



SUPPLY, INSTALLATION, COMMISSIONING & TESTING OF ADDRESSABLE FIRE DETECTION & ALARM SYSTEM (AFDAS)

A. BILL OF QUANTITIES (BOQ)

Item No.	Item Description	Brand	Unit	Quantity
1	Supply of Intelligent Addressable Fire Alarm Control Panel, fully expandable up to a minimum of Eight (08) Signaling Line Circuits (SLC Loops), supplied complete with all required loop cards/modules to provide eight (08) fully operational loops at the time of supply and commissioning. The panel shall be complete with CPU, color/LCD display, integral power supply, integral battery charger, maintenance-free sealed lead-acid batteries sized for the fully configured control panel and the connected system load at the time of commissioning, enclosure, network capability, programmable cause-and-effect logic, event history, software, and all accessories necessary for complete installation, testing, commissioning, and operation. Certifications: • UL 864 (Fire)UL 1076 • UL 257 • ULC-S527-11 • UL Listed: S635 • ULC Listed: S527-11 • MEA: 232-06-E • CSFM: 7165-0028:0224 • FM Approved • FM6320 Approved. Class 6320 for Gas Detection • CCCF listed.	Honeywell or Equivalent	Nos.	01
2	Supply of Intelligent Addressable Repeater Panel compatible with the proposed Fire Alarm Control Panel, complete with LCD display, communication interface, enclosure, power supply, batteries, and all accessories.	Same as Panel Manufacturer	Nos.	01
3	Supply of Intelligent Addressable Optical Smoke Detector complete with mounting base.	Same as Panel Manufacturer	Nos.	300
4	Supply of Intelligent Addressable Rate-of-Rise / Fixed Temperature Heat Detector complete with mounting base.	Same as Panel Manufacturer	Nos.	10

5	Supply of Intelligent Addressable Beam Smoke Detector complete with transmitter, receiver, reflector kit, mounting brackets, power supply and all accessories suitable for the proposed fire alarm system and complying with NFPA 72 and manufacturer's installation requirements. The contractor shall perform beam alignment and functional testing during commissioning.	Same as Panel Manufacturer	Nos.	12
6	Supply of Intelligent Addressable Manual Call Point (Break Glass Unit) complete with resettable operating element/key, weatherproof back box, and accessories.	Same as Panel Manufacturer	Nos.	56
7	Supply of Intelligent Addressable Loop-Powered Electronic Sounder with sounder/visual alarm device (horn/strobe or sounder beacon) suitable for indoor installation, complete with mounting base and accessories. The sounder shall provide a minimum sound pressure level as required by NFPA 72 and applicable local requirements at the required occupied locations.	Same as Panel Manufacturer	Nos.	57
8	Supply of 3 kVA Online Double-Conversion UPS, 230 VAC, single phase, with pure sine-wave output, automatic bypass, built-in battery charger, maintenance-free batteries, LCD display, overload/short-circuit protection, and all accessories required for installation, testing and commissioning, suitable for the proposed Fire Alarm System.	Schneider Electric/APC or equivalent	Nos	01
9	Supply of 2-Core x 1.5 mm ² fire-resistant, shielded, twisted-pair, low-smoke zero-halogen (LSZH) fire alarm cable, suitable for the proposed addressable fire alarm system, with fire-resistance/circuit-integrity performance suitable for the required application and complying with NFPA 72, applicable IEC/BS standards and the OEM's requirements. The contractor shall submit manufacturer's technical datasheet and relevant fire-resistance test certificate. Preferably red color or as approved by PSPC. Cable shielding shall be installed and terminated in accordance with the Fire Alarm System OEM's approved installation requirements. Shield continuity and termination shall be verified during commissioning.	Pakistan Cable or Equivalent	Mtr.	8500
10	Supply of PVC Conduit, 25 mm diameter, complete with all accessories including bends, couplers, junction boxes, inspection boxes, adaptors, bushings, saddles, clamps, spacers, solvent cement, flexible conduits, glands, fasteners, supports, and all accessories required for complete installation.	Jeddah or Equivalent	Mtr.	8500
11	Soft Digging 2 feet depth x 1 feet width: Earth excavation, trenching, backfilling, compaction, along with the Supply and installation of underground warning/protection tape marked "FIRE ALARM CABLE" at an appropriate depth above the installed cable.	-	Mtr.	300

12	Hard Digging 2 feet depth x 1 feet width: Road cutting/hard excavation including reinstatement, compaction, minimum 4-inch concrete encasement/protection, (1:4:8), cement patching, along with the Supply and installation of underground warning/protection tape marked "FIRE ALARM CABLE" at an appropriate depth above the installed cable and restoration of the area to its original condition after cable installation.	-	Mtr.	120
13	Installation, Testing & Commissioning: Complete installation, cable laying, termination, addressing, programming, testing, commissioning, loop configuration, cause-and-effect programming, integration of all field devices, panel earthing, preparation of as-built drawings, submission of test reports, demonstration of complete system functionality, and operation & maintenance training for five (10) PSPC employees.	-	Job	01

B. TERMS & CONDITIONS

1. Scope of Work

- a) The Contractor shall be responsible for the design verification, supply, installation, programming, testing, commissioning, integration, training, documentation and successful handing over of a complete Addressable Fire Detection & Alarm System (AFDAS) at PSPC. Supply of intelligent addressable monitor/control/relay modules as required for system integration and complete operation, including all mounting accessories and interfaces.
- b) All hardware, software, modules, gateways, licenses and accessories required for the specified integrations shall be deemed included in the contractor's quoted price.
- c) The contractor shall provide all necessary dedicated power supply arrangements for the fire alarm system, including MCB/isolator, cabling, termination, protection, labeling and earthing, as required by the approved design and OEM recommendations.
- d) Appropriate surge protection shall be provided for the fire alarm system, communication interfaces and externally routed circuits where required by the site conditions and approved design.
- e) Fire alarm zones shall be logically configured and clearly identified on the FACP display and as-built drawings.
- f) The work shall be executed on a turnkey basis, including all equipment, accessories, hardware, software, wiring, conduits, fittings, testing equipment and labor required for complete and satisfactory operation of the system, whether or not specifically mentioned in the BOQ.
- g) The Contractor shall conduct a detailed site survey prior to bid submission of bid to assess the existing ceiling conditions, cable routes, electrical supply, and other relevant site conditions

2. Site Visit, Pre-Bid Meeting & Drawings

- a) Bidders shall conduct a mandatory site visit prior to submission of their bids to fully understand the scope, site conditions, and requirements of the work. The site visit shall be arranged through the Procurement Department, during which bidders may seek clarification regarding the scope of work and any other relevant requirements.
- b) A pre-bid meeting will be held two weeks prior to the bid opening date

- c) Available layouts/maps will be discussed in the meeting.
- d) the contractor must submit proposed drawings/layout before commencing work for approval and final “as-built” drawings upon completion.

3. Project Execution Plan

The contractor shall hold a project kick-off meeting within 10 working days of the award of Purchase Order and will submit a detailed work plan and timeline 5 days before the meeting for approval before starting the work.

4. Material Approval

The contractor is responsible for providing all labor, materials, tools, and equipment necessary to complete the work as per the specified requirements. All materials supplied by the contractor shall be inspected and after giving satisfactory approval it will be deployed.

a) Quality Assurance

The contractor shall ensure all equipment and parts supplied are original, new (non-refurbished), and latest available in the market, meeting manufacturer's standards. In case of any such supplies the same will be returned to the bidder at no additional cost to procuring agency.

b) Packaging

Supplied items shall be delivered to PSPC in their Original Equipment's Manufacturers (OEM) packaging (where applicable) and will undergo inspection upon receipt.

c) Non-Conformance

In case of non-compliance with required specifications, the contractor must replace the item at no additional cost. PSPC reserves the right to reject any material not meeting the specified requirements.

5. OEM Authorization / Core Equipment

- a) The bidder shall be an authorized dealer, system integrator, or sole distributor of the OEM for the core fire alarm system equipment, including but not limited to the Addressable Fire Alarm Control Panel, Smoke/Heat Detectors, Addressable Modules, Manual Call Points, and other major system components. Valid OEM authorization/certification shall be submitted along with the bid.
- b) The bidder shall clearly identify the proposed manufacturer/OEM, model numbers, and country of origin of all major equipment at the time of bid submission. No change in the approved manufacturer, model, or major system architecture shall be permitted without prior written approval from PSPC.

6. Bidder's Experience

- a) Overall Experience: Must have at-least 10 years of experience. The bidder shall provide documentary evidence with the technical bid demonstrating a minimum of ten (10) years of experience in fire detection and alarm system works, including company registration/incorporation documents, previous POs/contracts, completion certificates, or other verifiable evidence acceptable to PSPC.
- b) Relevant Experience: The bidder shall have successfully completed at least 03x similar projects during the last seven (07) years, of which at least 1x project shall have a minimum value of PKR 35 million. Documentary evidence including Purchase Order and Completion Certificate shall be submitted with the technical bid.

7. Technical Expertise

The Bidder shall provide the CVs of the Project Execution Team with the technical bid comprising of at least 1x qualified Electronic Engineer (Fire Alarm Engineer/Project Engineer), along with at least 2x diploma holders with relevant qualifications, experience and certifications. The said engineer shall have a minimum of five (05) years of relevant experience in the design, installation, programming, testing, commissioning, and troubleshooting of addressable Fire Detection and Alarm Systems. Experience of engineers in the successful execution of at least one (01) similar project of comparable nature and complexity shall be mandatory. Relevant OEM certification and/or recognized fire alarm system certification shall be mandatory. Moreover, the Engineer and all members of the Project Execution Team should be direct employees of the contractor and should be on the contractor's payroll and the same personnel shall be deployed for the execution of the project in the event of award of the contract, unless otherwise approved by PSPC.

8. Software and Licensing

All software, programming tools, licenses, configuration utilities, and other software required for the operation, programming, monitoring, maintenance, and future expansion of the system shall be supplied and handed over to PSPC.

9. Passwords and System Ownership

All administrator, engineering, programming, and system access credentials shall be handed over to PSPC upon completion of the project. The contractor shall not retain exclusive control over the system, and PSPC shall have full access to the system for operation, monitoring, maintenance, and future modification.

10. Standards and Compliance

The complete installation shall comply with the latest applicable editions of:

- a) NFPA 72 National Fire Alarm and Signaling Code
- b) NFPA 70 National Electrical Code (where applicable)
- c) Applicable IEC/BS Standards
- d) Pakistan Building Code
- e) OEM requirements

11. Responsibility for Material & Tools

The contractor shall provide all labor, supervision, transportation, lifting equipment, tools, testing instruments, consumables, scaffolding/ladders, safety equipment, and all miscellaneous materials necessary to complete the project. No additional payment shall be made for incidental materials required for successful completion of the work.

12. Installation Requirements

The contractor shall ensure:

- a) Neat and professional workmanship.
- b) Proper detector spacing as per NFPA 72.
- c) Correct cable routing and segregation.
- d) Installation of fire-resistant cables in conduits
- e) Proper cable identification and labeling.
- f) Proper detector numbering.
- g) Proper panel labeling.
- h) Proper earthing and bonding.
- i) Protection of installed equipment from dust and physical damage during execution.

13. Compatibility and Future Integration

- a) The supplied Fire Alarm Control Panel and all field devices shall be fully compatible with each other and shall support future integration with, but not limited to:
 - I. Access Control System (ACS of Virdi)
 - II. Building Management System (BMS)
 - III. HVAC System
 - IV. Fire Dampers
 - V. CCTV System (Dhaua)
 - VI. Public Address System (Toa)
 - VII. Other life safety systems
- b) The contractor shall ensure that the supplied system is expandable and capable of future integration without replacement of the Fire Alarm Control Panel. The contractor shall provide necessary hardware, software, gateways, programming, licenses, and accessories required for the integration of the fire alarm system with other security and safety systems.

14. System Expandability

- a) The contractor shall ensure that the system has sufficient spare capacity for future expansion, including:

- I. Minimum 30% spare addressable device capacity.
- II. Minimum 30% spare power supply capacity.
- III. Minimum 30% spare battery backup capacity.
- IV. Spare inputs/outputs for future integrations.

Documentary evidence of spare capacity shall be submitted with the technical bid .

15. Testing and Commissioning

- a) The contractor shall carry out complete testing and commissioning of the installed system in the presence of PSPC representatives. Testing shall include, but not be limited to:
 - I. Detector functionality.
 - II. Manual Call Point testing.
 - III. Alarm device testing.
 - IV. Loop integrity.
 - V. Earth fault verification.
 - VI. Battery backup.
 - VII. Power failure operation.
 - VIII. System programming.
 - IX. Integration testing (where applicable).
- b) The project shall not be considered complete until successful completion of all tests. All installed cables shall be tested for continuity, insulation resistance, earth fault, polarity, loop resistance, and other applicable parameters. Test results shall be documented and submitted to PSPC.

16. Documentation

- a) Upon completion, the contractor shall submit:
 - I. As-built drawings.
 - II. Device address list.
 - III. Cable schedules.
 - IV. Programming backup.
 - V. Configuration files.
 - VI. Test reports.
 - VII. Commissioning report.
 - VIII. Warranty certificates.
 - IX. Operation Manual.
 - X. Maintenance Manual.
 - XI. Maintenance Checklist.
 - XII. Preventive maintenance schedule.
- b) The contractor shall submit updated as-built drawings showing the exact location, identification, address, loop number, cable route, and configuration of each installed device.

17. Training

- a) The contractor shall provide onsite operational, troubleshooting and maintenance training to 10 x PSPC personnel covering:
 - I. System operation.
 - II. Alarm acknowledgement.
 - III. System reset.
 - IV. Fault handling.
 - V. Routine inspection.
 - VI. Preventive maintenance.
 - VII. Basic troubleshooting.
- b) Training shall be completed before final acceptance.

18. Warranty & Defect Liability

- a) The complete system shall carry a minimum One (01) Year Comprehensive Warranty commencing from the date of successful commissioning (date of JCC). The warranty shall include all labor, spare parts, transportation, software support, programming, replacement of defective equipment, and onsite services without additional cost to PSPC.
- b) Any equipment or component replaced during the warranty period shall be covered by a minimum warranty period of twelve (12) months from the date of replacement, or the remaining warranty period of the original system, whichever is longer.
- c) The Contractor shall perform 04 quarterly preventive maintenance, provide maintenance check list and respond to any fault notification and mobilize his team at the site within four (04) hours of receiving the complaint. The contractor shall rectify any defects observed during the warranty period within **24 hours** of notification.
- d) For any critical system fault resulting in complete or partial loss of fire detection/alarm functionality, the contractor shall mobilize within four (04) hours and restore the affected functionality within twenty-four (24) hours. Where permanent rectification requires OEM parts not immediately available, temporary restoration shall be provided within 24 hours, subject to PSPC approval.
- e) All firmware/software updates, configuration backup, programming support and restoration of the approved configuration shall be included during the warranty period.

19. Damage Responsibility

- a) The contractor shall be fully responsible for any damage caused to existing buildings, finishes, electrical installations, communication infrastructure, access control equipment, furniture, or any other PSPC property during execution of the work. All such damage shall be repaired or replaced by the contractor at no additional cost to procuring agency.
- b) Upon completion of the work, the Contractor shall restore the site to its original condition, ensuring that all work areas are left clean, safe, and in the same condition as they were prior to the commencement of the work, to the satisfaction of procuring agency. Particularly proper compaction of all areas where hard digging is done.

20. Health, Safety and Environment

- a) The contractor shall strictly comply with PSPC Safety Regulations. The contractor shall:

- I. Provide appropriate Personal Protective Equipment (PPE) to its labor/team.
- II. Secure work areas.
- III. Maintain good housekeeping.
- IV. Obtain required work permits.
- V. Ensure safe disposal of waste material.

b) The contractor shall be solely responsible for the safety of its personnel.

21. Completion Criteria

The project shall be considered complete only after:

- a) Complete supply & installation of all BOQ items.
- b) Successful testing and commissioning.
- c) Submission of all documentation.
- d) Completion of training.
- e) Rectification of all deficiencies identified during inspection before project handover.
- f) Written acceptance by PSPC.

22. Penalty for Delay

Delay beyond the approved completion period shall attract Liquidated Damages at the rate of 2% of the delayed portion of the Purchase Order value per month or part thereof, subject to a maximum of 10% of the total Purchase Order value, in accordance with applicable PPRA rules.

23. Confidentiality

The contractor shall maintain strict confidentiality regarding PSPC facilities, layouts, security arrangements, drawings, and all project-related information. Non-disclosure agreement (NDA) would be signed with contractor before issuance of final purchase order as per PSPC procurement department SOP.

24. Performance Warranty

PSPC shall retain 5% of the Purchase Order value as Performance Security for a period of One (01) Year after successful completion of the project.

25. Subcontracting

The contractor shall not subcontract the complete or substantial portion of the project without prior written approval from PSPC.

26. Spare Parts

The contractor shall provide a recommended list of critical spare parts and consumables required for a minimum period of three (03) years of operation and maintenance of the system.

27. Termination

PSPC reserves the right to terminate the contract in accordance with the applicable procurement rules and contractual provisions in case of persistent non-performance, material breach, failure to meet approved specifications, or failure to achieve the agreed project milestones.

28. Price/Taxes

The quoted prices shall be inclusive of all applicable taxes, duties, transportation, loading/unloading, installation, testing, commissioning, labor, tools, consumables and all other costs necessary for complete execution of the project

29. OEM end-of-life / Discontinued Product

The proposed system shall be a current, actively supported product range of the OEM. Products that have been discontinued, declared obsolete, or are under end-of-sale status at the time of bidding shall not be accepted.

30. Equivalent

The Fire Alarm Control Panel, detectors, MCPs, sounders, modules and other addressable system components shall be from a single compatible OEM/product family unless otherwise approved by PSPC. Mixing of addressable devices from different manufacturers shall not be permitted unless the complete combination is officially listed/approved by the system OEM and supported by documentary evidence.

Mandatory Requirement

Sr. No.	Mandatory Requirement	Evidence / Document Required at Bid Submission	Reference
1	Mandatory site visit	Bidder shall conduct the mandatory site visit prior to bid submission.	Section B, Clause 2(a)
2	OEM authorization	Bidder shall be an authorized dealer, system integrator, or sole distributor of the OEM for core fire alarm system equipment; valid OEM authorization/certification shall be submitted with the bid.	Section B, Clause 5(a)
3	Proposed OEM / model / origin	Clearly identify proposed manufacturer/OEM, model numbers, and country of origin of all major equipment at bid submission.	Section B, Clause 5(b)
4	Overall experience	Minimum 10 years' experience in fire detection and alarm system works; documentary evidence to be submitted with the technical bid.	Section B, Clause 6(a)
5	Similar project experience	Minimum 3 similar projects completed during the last 7 years, including at least 1 project with minimum value of PKR 35 million; submit PO and completion certificate.	Section B, Clause 6(b)
6	Project execution team	Submit CVs with technical bid for at least 1 qualified Electronic/Fire Alarm/Project Engineer and at least 2 relevant diploma holders.	Section B, Clause 7
7	Engineer experience	Engineer must have minimum 5 years relevant experience and experience in at least 1 similar project of comparable nature and complexity.	Section B, Clause 7
8	Personnel certification	Relevant OEM certification and/or recognized fire alarm system certification shall be submitted/established for the project execution team.	Section B, Clause 7
9	Direct employment	Engineer and project execution team members shall be direct employees of the contractor and on the contractor's payroll.	Section B, Clause 7
10	Cable technical documents	Submit manufacturer's technical datasheet and relevant fire-resistance test certificate for the proposed fire alarm cable.	BOQ Item 9
11	Certification / compliance documents	Submit applicable product certification/listing and compliance documentation for the proposed equipment as required by the BOQ/specification.	BOQ Item 1 / Section B, Clause 10
12	Current OEM product	Proposed system shall be current and actively supported by the OEM; discontinued,	Section B, Clause 29

		obsolete, or end-of-sale products are not acceptable at bidding.	
13	Single compatible OEM/product family	Proposed panel, detectors, MCPs, sounders, modules and other addressable components shall be from a single compatible OEM/product family unless officially listed/approved by the OEM with documentary evidence.	Section B, Clause 30

C. SCHEDULE OF REQUIREMENT

Project Milestones & Payments:

S #	Milestones	Payment	Documentation Requirements
1	Mobilization Advance	15% against submission of bank/insurance guarantee (PACRA Rating AAA & AA++ only) The mobilization advance shall be adjusted proportionately from subsequent payments.	Bank/insurance guarantee documents, PACRA rating certificate
SUPPLY – Overall			
2	Supply of BOQ Items/Equipment	1.70% of received supplies in 02 installment with minimum invoice value of 10 Million or above. 2.Remaining 30% of supplies after the complete installation, testing and commissioning	Delivery challans, gate passes
SERVICE - Installation, Testing & Training			
3	1.Installation of complete system Programming, Testing, Commissioning and Training	1. 100% service amount 2. 30% Remaining supplies amount	1. Installation completion certificate 2. Software integration report 3. Testing and commissioning report 4. System acceptance certificate 5. Training completion certificate
5	Performance Security	5% of the PO value shall be retained as Performance Security for 12 months from the date of successful completion and acceptance of the project	Warranty certificate, Maintenance schedule
6	Overall project completion period shall not exceed 07 months from the date of Purchase Order.		