 2005) blau, entsprechend (EN 54-11: 2001, EN 54-17: 2005)
CPD-Zertifikat:	rot, 0786-CPD-20998

Technical data

Operating voltage:	7 to 31 VDC
Quiescent current:	max. 120 µA at 30 VDC
Alarm current:	2,5 mA
Connection:	Integral X-LINE
Screw terminals:	max. 2,5 mm ²
Signal transmission:	serial, 2-wire
Protection class	
MCP 545X-1/2:	IP 24
MCP 545X-3:	IP 67
Ambient temperature:	-20° to +50°C
Housing colour:	red, RAL 3001 yellow, RAL 1006 blue, RAL 5002
Housing material:	plastic, glass fibre-reinforced
Weight	
MCP 545X-1/2:	160 g/110 g
MCP 545X-3:	240 g
Approval:	red, G210092 (EN 54-11: 2001, EN 54-17: 2005) yellow, according (EN 54-11: 2001, EN 54-17: 2005) blue, according (EN 54-11: 2001, EN 54-17: 2005)
CPD-Certificate:	red, 0786-CPD-20998

Weitere Informationen sind der Technischen Dokumentation zu entnehmen.
Further information can be obtained from the technical documentation.

Schrack Seconet AG

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FIRE ALARM

www.schrack-seconet.com

SCHRACK
S E C O N E T

© Schrack, Produktions - B.D.8-0088)DE-EN - MCP 545X - V1.0
Technische Änderungen vorbehalten - subject to technical modifications

7.2 Manual call points



No.: 30-5700007-01



No.: 30-5700007-03

Manual call points MCP 535X-1 and MCP 535X-3

For manual actuation of a fire alarm in conformance with EN 54-11 (type B). The alarm is triggered by smashing the glass panel and pressing the button. The push button remains locked, and the actuated state is indicated by means of the built-in LED. The protection class of the detector can be increased to IP 54 by fitting a rubber seal. Both the insert (with a hand symbol) and the outer labelling of the blue version and the key for opening the door must be ordered separately.

Operating voltage:	7 to 31 VDC
Quiescent current:	max. 120 μ A typ. 90 μ A
Alarm current:	max. 2,5 mA, max. 20mA backup-alarm
Functional principle:	manual call point type B acc. to EN 54-11
Connection:	Integral X-LINE
Terminals:	Screw clips, maximum 1.5 mm ²
Signal transmission:	serial, 2 wire technology
Short circuit isolator:	integrated
Protection category:	IP 52 (optional IP 54)
Ambient temperature:	-20° to +50°C
Dimensions:	134 x 134 x 36 mm (HxWxD)
Case:	red plastic (RAL 3001) blue plastic (RAL 5005)
Weight:	450 g
VdS-Approval:	G210095 (EN 54-11, EN 54-17)
CPD-Approval:	0786-CPD-20988



No.: 30-5700007-05

Manual triggering device MCP 535X-5

For manually triggering an extinguishing operation using gas extinguishing agents conformant to EN 12094-3. The gas extinguishing system is triggered by smashing the glass panel and pressing the button. The push button remains locked, and the actuated state is indicated by means of the built-in LED. The protection class of the detector can be increased to IP 54 using a rubber seal. Both the insert (with a hand symbol) and the outer labelling and the key for opening the door must be ordered separately.

Operating voltage:	7 to 31 VDC
Quiescent current:	max. 120 μ A typ. 90 μ A
Alarm current:	max. 2,5 mA, max. 20mA backup-alarm
Functional principle:	Manual triggering device (EN 12094-3)
Connection:	Integral X-LINE
Signal transmission:	serial, 2 wire technology
Terminals:	Screw clips, maximum 1.5 mm ²
Short circuit isolator:	integrated
Protection category:	IP 52 (optional IP 54)
Ambient temperature:	-20° to +50°C
Dimensions:	134 x 134 x 36 mm (HxWxD)
Case colours:	yellow plastic (RAL 1003)
Weight:	450 g
VdS-Approval:	G210096
CPD-Approval:	0786-CPD-20989

TDS & GA For Addressable Fire Detection Items		
ITEM		INPUT OUTPUT MODULE
PROJECT :		1x500MW FGUTPP , Stage IV-220/400KV Switchyard
OWNER/CLIENT:		NTPC Limited
EPC CONTRACTOR		NTPC BHEL Power Projects Limited (NBPPL)
1	Manufacturer	SCHRACK
2	Model No	BX-OI3
3	Function	2 inputs for monitored, 1 optocoupler input and 1 relay output
4	Operating Voltage	12V-30V DC
5	Current Consumption	550 micro amp.
6	Connection	Screw clips, max. 1.5 mm ²
7	Signal transmission	serial 2 wire technology
8	Relative air Humidity	5 TO 95% Without condensation
9	Ambient Temperature	(-) 25° to (+) 60° C
10	Short circuit isolator	Integrated
11	Case	Polystyrol, halogen-free
12	Colour	Grey (RAL 7035)
13	Protection class	IP 66 with case
14	Approval	VDS
15	Quantity	As per approved Drawings
16	Inspection	ICL
17	Weight	125 g
18	Dimension	67 x 67 x 20 mm (with case 94 x 94 x 57 mm)
19	Application	substation bldg
20	VDS Approval	G210133
21	CE- Certificate	0786-CPD-21011

Ein-/Ausgangsmodul BX-OI3. Input/Output Module BX-OI3.



- Relaisausgang mit programmierbarer Fail-Safe-Lage •
- 2 überwachte Eingänge • 1 Optokopplereingang • Einfache
- Einbindung von Sondermeldern • Geringer Stromverbrauch •
- Hohe Störfestigkeit durch spezielles Energiemanagement •
- Integrierter Kurzschlussisolator • Gehäuse erfüllt Schutzklasse
- IP 66.

- relay output with programmed fail-safe position • 2 moni-
- tored inputs • 1 optocoupler input • simple implementation of
- special detectors • low power consumption • high resistance
- against faults thanks to special energy management • inte-
- grated short circuit isolator • case satisfies IP 66 protection
- class.

Beschreibung

Das Ein-/Ausgangsmodul BX-OI3 ist geeignet zum Anschluss an die Integral X-LINE.

Es enthält einen Relaisausgang mit programmierbarer Fail-Safe-Lage, zwei Eingänge für die überwachte Abfrage von potentialfreien Kontakten und einen Optokopplereingang, welcher bei Bedarf zur Überwachung einer externen Spannung verwendet werden kann.

Das BX-OI3 ist besonders geeignet zur Einbindung von Sondermeldern (Flammen- und Linearmelder, Rauchansaugsysteme, etc.) in die Integral X-LINE. Sowohl die Adressierung des Moduls, als auch die Einstellung der Parameter für die angeschalteten Sondermelder (z.B. deren Verhalten bei Alarm und Störung) erfolgt mittels PC-Software über die Brandmelderzentrale.

Das BX-OI3 enthält einen Kurzschlussisolator, welcher im Fall von Drahtbruch oder Kurzschluss dafür sorgt, dass der Fehler lokalisiert wird und gleichzeitig der Betrieb der Ringleitung in vollem Funktionsumfang erhalten bleibt, zusätzlich wird die Spannung auf der Ringleitung intern auf Unterspannung überwacht.

Das BX-OI3 ist in ein Kunststoffgehäuse mit Schutzart IP 66 eingebaut, welches je nach Bedarf mit verschiedenen Kabeleinführungen ausgestattet werden kann.

Die Verwendung eines geschirmten Brandmeldekabels wird empfohlen, besonders in Bereichen, wo EMV-Störgrößen vorhanden sind, oder solche bedingt durch Arbeitsprozesse periodisch auftreten können.

Für die Projektierung gelten die landesspezifischen Richtlinien für Planung und Einbau von automatischen Brandmeldeanlagen.

Description

The input/output module BX-OI3 is suitable for the connection to Integral X-LINE.

It contains a relay output with a programmable fail-safe position, two inputs for monitored querying of potential-free contacts and an optocoupler input which can be used, if required, for monitoring external voltages.

The BX-OI3 is particularly well-suited for connecting special detectors (flame and line detectors, smoke aspirating systems etc.) using Integral X-LINE. Addressing of the module as well as setting the parameters for connected special detectors (e.g. how they behave when there is an alarm or a fault) is carried out via the fire alarm control panel using PC software.

The BX-OI3 contains a short circuit isolator which guarantees, that a possible failure is located and that the loop stays in unrestricted function even in case of a wire break or a short circuit, in addition the voltage on the loop line is internally monitored on under voltage.

The BX-OI3 is installed in a IP 66 protection class plastic case, which can be fitted with different cable inlets depending on requirements.

A shielded cable installation is recommended, particularly in cases, where electromagnetic disturbances occur, or such could be caused periodically during working processes.

The country-specific guidelines for planning and installation of automatic fire alarm systems are applicable.

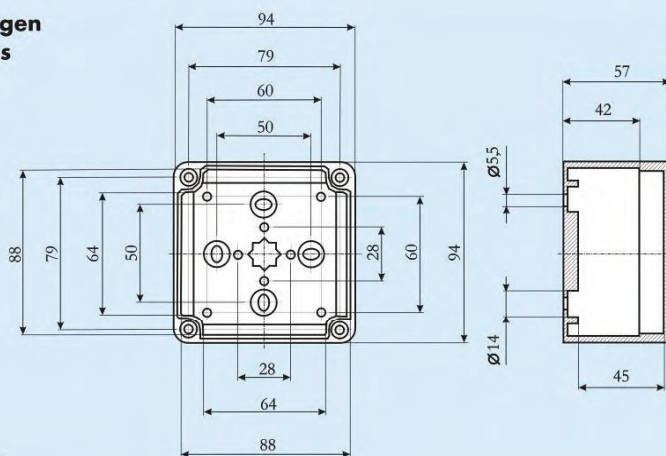
FIRE ALARM

www.schrack-seconet.com

SCHRACK
S E C O N E T

Ein-/Ausgangsmodul BX-OI3. Input/Output Module BX-OI3.

Abmessungen Dimensions



Alle Maße in mm
All dimensions in mm

Technische Daten

Betriebsspannung:	12 bis 30 VDC
Stromverbrauch:	typ. 550 μ A
Signalübertragung:	seriell, 2-Leiter-Technik
Relaisausgang:	bistabiler Umschaltkontakt 230 V/2 A, (max. 60 W)
Überwachte Eingänge:	für potentialfreie Kontakte
Optokopplereingang:	Abfrage von potentialgebundenen Signalen, bzw. externen Spannungen von 0 bis 30 VDC
Anschluss:	Schraubklemmen, max. 1,5 mm ²
Kurzschlussisolator:	integriert
Schutzart:	IP 66 mit Gehäuse
Umgebungstemperatur:	-20° bis +60°C
Rel. Luftfeuchtigkeit:	5 bis 95% ohne Kondensation
Abmessungen:	67 x 67 x 20 mm (mit Gehäuse 94 x 94 x 57 mm)
Gehäuse:	Polystyrol, halogenfrei
Farbe:	grau (RAL 7035)
VdS-Zulassung:	beantragt

Technical data

Operating voltage:	12 to 30 VDC
Current consumption:	typ. 550 μ A
Signal transmission:	serial, 2 wire technology
Relay output:	bistable change-over contact 230 V/2 A, (max. 60 W)
Monitored inputs:	for potential-free contacts
Optocoupler input:	Querying potentially-charged signals, or external voltages of 0-30 VDC
Connection:	Screw clips, max. 1.5 mm ²
Short circuit isolator:	integrated
Protection class:	IP 66 with case
Ambient temperature:	-20° to +60°C
Relative air humidity:	5 to 95% without condensation
Dimensions:	67 x 67 x 20 mm (with case 94 x 94 x 57 mm)
Case:	Polystyrol, halogen-free
Colour:	grey (RAL 7035)
VdS-Approval:	applied for

Weitere Informationen sind der Technischen Dokumentation zu entnehmen.
Further information can be obtained from the technical documentation.

SCHRACK SECONET AG

A-1122 Wien, Eibesbrunnnergasse 18 • Tel.: +43-1-81157-0 • office@schrack-seconet.com

FIRE ALARM

www.schrack-seconet.com

SCHRACK
S E C O N E T

© Schrack Productions – B-D80068DE-EN – BX-OI3 – V1.0 – 12.2009
Technische Änderungen vorbehalten – subject to technical modifications

TDS & GA For Addressable Fire Detection Items		
1	Manufacturer	SCHRACK
2	Model No	BX-SOL
3	Operating Voltage	12 to 30 VDC
4	Power consumption	2,3 mA @ 24 VDC (volume low) , 4,7 mA @ 24 VDC (volume high)
5	Volume	89dB(99dB)+/-3dB (A)/m @ 24VDC
6	Possible tones	DIN 1200 ~ 500 Hz (acc. to DIN 33404) , Slow Whoop 500 ~ 1200 Hz (EN 2575) , Continuous tone 990 Hz (pulse can be set) , Sweden-Tone (150 ms on/ 150 ms off)
7	Protection Class	IP 21C
8	Ambient temperature	(-) 10° to +55°C
9	Dimensions	max. 108 x 91 mm (D x H)
10	Case colour	white or red
11	Case material	ABS
12	Weight	230g
13	Approval	VDS
14	Quantity	As per approved Drawings
15	Inspection	ICL



BX-SOL-R
No. 20-2100008-01-01



BX-SOL-W
No. 20-2100008-02-01

BX-SOL Loop siren

The loop siren BX-SOL is used to signal a fire alarm in interior rooms and conforms to environmental category type A according to EN 54-3.

The device is available in red or white and is connected directly to Integral X-LINE by means of a 6 pin screw clip.

Up to 62 BX-SOL devices can be connected to an Integral X-LINE, with the quantity being determined by the volume that has been configured, the combination of other devices as well as the cable diameter.

The tone types “Slow Whoop”, “DIN tone”, “Swedish Tone” or “permanent tone” are set directly at the fire alarm control panel, even during ongoing operation, whilst the required volume can be set by using software or setting DIP switches.

In particular when deployed in areas where there are EMC disturbances, or where such disturbances can occur periodically as a result of working processes, we recommend that a shielded fire alarm cable is used.

Like every element of Integral X-LINE, the loop siren BX-SOL also contains a short circuit isolator, which ensures in the event of a wire break or a short circuit that the fault is localised and that the loop circuit's operation is simultaneously maintained in its entirety.

The country-specific guidelines for planning and installation of automatic fire alarm systems are applicable.

Operating voltage:	12 to 30 VDC
Power consumption:	2,3 mA @ 24 VDC (volume low) 4,7 mA @ 24 VDC (volume high)
Volume:	89 dB (99 dB) $\pm$ 3 dB(A)/m @ 24 VDC
Possible tones:	DIN 1200 ~ 500 Hz (acc. to DIN 33404) Slow Whoop 500 ~ 1200 Hz (EN 2575) Continuous tone 990 Hz (pulse can be set) Sweden-Tone (150 ms on/ 150 ms off)
Short circuit isolator:	integrated
Protection class:	IP 21c
Ambient temperature:	-10° to +55°C
Dimensions:	max. 108 x 91 mm (D x H)
Case colour:	white or red
Case material:	ABS
Weight:	230 g
VdS-Approval:	G210086
CPD-Certificate:	0786-CPD-20986

Description	Type	Art. No.
BX-SOL-R Loop siren red	BX-SOL-R	20-2100008-01-01
BX-SOL-W Loop siren white	BX-SOL-W	20-2100008-02-01



BX-FOL-RR
No. 202100009-01-03



BX-FOL-WR
No. 202100009-02-03



BX-FOL-RO
No. 202100009-03-03



BX-FOL-WO
No. 202100009-04-03

BX-FOL-RR Loop flashing light

The loop flashlight BX-FOL is used to optically signal a fire alarm in interior rooms and conforms to environmental category type A according to EN 54-3.

The device is available in red or white with red or orange lens and is connected directly to Integral X-LINE by means of a 6 pin screw clip.

Up to 23 BX-FOL devices can be connected to an Integral X-LINE, with the quantity being determined by the combination of other devices as well as the cable diameter.

The required flash frequency can be set to “Slow” or “Fast” by using software or a DIP switch, with “Fast” being the factory setting.

In particular when deployed in areas where there are EMC disturbances, or where such disturbances can occur periodically as a result of working processes, we recommend that a shielded fire alarm cable is used.

Like every element of Integral X-LINE, the loop flashlight BX-FOL also contains a short circuit isolator, which ensures in the event of a wire break or a short circuit that the fault is localised and that the loop circuit's operation is simultaneously maintained in its entirety.

The country-specific guidelines for planning and installation of automatic fire alarm systems are applicable.

Operating voltage:	12 to 30 VDC
Alarm current:	max. 6,5 mA @ 24 VDC
Quiescent current:	500 µA
Signal transmission:	serial, 2 wire technology
Flashing frequency:	0,5 Hz (slow) or 1 Hz (fast)
Short circuit isolator:	integrated
Protection class:	IP 21c
Ambient temperature:	-10° to +50°C
Dimensions:	93 x 54 mm (DxH)
Case colour:	white or red
Case material:	ABS
Weight:	110 g
VdS-Approval:	G210085 (EN 54-3, EN 54-17)
CPD-Certificate:	0786-CPD-20987 (EN 54-17)

Description	Type	Art. No.
BX-FOL loop flashing light red, red lens	BX-FOL-RR	20-2100009-01-03
BX-FOL loop flashing light white, red lens	BX-FOL-WR	20-2100009-02-03
BX-FOL loop flashing light red, orange lens	BX-FOL-RO	20-2100009-03-03
BX-FOL loop flashing light white, orange lens	BX-FOL-WO	20-2100009-04-03



BX-API
No. 20-2100010-01



Base siren BX-API

For fitting in USB 501-x Integral loop technology detector base for local acoustic warnings of a fire. The BX-API snaps directly into the detector base and connects directly to its connector clips. If a detector is activated, then module BX-API is triggered as well as the alarm message being sent, with the base-mounted siren emitting an acoustic alarm signal. The volume setting (LOW or HIGH) is set by means of a DIP switch.

Operating voltage:	15 to 30 VDC
Power consumption:	Low max. 2mA, High max. 4mA
Connection:	USB 501-x detector base
Tone types:	can be selected by dip switches: DIN 1200 ~ 500 Hz (acc. to DIN 33404) Slow Whoop 500 ~ 1200 Hz (EN 2575) Continuous tone 990 Hz (pulse can be set) Sweden-Tone (150 ms on/ 150 ms off)
Volume:	Low 65dB @24VDC @1m @90° High 75dB @24VDC @1m @90°
Ambient temperature:	+5°C to +40°C
VdS-Approval:	applied for
CPD-Certificate:	applied for

Description	Type	Art. No.
BX-API Base-siren	BX-API	20-2100010-01



BX-SBL501-W
No. 20-2100011-02-01

Base siren BX-SBL501-W

For signalling a fire alarm in interior rooms (EN 54-3/type A), fitted as a unit with a USB 501 detector base and directly connected to the X-LINE. The siren is available in white, four different tone types and the volume can be set by software or by using DIP switches. The cable inlet is from above, with variant BX-SBL501-WDB with a higher base being available for a cable inlet from the side.

Operating voltage:	12 to 30 VDC
Quiescent current:	max. 0,5 mA
Power consumption:	1,5 mA @ 24 VDC (volume low) 4,0 mA @ 24 VDC (volume high)
Volume:	80 dB (90 dB) ± 3 dB(A)/m @ 24 VDC
Types of tone:	DIN 1200 ~ 500 Hz (acc. to DIN 33404) Slow Whoop 500 ~ 1200 Hz (EN 2575) Continuous tone 990 Hz (pulse can be set) Sweden-Tone (150 ms on/ 150 ms off)
Connection:	screw clips, maximum 2.5 mm ²
Short circuit isolator:	integrated
Protection class:	IP 31 D
Ambient temperature:	-10° to +55°C
Dimensions:	114 x 32 mm (DxH) 114 x 36 mm (DxH) with high base
Case material:	PC-ABS
Case colour:	white RAL 9003
Weight:	ca. 170 g
VdS-Approval:	applied for
CPD-Certificate:	applied for

Description	Type	Art. No.
Base-siren BX-SBL501 white	BX-SBL501-W	20-2100011-02-01
Base-siren BX-SBL501 white high base	BX-SBL501-WDB	20-2100011-01-01



BX-SBL502-W
No.: 20-2100012-04-01



BX-SBL502-R
No.: 20-2100012-03-01

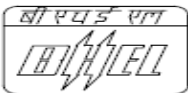
Platform siren BX-SBL502

For signalling a fire alarm in indoor areas (EN 54-3/ type A), suitable for direct connection to the Integral X-LINE. The siren is available in red or white, four different tone types and the volume can be set by software or by using DIP switches. The cable inlet is from above, with variants BX-SBL502-WDB and BX-SBL502-RDB with a higher base being available for a cable inlet from the side.

Operating voltage:	12 to 30 VDC
Quiescent current:	max. 0,5 mA
Power consumption:	1,5 mA @ 24 VDC (volume low) 4,0 mA @ 24 VDC (volume high)
Volume:	80 dB (90 dB) ± 3 dB(A)/m @ 24 VDC
Types of tone:	DIN 1200 ~ 500 Hz (acc. to DIN 33404) Slow Whoop 500 ~ 1200 Hz (EN 2575) Continuous tone 990 Hz (pulse can be set) Sweden-Tone (150 ms on/ 150 ms off)
Connection:	Screw clips, maximum 2.5 mm ²
Short circuit isolator:	integrated
Protection class:	IP 31 D
Ambient temperature:	-10° to +55°C
Dimensions:	114 x 32 mm (DxH) 114 x 36 mm (DxH) with high base
Case material:	PC-ABS
Case colour:	white RAL 9003
Weight:	ca. 165 g
VdS-Approval:	applied for
CPD-Certificate:	applied for

Description	Type	Art. No.
Platform siren BX-SBL502 white	BX-SBL502-W	20-2100012-04-01
Platform siren BX-SBL502 white high	BX-SBL502-WDB	20-2100012-02-01
Platform siren BX-SBL502 red	BX-SBL502-R	20-2100012-03-01
Platform siren BX-SBL502 red high	BX-SBL502-RDB	20-2100012-01-01

TDS & GA For Addressable Fire Detection Items			
ITEM			Response Indicator
PROJECT :			1x500MW FGUTPP , Stage IV-220/400KV Switchyard
OWNER/CLIENT:			NTPC Limited
EPC CONTRACTOR			NTPC BHEL Power Projects Limited (NBPPL)
	SI No	Description	Details
GENERAL	1	Make	M/s Venus Engineering
	2	Model	Response Indicator RI-01
	3	Enclosure Protection	IP42
	4	Area Classification	Safe Area
	5	Mounting	Suitable for SURFACE / RECESS MOUNTED
	6	Labeling	Text "FIRE " in Red color
	7	Dimensions (approximate)	Back Box 55mm (H) x 55125mm (W) x 40 mm (D) Top Cover 85 * 65 mm
HOUSING	8	Material of Construction	18/20 swg MS, CRCA Sheet
	9	Colour	IVORY
	10	Cover	Screwed
	11	Cable Entry	M16 Gland -2way
COMPONENT	12	Series Resistor	1Kohm /0.5 watt
	13	LED	Red color 5mm LED
	14	Connector	PP Material, Screw Cable Fixing

1x500MW FGUTPP , Stage IV-220/400KV Switchyard		
NTPC Document No: 1450-001R-SWYD-PVI-Y-001		
Customer:		NTPC Limited A Govt. of India Enterprise
EPC		NTPC BHEL Power Projects Limited
Vendor:		
Contractor:	TBEM 	BHEL Transmission Buisness Group
Document Title :		
Technical data sheet for Cable		

Technical data sheet for Cable

M/S. DELTON CABLES LIMITED
Delton House, 4801, Bharat Ram Road
24 Daryaganj, New Delhi - 1100 02
TECHNICAL PARTICULARS

S.No	Description	UNIT	2C x 1.5Sq.mm
1.	Name of Manufacturer		Delton Cables Limited Faridabad/Dharuhera (India)
2.	Applicable Standards		Gen. Conf. To BS:5308-1, IS: 7098-1, IS: 8130, IS: 3975, IS: 5831, IS: 10810, IS: 3961, ASTM-D-2843, ASTM D-2863, IEC-754 (I), IEC-332-I & our Data Sheet.
3.	Voltage Grade	V	1100
4.	Continuous Operating Temp. (Max.)	°C	90
	Conductor Temp. at the termination of short circuit (Max.)		250
5.	No. of Cores		2
6.	Conductor		
	Material		Annealed Tinned Copper of Class 2 as per IS: 8130
	Grade		Electrolytic
	Area of Cross Section (Approx.)	mm ²	1.5
	Shape of Conductor		Stranded-Circular
	No. of Condt. / Strand Dia. (Approx.)	mm	7/0.53
7.	Insulation		
	Material		XLPE as per IS: 7098-1
	Thickness (Nom.)	mm	0.7
	Core Identification		Red & Black
8.	Cable Laying		The Required No. of Cores laid up as a round cable core with suitable lay
9.	Screening		
	Overall Screen		
	Material		Aluminum Mylar Tape
	Thickness (min)	mm	0.050
	Coverage/Overlap	%%	100/25(min.)
	Drain wire		0.5 Sq.mm (7/0.3 mm) ATC
10.	INNER SHEATH		
	Material		Extruded PVC Type 'ST 2' as per IS: 5831
	Thickness (Min.)	mm	0.3
	Colour		Black
11.	ARMOURING		
	Material		Galvanized Steel Round Wire as per IS: 3975
	Type		Helical-Single layer
	Size of Wire (Approx.)	mm	1.4
12.	Outer Sheath		
	Material		Extruded PVC Type 'ST 2' as per IS: 5831 with FRLS properties
	Thickness (Min.)	mm	1.24
	Overall Dia of Cable with +/-2mm Tolerance	mm	13.3
	Weight of Cable (Approx.)	Kg/ Km	384.0
	Colour		Black
13.	Marking on Outer Sheath		Delton Cables Ltd., Voltage grade, No. of Core x Area of cross section, Year of manufacturing, FRLS & Sequential length marking at every meter by Printing



Technical data sheet for Cable

ITEM	SLC LOOP CABLE
PROJECT :	1x500MW FGUTPP , Stage IV-220/400KV Switchyard
OWNER/CLIENT:	NTPC Limited
EPC CONTRACTOR	NTPC BHEL Power Projects Limited (NBPPL)
SUPPLIER/ CONTRACTOR	MX SYSTEM INTERNATIONAL PVT LTD
PACKAGE:	FIRE PROTECTION & FIRE DETECTION AND ALARM SYSTEM
NTPC DOCUMENT NO.	1450-001R-SWYD-PVI-Y-001
MX DOCUMENT NO.	MXI-037700-DS-11018
DATE	REV - 2 DATE: 09/01/2017

S.No	Description	UNIT	2C x 1.5Sq.mm
14.	Standard Packing length with +/- 5% Tolerance	mtr	40 x 1000
	Overall Quantity tolerance		+/-5%
15.	Min. Bending Radius	mm	12 x OD of Cable
16.	ELECTRICAL TESTS		
	Max. DC Conductor Resistance at 20°C	Ohms/km	12.3
	High Voltage Test on finished cable.	KV rms	Core to Core = 2KV rms for 1 minute Core to Screen = 1KV rms for 1 minute
	Min. Volume Resistivity	ohm-cm	1×10^{14} at 27°C 1×10^{12} at 90°C
	Short Circuit Current for 1 Sec.	KA	0.215
	Continuous current rating for standard IS condition laid Direct		
	In Ground at 30	Amp	33
	In Air at 40	Amp	29
17.	FRLS Properties (For Outer Sheath)		
	Min. Oxygen index at room temp.	%	29 when tested as per ASTM D 2863
	Min. Temp. Index at O.I 21%	°C	250 When tested as per ASTM D 2863
	Max.HCL Emission	%	20 (by weight) when tested as per IEC-754-I
	Smoke density rating		60% when tested as per ASTM D 2843
	Flammability test on finished Cable		As per IEC -332 part-I



NTPC Document No: 1450-001R-SWYD-PVM-Y-007		
Customer:		NTPC Limited A Govt. of India Enterprise
EPC		NTPC BHEL Power Projects Limited
Vendor:		
Contractor:	TBEM 	BHEL Transmission Buisness Group
Document Title :		
TDS For CO2 type portable extinguisher		

TDS For CO2 type portable extinguisher		
PROJECT : 1x500MW FGUTPP , Stage IV-220/400KV		PACKAGE FIRE DETECTION & PROTECTION SYSTEM
CLIENT : NTPC Limited		PAGE: 2 OF 3
EPC Contractor: NTPC BHEL Power Projects		
1	MAKE	SAFEX
2	DESIGN STANDARD	IS:15683:2006
3	CAPACITY	4.5 Kgs
4	TYPE	CO2 Type
5	CERTIFICATION MARK	ISI Marked
6	MATERIAL	
6.1	BODY WITH NECK RING	SEAMLESS PIPE CONFORMING TO IS : 7285, ISI MARKED
6.2	DISCHARGE VALVE	WHEEL TYPE CONFORMING TO IS : 3224, ISI MARKED
6.3	DISCHARGE NOZZLE / HORN	NON-CONDUCTOR OF ELECTRICITY LIKE POLYTHENE FIBER GLASS
6.4	SYPHONE TUBE	ALUMINIUM IS : 738
6.5	HOSE	RUBBER 1 MTR LENGTH MIN. BURST PRESSURE 140 Kgf /cm ²
7	PROCESS	
7.1	ANTICORROSIVE	1. SHOT BLASTING 2. ZINC CROMITE RED OXIDE PRIMER COAT
7.2	WELDING	SEAMLESS
7.3	PAINTING	PO RED CONFORMING TO IS:5
8	PERFORMANCE	
8.1	MIN DISCHARGE	8 SEC.
8.2	DISCHARGE	95% MIN. WITHIN 25 SEC
8.3	THROW OF JET	2 Mtr
8.4	TEST PRESSURE BODY	250 kgf/cm ²
9	DIMENSION	
9.1	BODY DIA	140 mm
9.2	OVERALL HEIGHT	710 ± 10 mm
9.3	EMPTY WEIGHT	12 Kgs
9.4	FULL WEIGHT	17 Kgs
10	APPLICATION	FOR B & C CLASS FIRE
11	CATALOGUE ATTACHED	YES
12	OPERATING TEMPERATURE	-20 TO +55°C
13	HANGING BRACKET WITH FIXING ACCESSORIES	PROVIDED

TDS For CO2 type portable extinguisher

PROJECT :	PACKAGE
1x500MW FGUTPP , Stage IV-220/400KV	FIRE DETECTION & PROTECTION SYSTEM
CLIENT : NTPC Limited	PAGE: 3 OF 3
EPC Contractor: NTPC BHEL Power Projects	

DESCRIPTION SAFEX BRAND CO2 TYPE FIRE EXTINGUISHER OF 4.5 KGS. CAP. MADE FROM BRASS/STEEL SEAMLESS DRAWN/STEEL 3% NIPER WITH HIGH PRESSURE DISCHARGE HOSE WITH HORN AND SUPPLIED COMPLETE WITH INITIAL CHARGE AS PER IS 15683 SPECIFICATION WITH 15 MPaC.		TECHNICAL SPECIFICATION	
DIMENSION OVERALL HEIGHT - 710 ± 10 MM. EMPTY WEIGHT : 12 KGS. DIA : 140MM.		BRAND : SAFEX IS SPECIFICATION : 15683 CAPACITY : 4.5 KGS BODY : SEAMLESS PIPE CONFORMING TO IS 7288 ISI MARKED. DISCHARGE VALVE : CONFORMING TO IS 3324 ISI MARKED (WHEEL TYPE) SYPHON TUBE : ALUMINIUM CONFORMING TO IS : 733 HOSE : HIGH PRESSURE WITH STAND HOSE- (BURSTING PRESSURE - 140 KG/CV2) DISCHARGE HORN : NON CONDUCTOR OF ELECTRICITY LIKE POLYETHYLENE FIBRE GLASS PAINTING : FIRE RED/P.O. RED CONFORMING TO SHADE NO 635638 OF IS : 5 DISCHARGE TIME : MAX 25 SEC.	
NOTE : 1. ALL DIMENSIONS ARE IN MM. 2. MATERIAL : MS.			

MAIN CONTRACTOR: SAFEX FIRE SERVICES LTD.		For Approval ☐ For Office Use ☐ For Bid Purpose ☐ For Information ☐ For Fabrication ☐ For Erection ☐	
SCALE : 1:1 DATE : 14.02.12		CLIENT : P.D.M.D.	
DRAWN : 14.02.12 CHECKED : 14.02.12 APPROVED : 15.02.12		TITLE : CO2 TYPE F/EXT- 4.5 KGS CAPACITY.	
DRAWN : 14.02.12 CHECKED : 14.02.12 APPROVED : 15.02.12		REV. NO : 01 REV. 01	

1x500MW FGUTPP , Stage IV-220/400KV Switchyard

NTPC Document No: 1450-001R-SWYD-PVM-Y-008

Customer:



NTPC Limited
A Govt. of India Enterprise

EPC

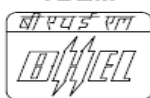


NTPC BHEL Power Projects Limited

Vendor:

Contractor:

TBEM



BHEL Transmission Business Group

Document Title :

TDS For DCP type portable extinguisher

TDS For DCP type portable extinguisher		
PROJECT : 1x500MW FGUTPP , Stage IV-220/400KV		PACKAGE FIRE DETECTION & PROTECTION SYSTEM
CLIENT : NTPC Limited		PAGE: 2 OF 3
EPC Contractor: NTPC BHEL Power Projects		
1	MAKE	SAFEX
2	DESIGN STANDARD	IS: 15683 : 2006
3	CAPACITY & TYPE	6 Kgs. ABC POWDER & STORED PRESSURE
4	MARKING	ISI Marked
5	MATERIAL	
5.1	BODY	MS SHEET 1.5 mm Thick
5.2	DISCHARGE VALVE	BRASS CE / EN APPROVED
5.3	DISCHARGE NOZZLE / HORN	PVC
5.4	LENGTH OF HOSE	PVC 430 MM MIN.
5.5	WASHER	RUBBER
5.6	NECKRING	MILD STEEL
5.7	SPRING	STEEL
5.8	SYPHONE TUBE	PVC
5.9	PLUNGER	BRASS
6	PROCESS	
6.1	ANTICORROSIVE	1. SHOT BLASTING 2. EPOXY POWDER COATING OUTSIDE
6.2	WELDING	ARGON GAS WELDING
6.3	PAINTING	PO RED CONFORMING TO IS:5
7	PERFORMANCE	
7.1	MINIMUM DISCHARGE	13 SEC
7.2	DISCHARGE	90% MIN. WITHIN 25 SEC
7.3	THROW OF JET	6 MTR.
7.4	TEST PRESSURE BODY	35 Kgf/cm ²
7.5	BURSTING PRESSURE	55 Kgf/cm ²
7.6	WORKING PRESSURE	15 Kgf/cm ²
8	DIMENSION	
8.1	BODY DIA.	160 +/- 5 mm
8.2	OVERALL HEIGHT	480 + 10 mm
8.3	EMPTY WEIGHT	2.60 Kgs.
8.4	FULL WEIGHT	9.30 Kgs.
9	APPLICATION	FOR A, B & C CLASS FIRE
10	OPERATING TEMPERATURE	-20 TO +55°C
11	HANGING BRACKET WITH FIXING ACCESSORIES	PROVIDED

TDS For DCP type portable extinguisher
--

PROJECT :	1x500MW FGUTPP , Stage IV-220/400KV
CLIENT :	NTPC Limited
EPC Contractor: NTPC BHEL Power Projects	

PACKAGE	FIRE DETECTION & PROTECTION SYSTEM
PAGE:	3 OF 3

SR NO	DESCRIPTION	MATERIAL
1	BODY	M.S SHEET
2	TOP	M.S.
3	NECKRING	M.S.
4	VALVE	BRASS
5	SY-PHONE	PLASTIC
6	BOTTOM	M.S.
7	HOSE	PVC
8	CHARGED	ABC POWDER

NOTE:

- 1) OVERALL HEIGHT : 480MM (APPROX)
- 2) BODY DIA : 150±5MM
- 3) EMPTY WEIGHT : 3.3KG. (APPROX)
- 4) FULL WEIGHT : 9.3KG. (APPROX)

CONSTRUCTION AS PER IS: 15683

(LOW INC.)	MAIN CONTRACTOR:		For Approval ☐	For Office Use ☐	For Bid Purpose ☐
			For Information ☐	For Fabrication ☐	For Erection ☐
Safex Fire Services Ltd.					
SCALE N.T.S.			CLIENT : MK SYSTEMS INTRAVY.LTD.		
			P.O.NO.:		
			SAT.	SIGN.	TITLE
			DRAWN	06.02.12	JMM
			CHECKED	06.02.12	KVM
			APPROVED	06.02.12	IJS
			DEMAND NOTE / B-06		
			REV. C0		

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

SCHEDULES AND ENCLOSURES

SECTION- 5

ENCLOSURES TO SPECIFICATION

SCHEDULES TO BE FILLED UP BY THE BIDDER

Schedule 1 **Schedules of Deviations**

Schedule 2 **Details of contact persons (technical & commercial)**

Schedule 3 **Enclosures to Specification**

ANNEXURE-A Drawings

SCHEDULE-1**SCHEDULE OF TECHNICAL DEVIATION**

The following are the deviations / variations / exceptions from the specification:

Section	Clause No. / Page No.	Statement of deviation/ Variations/Exceptions
---------	--------------------------	--

- 1) In case, this schedule is not submitted, it will be presumed that the equipment /material to be supplied under this contract are deemed to be in compliance with the specification.
- 2) If there is NIL deviation, even then the format to be filled as **NIL DEVIATION**
- 3) Continuation sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Place

Signature of the authorized representative of Bidder

Name -----

Date

Designation-----

Company seal-----

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

SCHEDULE-2

DETAILS OF CONTACT PERSON BOTH TECHNICAL AND COMMERCIAL

Name

Address for correspondence

Phone No.

Fax No.

Email

Place

Signature of the authorized representative of Bidder

Date

Name-----

Designation-----

Company seal -----

Note: Continuation sheets of like size and format may be used as per the Bidder's Requirement and shall be annexed to this schedule.

Project: 1x500MW FGUTPP, Stage IV- 220/400kV Switchyard

TB-359-552-101, R-0

Customer: National Thermal Power Corporation (NTPC)

Contractor: Bharat Heavy Electricals Limited

Item: FIREFIGHTING SYSTEM FOR NEW EXTENSION CONTROL BUILDING AT 220KV SWITCHYARD

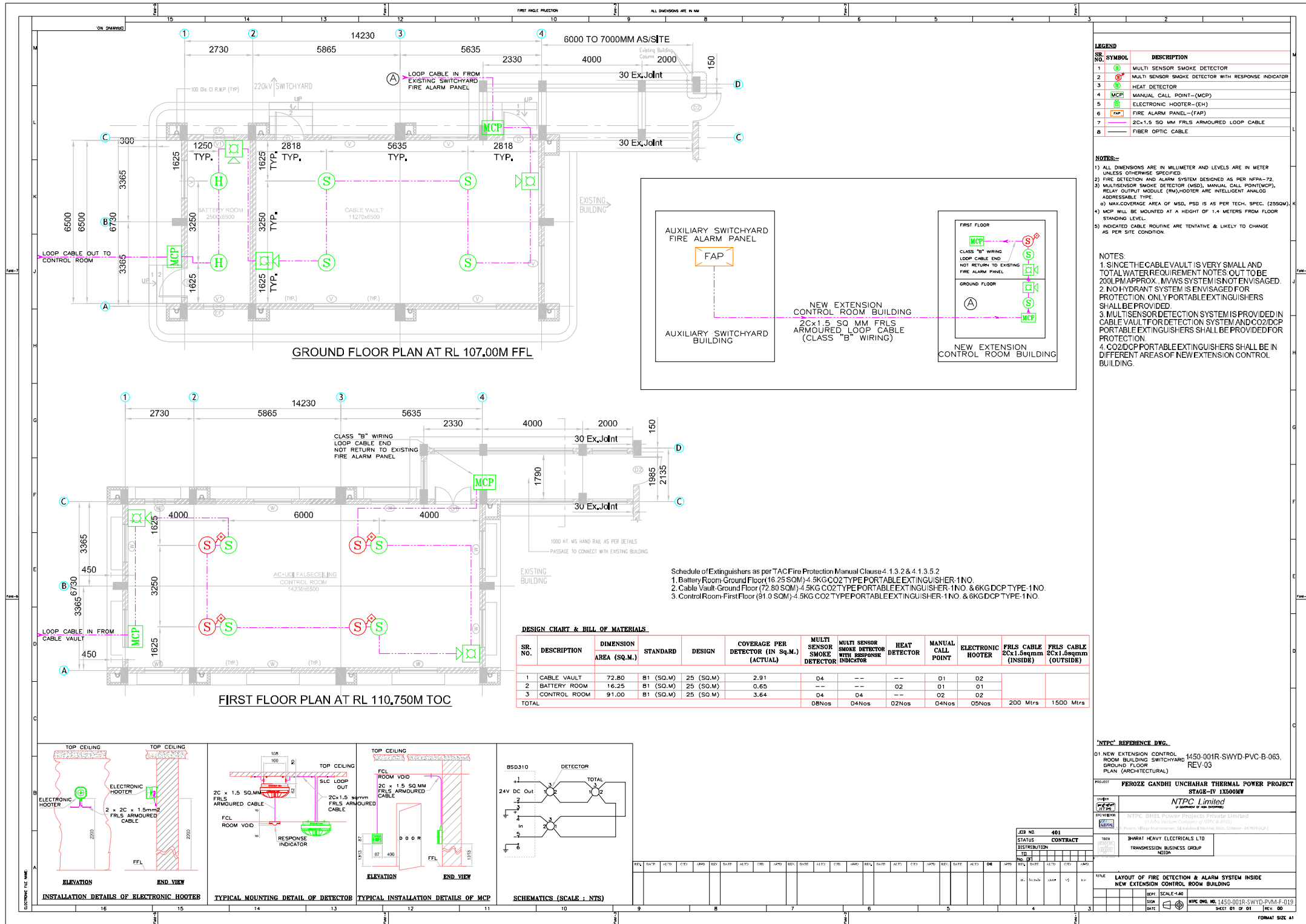
SCHEDULE –3

ENCLOSURES TO SPECIFICATION

DRAWINGS (ANNEXURE-A)

1. LAYOUT OF FIRE DETECTION & ALARM SYSTEM INSIDE NEW EXTENSION CONTROL ROOM BUILDING.

DRG. NO. 1450-001R-SWYD-PVM-F-019 REV.00



LEGEND		
SR. NO.	SYMBOL	DESCRIPTION
1		MULTI SENSOR SMOKE DETECTOR
2		MULTI SENSOR SMOKE DETECTOR WITH RESPONSE INDICATOR
3		HEAT DETECTOR
4		MANUAL CALL POINT-(MCP)
5		ELECTRONIC HOOTER-(EH)
6		FIRE ALARM PANEL-(FAP)
7		2C x 1.5 SQ MM FRLS ARMoured LOOP CABLE
8		FIBER OPTIC CABLE

NOTES:-

1) ALL DIMENSIONS ARE IN MILLIMETER AND LEVELS ARE IN METER UNLESS OTHERWISE SPECIFIED.

2) FIRE DETECTION AND ALARM SYSTEM DESIGNED AS PER NFPA-72.

3) MULTISENSOR SMOKE DETECTOR (MSD), MANUAL CALL POINT(MCP), RELAY OUTPUT MODULE (RMO),HOOTER ARE INTELLIGENT ANALOG ADDRESSABLE TYPE.

4) MAX. COVERAGE AREA OF MSD, PSD IS AS PER TECH. SPEC. (255SQM).

5) MCP WILL BE MOUNTED AT A HEIGHT OF 1.4 METERS FROM FLOOR STANDING LEVEL.

6) INDICATED CABLE ROUTINE ARE TENTATIVE & LIKELY TO CHANGE AS PER SITE CONDITION.

NOTES:

1. SINCE THE CABLE VAULT IS VERY SMALL AND TOTAL WATER REQUIREMENT NOTES OUT TO BE 200 LPM APPROX. MWS SYSTEM IS NOT ENVISAGED.

2. NO HYDRANT SYSTEM IS ENVISAGED FOR PROTECTION. ONLY PORTABLE EXTINGUISHERS SHALL BE PROVIDED.

3. MULTISENSOR DETECTION SYSTEM IS PROVIDED IN CABLE VAULT FOR DETECTION SYSTEM AND CO2/DCP PORTABLE EXTINGUISHERS SHALL BE PROVIDED FOR PROTECTION.

4. CO2/DCP PORTABLE EXTINGUISHERS SHALL BE IN DIFFERENT AREAS OF NEW EXTENSION CONTROL BUILDING.

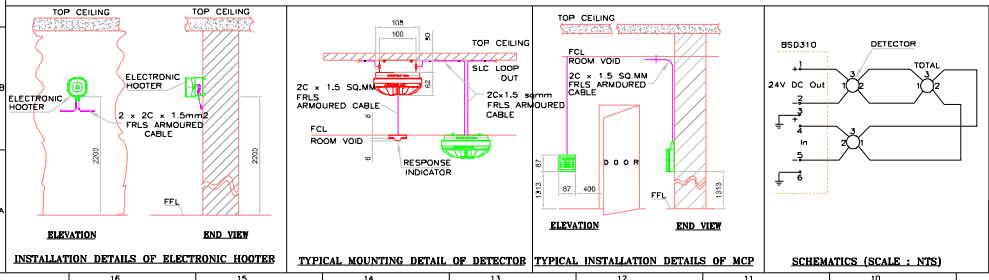
Schedule of Extinguishers as per TAC Fire Protection Manual Clause 4.1.3.2 & 4.1.3.5.2

1. Battery Room-Ground Floor (16.25 SQM)-4.5KG CO2 TYPE PORTABLE EXTINGUISHER-1 NO.

2. Cable Vault-Ground Floor (72.80 SQM)-4.5KG CO2 TYPE PORTABLE EXTINGUISHER-1 NO. & 6KG DCP TYPE-1 NO.

3. Control Room-First Floor (91.0 SQM)-4.5KG CO2 TYPE PORTABLE EXTINGUISHER-1 NO. & 6KG DCP TYPE-1 NO.

DESIGN CHART & BILL OF MATERIALS												
Sr. No.	DESCRIPTION	DIMENSION AREA (SQ.M.)	STANDARD	DESIGN	COVERAGE PER DETECTOR (IN Sq.M.) (ACTUAL)	MULTI SENSOR SMOKE DETECTOR	MULTI SENSOR SMOKE DETECTOR WITH RESPONSE INDICATOR	HEAT DETECTOR	MANUAL CALL POINT	ELECTRONIC HOOTER	FRLS CABLE 2C x 1.5sqmm (INSIDE)	FRLS CABLE 2C x 1.5sqmm (OUTSIDE)
1	CABLE VAULT	72.80	B1 (SQ.M.)	25 (SQ.M.)	2.91	04	--	--	01	02		
2	BATTERY ROOM	16.25	B1 (SQ.M.)	25 (SQ.M.)	0.65	--	--	02	01	01		
3	CONTROL ROOM	91.00	B1 (SQ.M.)	25 (SQ.M.)	3.64	04	04	--	02	02	200 Mtrs	1500 Mtrs
TOTAL						08Nos	04Nos	02Nos	04Nos	05Nos		



'NTPC' REFERENCE DWG.

01 NEW EXTENSION CONTROL ROOM BUILDING SWITCHYARD 1450-001R-SWYD-PVC-B-063, GROUND FLOOR PLAN (ARCHITECTURAL) REV-03

PROJECT: **PEROZE GANDHI UNCHAHAR THERMAL POWER PROJECT STAGE-IV 1X500MW**

CLIENT: **NTPC Limited**
(A Public Limited Company of NTPC & BHEL)

DESIGNER: **NTPC BHEL Power Projects Private Limited**
(A Joint Venture Company of NTPC & BHEL)

CONTRACTOR: **SHARAT HEAVY ELECTRICALS LTD**
TRANSMISSION BUSINESS GROUP, INDIA

DATE: 15/01/2024

SCALE: 1:40

FILE NO: 1450-001R-SWYD-PVC-B-063

SHEET 01 OF 01

FORMAT SIZE: A1