



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
Powai, Mumbai 400076.

Ref. PR No. 1000057680

Rfx. No. 6100003146

Item Description: Additional Requirement of Integrated Student ID card access control hardware system with accessories and service (RFID-based)

Sr. No	Item Description	Detailed Technical Specification	Technical Compliance (Yes / No)	Additional Information (if any)
1.	Dual-frequency hybrid RFID smart Cards (Qty: 1000 Nos)	Card Type: Single hybrid card carrying both UHF RFID and HF/NFC interfaces (two separate cards not acceptable) Form Factor: ISO/IEC 7810 ID-1 / CR80 — 85.6 × 54 × 0.80 mm; high-grade glossy PVC; approx. 7 g UHF Interface: NXP UCODE 9 — 865–868 MHz (India WPC band); EPC Class 1 Gen 2 / ISO/IEC 18000-6C; EPC memory up to 96 bits; factory-locked unique TID; read range up to 8 m; up to 640 kbps; fast multi-tag anti-collision HF / NFC Interface: NXP MIFARE Classic 4K — 13.56 MHz; ISO/IEC 14443 Type A, NFC-compatible; 4096 bytes user memory (40 sectors: 32 × 4-block + 8 × 16-block); 4-byte unique UID; read range up to 10 cm; up to 106 kbps Identification: Machine-readable unique identifier on both interfaces; not dependent on printed data Personalization: Supplied blank and pre-encodable; printable both sides on standard dye-sublimation / thermal ID card printers Durability: Water-resistant, rated for daily institutional use; service life 4–6 years; data retention 10 years		
2.	HF (High Frequency) and NFC Card Reader (Qty: 11 Nos)	Type: Contactless HF / NFC proximity card reader for access-control applications Operating Frequency: 13.56 MHz; ISO/IEC 14443 Type A, NFC-compatible; reads S50 / S70 IC cards and the HF chip of the hybrid card		

		3. Read Range: Up to 5 cm — short, intentional single-card read, avoiding false reads at turnstiles 4. Reading Time: ≤ 200 ms (read response well under 1 second per transaction) 5. Output Format: 34-bit Wiegand (default); RS-485 / OSDP interface options available 6. Indication: Red and green LEDs with integrated beeper for grant / deny / fault 7. Power: DC 6–14 V, max. 70 mA (powered from the access control panel) 8. Housing / Protection: ABS + PC textured enclosure; IP65 rated 9. Dimensions / Weight: 78 × 44 × 16 mm (H × W × D); 50 g 10. Environment: –20 °C to +65 °C; 10 % to 90 % RH non-condensing 11. Mounting: Surface mount on wall / barrier post, or under-mounted within the turnstile lid		
3.	Standard access-control mechanism – turnstile (Qty: 2 Nos)	1. Type: Tripod turnstile, single lane, rotating three-arm barrier 2. Lane Width / Footprint: Lane width 550 mm; chassis footprint 260 × 1110 mm 3. Construction: Chassis, cabinet, lid and door leaf in SUS304 stainless steel (t = 1.2 mm); silver-grey finish 4. Throughput: 25 passengers per minute 5. Reliability: MCBF 2 million cycles; MTTR less than 60 minutes 6. Power: 110 / 220 V AC, 50/60 Hz; DC 12 V internal 7. Safety: Voltage-free contact input for fire alarm; fail-safe automatic drop-arm on power failure; emergency mode supported 8. Security: Anti-tailgating; single-passage-per-authorization logic 9. Indication: LED indicator — steady green (pass) / steady red (closed); internal buzzer; noise level < 65 dB 10. Interface: RS-485 port × 1, fire alarm relay port × 1; controlled by C3-200 / C3-400 panel or equivalent 11. Environment: Indoor / sheltered outdoor; IPX4; –20 °C to +70 °C; 20 % to 80 % RH		

		12. Weight / Certification: 30 kg net; CE, FCC, ISO 9001		
4.	Accessible-control mechanism for wheelchair (Qty: 4 Nos)	1. Type: Single swing barrier with cantilever glass arm — no receiving post required 2. Accessible Lane Width: Up to 920 mm clear passage — suitable for wheelchair users and, where permitted, bicycles 3. Barrier: Tempered glass swing arm; acrylic lid; infrared sensor array for presence and safety detection 4. Cabinet: Cold-rolled steel sheet (SUS304 stainless steel) 5. Dimensions / Weight: 202 × 187 × 1109 mm (L × W × H); 24 kg 6. Power: AC 110 / 220 V, 50/60 Hz 7. Safety: Emergency mode supported — barrier releases to open on power failure or fire alarm signal 8. Indication: LED direction and status indication 9. Reliability: MCBF 5 million cycles 10. Environment: Indoor / sheltered outdoor; -15 °C to +60 °C; 20 % to 93 % RH non-condensing 11. Access Logic: Identical RFID authentication logic to the standard turnstiles; controlled from the same access control panel		
5.	Controller Hardware (Centralised) (Qty: 2 Nos)	1. Type: Four-door networked access control panel, Linux operating system 2. Access Point Capacity: 4 access points; configurable one-way or two-way per door 3. Reader Capacity: 8 × RS-485 readers (ZKTeco RS-485 / OSDP or substantially equivalent) and 4 × Wiegand readers (26 / 34 / 66-bit) 4. User / Card Capacity: 100,000 users; 100,000 cards (standard) 5. Transaction Capacity: 500,000 events stored on-board — far exceeding the 500-event minimum local cache requirement 6. Inputs: 4 × exit button, 4 × door status, 4 × auxiliary input 7. Outputs: 4 × Form-C relay for lock, 4 × Form-C relay for auxiliary output 8. Communication: TCP/IP × 1, RS-485 (ZKTeco RS-485 or substantially equivalent / OSDP) × 1, Wiegand input × 4, USB Type-A × 1		

		9. Functions: Embedded web server, up to 14-digit user ID, access levels and groups, holidays, anti-passback, anti-tailgating, linkage and global linkage 10. Offline Operation: Local card database allows authorization to continue during network outage; buffered events uploaded chronologically without loss or duplication on restoration 11. Time Sync: SNTP / NTP synchronization from the central server or an IIT Bombay-approved time source 12. Power / Enclosure: 9.6–14.4 V DC; SPCC steel enclosure 350 × 90 × 300 mm with 110–240 V AC input, 12 V 4 A + 1 A DC PSU and reserved backup battery space; board 215.88 × 99.14 × 19.3 mm; 0 °C to 45 °C, 20 % to 80 % RH 13. Software: ZK Bio CV Security or substantially equivalent — centralised configuration, monitoring, event logging and data exchange		
6.	Accessories-cabling, Mounting and civil work (Qty: 1 Lot)	1. Data Cabling: Cat-6 UTP cabling from each device to the nearest network / panel location, in PVC or GI conduit, with I/O boxes, patch cords and RJ-45 terminations 2. Control Cabling: Shielded multi-core cable for RS-485 / Wiegand reader runs and lock / relay wiring, sized to the run length 3. Power Distribution: Power cabling from the nearest institute distribution board to each turnstile, barrier and panel, with MCB, SMPS and switched socket points; earthing of all metallic enclosures and surge protection at panel level 4. Mounting Hardware: Base plates, chemical / mechanical anchor fasteners, reader mounting plates, back boxes, cable trays, junction boxes and gland fittings 5. Civil Work: Floor preparation and levelling at turnstile and barrier positions, core cutting, grouting, chipping and making good, and wall build-out to close side openings where required 6. Labelling & Documentation: Device and cable labelling, as-built cable schedule and device / location ID mapping sheet		

		7. Testing Consumables: All consumables, tools, tackle and lifting arrangement required for installation, testing and commissioning		
7.	Controller-less Card Reader (Qty: 2 Nos)	1. Type: Linux-based standalone (controller-less) RFID access control and identification terminal — no external panel required; intended for the hostel mess / canteen 2. Display / Keypad: 2.4-inch TFT LCD colour screen with hidden capacitive touch keypad 3. Hardware: 1 GHz dual-core CPU, 64 MB DDR2 RAM, 256 MB Flash 4. RFID Module: Multi-Tech RFID module — 125 kHz (ID) and 13.56 MHz (IC / MIFARE, ISO 14443A) including MIFARE DESFire EV1 / EV2; reads the HF chip of the same student ID card 5. Capacity: 50,000 cards (optionally 100,000); 200,000 transactions on-board (optionally 1,000,000); user ID up to 14 digits 6. Communication: TCP/IP 10/100 Mbps auto MDI/MDI-X, RS-485, OSDP v2.1.7, Wiegand in / out, RS-232 (printer); Wi-Fi optional. Access Control Push protocol; AES-256 encryption and HTTPS 7. Interfaces: Third-party electric lock, door sensor, exit button, alarm, doorbell; 1 × AUX input 8. Offline Operation: Verification and event recording continue locally during network outage; buffered events upload automatically on restoration 9. Protection: IP65 weatherproof and IK04 vandal resistant; metal mid-frame with 2.5D tempered glass panel 10. Power / Environment: IP65 weatherproof and IK04 vandal resistant; metal mid-frame with 2.5D tempered glass panel 11. Dimensions / Mounting: 143 × 85 × 19.8 mm; surface / wall mount, typically 1200 mm above finished floor level 12. Software: ZKBio CVAccess or substantially equivalent; event data exposed to the central platform through the documented push protocol / API		
8.	General Conditions-	1. Standards: UHF: EPC Class 1 Gen 2 / ISO/IEC 18000-6C. HF/NFC: ISO/IEC 14443 Type A, NFC-		

	Applicable to all the above items	compatible. Card body: ISO/IEC 7810 ID-1. Equipment: CE / FCC / ISO 9001 as applicable per model 2. System Integration: All readers, barriers and terminals report to the centralised access control software with card identifier, timestamp, device / location ID, access result and reader technology type; data exchange to the designated IIT Bombay platform through a documented interface 3. Supply Condition: All equipment new, unused and of current production, supplied with OEM power adaptors, mounting hardware and documentation 4. Comprehensive AMC (5 Years + 1 year free support) 5. Support: ZKTeco or its equivalent; OEM back-to-back support and spares availability.		
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