



SECTION 6: SPECIFICATIONS

PART 6: TECHNICAL SPECIFICATIONS – IT & SECURITY SYSTEM

1 INTRODUCTION

1.1 In summary, the requirements of security system shall consists of the following:

- a) Main Entrance & Entrance Doors Leading To General Office
 - Supply and install a card access system complete with HID proximity readers, electromagnetic locks, exit buttons, emergency door release buttons, bypass key switches and back-up battery to ensure only authorized personnel can access at the Main Entrance and entrance door leading to General Office;
 - Supply and install audio-visual visitor intercom system at the Main Entrance complete with a remote release button in the General Office.
- b) Discrete panic buttons in locations accessible to external parties (e.g. reception area) so that attending staff has means to alert other office staff in the event of a threat. The methods of alert can be visual (e.g. strobe light), audio (alarm noise), visual and audio, through SMS alert to mobile phones etc. or combinations of the mentioned as requested by Business Unit / Owner or as applicable in the local settings.
- c) CCTV
 - Supply and install CCTVs at the locations as indicated in the layout plan.
- d) Intruder Alarm System
 - Supply and install an intruder alarm system complete with alarm panel, PC, siren and strobe light.
 - It shall be integrated with electromagnetic locks and motion detectors, such that the alarm will sound when a forced entry is detected or when the panic button is activated. Alarm alert is recommended to be able to trigger to SIA General Manager / Station Manager / State Manager of the respective premises.
 - The contractor shall also connect the security alarm to the landlord's central building control panel.



2 SCOPE OF WORK

2.1 Technical Specifications Guidelines for CCTV System

2.1.1 Cameras

a) Fixed Indoor Day/Night Dome Camera

All CCD fixed internal day/night dome cameras shall be of compact, lightweight and stylish design. These cameras shall meet the following minimum specifications:

- Pickup device: 1/3 inch Super HAD CCD
- Scanning system: 2:1 interlaced, 625 lines / 50 fields / 25 frames
- Picture Elements: 752 (H) x 582 (V) pixels
- Synchronization: Internal sync
- Horizontal Resolution: Min. 580 TVL
- S/N Ratio: 52 dB minimum (AGC off)
- Minimum Illumination: 0.04lux @ F1.2
- Lens System: vari-focus 3-8mm, auto iris
- Video Output: 1.0 Vp-p PAL composite, 75 ohms
- Operating Temperature: -10°C to +50°C
- Electronic Shutter: 1/50 to 1/120,000 sec
- Power: 12 VDC, 1.8W

b) Fixed Outdoor Day/Night Camera

All CCD fixed external lowlight, high resolution cameras shall come with the specified lens and mounting brackets. These cameras housing shall be environmentally sealed to a rating of IP65 and include a sun shield and blower to meet the following minimum specifications:

- Pickup device: 1/3 inch Super HAD CCD
- Scanning system: 2:1 interlaced, 625 lines / 50 fields / 25 frames
- Picture Elements: 752 (H) x 582 (V) pixels
- Synchronization: Internal, Line Lock
- Horizontal Resolution: Min. 580 TVL
- S/N Ratio: 52 dB minimum (AGC off)
- Minimum Illumination: 0.05lux (50IRE @F1.2). 0.0002 lux (sens-up)
- Lens System: CS Mount
- Video Output: 1.0 Vp-p PAL composite, 75 ohms
- Operating Temperature: -10°C to +50°C
- Electronic Shutter: 1/50 to 1/120,000 sec
- Power: 12 VDC
- OSD Controls: Electronic shutter, focus control, AGC On/Off, Synchronization mode, white balance, motion detection

2.1.2 Closed Circuit Television (CCTV)

- a) Infra-red (night vision capabilities) CCTVs shall be placed at the locations indicated in the drawing.
- b) The CCTV system shall be completed with the following:
 - Indoor dome camera with 580 TVLines and 3.0-12 mm lens,



- 8 Channel Digital Video Recorder with 28 days of recordings (with ability for real time monitoring and playback)
- 19" LCD monitor for playback and real-time monitoring.
- To use the Equipment Rack in the Server Room

c) Indoor Dome Camera

The indoor dome camera shall meet the following minimum specifications:

- Varifocal Camera
- Super sensitive low LUX image capture (* 0.30 Lux for normal indoor office)
- Ultra clear image performance
- Sony 1/3" super HAD CCD sensor
- 580 TVLines resolution
- Backlight compensation
- Compact and light-weight
- Small top dome cover

Note: For indoor space with critical items, use Indoor IR Camera that turns on IR LEDs at 1 Lux.

d) Digital Video Recorder (DVR)

- DVR shall allow for both analog and digital products to operate as a single integrated solution, capable of storing and playback of digitized images with triplex function (record, playback and live views).
- Keyboard controller for selection of view and control of any camera that is connected to the CCTV system.
- DVR must be capable of performing the operational task as described in the CCTV System Technical Specifications.
- Capacity of the DVR shall be based in the Schedule of Equipment plus 20% of spares for future expansions. The design of the CCTV system shall be such to provide capability for future expansion at minimum cost by adding of components without making other items redundant.
- The system shall allow maximum flexibility and expandability, where unrestricted number of recorders can be installed.
- DVR shall allow control PTX functions from a computer mouse and provide drag and drop cameras to the display window.
- Workstation(s) (SIA General Manager / Station Manager / State Manager of the respective premises decide on who would be able to monitor the CCTV footage) shall be able to display single and multiple screens of up to 4 cameras on a single monitor.



- DVR shall operate with a computer (comprising of Monitor, Keyboard, Mouse) running Microsoft Windows with the following specifications:
 - Recoding Mode: Continuous, Motion Detection, Scheduled, Alarm / Event Based
 - Recording Speed: up to 25 frames per second/camera
 - Hard Disk: from 500GB to 3TB (Contractor to calculate The storage capacity of 30 days recording based on 12.5 FPS @ 4 CIF)
 - Ethernet: (10/100/1000) Base T RJ45
 - DVD Writer: DVD +/- R/W Combo Drive

e) LCD Monitor

The LCD monitor shall be of LED Type and shall meet the following minimum specifications:

- Screen size: 19 inches
- Brightness: 300 cd/m²
- Resolution: 1920 x 1080
- Response Time: 5ms
- Front panel controls for brightness, contrast, colour saturation, volume and power.

f) Uninterrupted Power Supply (UPS)

- Supply and install UPS to sustain the operation of all security system for a minimum of four (4) hours or until primary power is restored (whichever occurs first)
- In Normal operating mode, each UPS units shall condition line power protecting against spikes, sags, surges, noise and other line problems
- Supply and install external make-before-break bypass switch for each UPS. The external make-before-break bypass switch shall provide for removing the UPS from the incoming power line for service.
- Minimum Specifications Guidelines
 - Online operation: The UPS shall provide continuous, no break Power during complete loss of momentary interruption
 - Output protection: Current limiting
 - Input protection: DC fuse and battery charger fuse
 - Controls: On / Off switch



- Batteries: As required for four (4) hours back-up of the Required load
- By Pass Switch: External mechanical make-before-break Switch as specified herein

2.2 Technical Specifications Guidelines for Card Readers and Controllers

Card Readers, Card Reader Controllers (CRCs) and Intelligent Local Controller

2.2.1 General

- 2.2.1.1 All card readers, door magnetic contacts, exit push buttons are to be flush mounted to employer's approval. All conduit down drop from ceiling to the security devices are also to be concealed.
- 2.2.1.2 It is imperative that all card readers, door magnetic contacts, exit push buttons and locking devices proposed to blend with the Interior Design (ID) of the building. The devices proposed must be of elegant design and aesthetic standard.
- 2.2.1.3 The card readers, CRCs and Intelligent Local Controller shall have the following minimum performance / features:
 - a) System Parameters
 - It shall be possible to use multiple card reader technologies in the same installation. The Intelligent Local Controller shall support wiegand, proximity, smart card technologies.
 - It shall be possible for different type of card readers to have a liquid crystal display or approximately coloured LED's to indicate to the user, whether access is granted or denied and door is unlocked or locked.
 - Card readers shall meet the following minimum requirements:
 - Ruggedized design suitable for surface mounting
 - Outdoor readers shall be weatherproof IP65 rated
 - Feature beeper
 - Protection against unauthorised tampering of the card reader keyboard with programmable time lockout shall be provided. When an invalid card is been used, the system shall be able to reject it. If multiple use of such an invalid card is attempted, the card reader shall be able to immediately reject reading any cards for a period of time. When such a card lookout occurs, the card reader shall inhibit all cards from gaining access for a period of time.
 - The card reader shall cater for simple remote door release by means of an egress push button from inside the protected area. For higher security control, an exit reader shall be used instead of the push button.
 - It shall be possible to temporary inhibit/lock out the card reader from normal usage by software so that no cardholders can gain access, until this mode has been reset.



b) Card Parameters

- The PIN for each card number in the database is unique. The capacity of the card numbers in the database shall not be decreased due to the use of PIN for each card.
- It shall be possible to control the use of any type of card, both during and after office hours.
- It shall be possible to program cards for a limited number of days use only, such as for contract workers.

c) Door Parameters

- When the car reader – Intelligent Local Controller reads a valid card, the Intelligent Local Controller shall unlock the door for a period of time that is programmable from 1 to 255 sec.
- It shall be possible to de-activate the controlled door for free access either manually or automatically by software time control.
- It shall be possible to control the locking/unlocking up to four times per day based on time zone control. The card reader – CRC shall emit a beeping warning signal if the door is not closed at the end of the time where the door is supposed to be relocked.

d) Intelligent Local Controller / Card Reader Controller

- Control card validation – card swipe permissions at the reader location.
- Receive card information from the SMS.
- Download card IDs to the readers
- Pass alarm and status information to SMS.
- Pass broadcast signals to the readers.
- Process transaction files.

e) Contactless Smart Card Reader

- Supply and install card readers at the locations as indicated on the Security Device Drawings.
- It shall be possible for different type of card readers to have a liquid crystal display or appropriate coloured LED's to indicate to the user, whether access is granted or denied and door is unlocked or locked.
- For outdoor reader shall be housed in the weatherproof enclosure to comply IP65 rating.
- All card readers shall meet the following requirements:
 - Combo reader: Unique read Selection that Enable mifare (13.56 MHz)
Proximity (125 KHz) or both technologies at the same time.
 - Contactless smart card readers shall comply with ISO 15693, ISO 14443A (CSN), and ISO 14443B and shall read credentials that comply with these standards.



- A two-colour LED and an audible tone shall indicate authorized and unauthorized reader uses. Operation of LEDs and audible tones shall be consistent throughout.
- The card reader shall be capable of mounting directly to a metal surface.
- The card reader and bit pattern shall not be proprietary to a single contractor or SMS manufacturer.

2.2.2 Card Access System

The Card Access System shall be completed with the following:

- a) HID Proximity Reader
 - The HID proximity reader shall be installed for each door that needs to be controlled.
 - It shall be capable of receiving 125 kHz radio frequency data from the Employer's staff pass and converts it into Wiegand protocol for immediate transmission to the card access controller.
 - Standard Output Data Configuration: Wiegand protocol
 - Status Indicator: Independently controlled tri-color LED and independently controlled audio tone.
- b) Card Access Controller
- c) Magnetic Contacts
 - The magnetic contacts shall be resistant to any attempt to introduce an external magnetic source, or by tampering with the line via shorting or earthing.
 - All cabling works shall be recessed within the door frame and no exposed cable shall be seen. Any trailing cables are to be secured / protected within the steel flexible conduit
 - Magnetic contact proposed by the tenderers shall be suitable for installation on the type of doors specified on the following:

- Wooden Door:	Fully recessed type (3/4")
- Glass Door:	Surface Mounted
- Steel / Aluminium Door:	Heavy duty surface mounted protected with steel flex conduit.
- Roller Shutter:	Heavy duty roller shutter reed switch with steel flex conduit.
- Steel gate:	Heavy duty surface mounted protected with steel flex conduit.
 - Surface mounted magnetic contact shall comply with the requirement as follows:
 - Specially formulated 3m® adhesive tape
 - Only applicable to glass door mounting



- No exposed cable to be seen causes any possible damage
 - End of line resistors.
 - Heavy duty surface mounted magnetic contact shall comply with the requirement as follows:
 - Triple biased
 - End of line resistors.
 - Jacketed lead or armored cable
 - Mounting brackets available for gates and steel door
 - Rugged construction for long life
 - Convenient surface mounting
 - Polarity-sensitive with reference to magnet direction.
 - Recessed mounted magnetic contact shall comply with the requirement as follows:
 - Fully recessed within the door frame and top edge of the leading end of door installation without gluing.
 - Self-lock mounting
 - Rugged construction
 - End of line monitored
- d) Emergency Break glass
- The emergency break glass cabling shall be dual separate contact monitoring type. The cabling shall be in series to disable the power and unlock the electromagnetic lock in the event of emergency. The activation shall also be link back to the SMS indicated break glass alarm status.
 - The emergency break glass mounting detailed shall be based on the typical installation drawings as shown. Alignment with other services (e.g. light switches, exit button, and thermostat etc.) shall be co-ordinated with the main-contractor and changes in the mounting height shall subject to the approval of the Employer.
 - The Contractor shall submit the enclosure colour of the emergency break glass subjected to the Employer's approval. Hinged cover engraved with "Emergency Use Only" with the lettering to be in black
- e) Electromagnetic Lock (EML)
- The electromagnetic lock shall consist of a magnet mounted onto the top of door frame with an appropriate steel plate attached to the top of door leaf. The door leaf will be strongly bonded to the door frame, when the magnet is energized holding the steel plate. Holding Force shall be 600 pounds with no residual magnetism.
 - The electromagnetic lock shall be enclosed in stainless steel housing or corrosion-resistant metals, fully-sealed electronics, with tamper-proof, weather-proof features and heavy duty construction. It shall be suitable for installation on single leaf door, double leaf door, timber, glass or metal doors.
 - The electromagnetic lock shall be complete with integrated door contacts, LED indicator for lock status, built-in exit push button and bypass keyswitch.



It shall be at all times fail-safe type, protected against power surge. All wiring to the unit shall be self-contained.

- f) Exit Button
 - Exit button shall be installed on the inside of the door for regular use and engraved with "press to exit" or a key logo for easy deification.
 - Exit button shall be a single-gang push button made of polycarbonate material.
 - Exit button shall have consistent operation and durable spring to prevent the unit from "locking-up" and prevent unnecessary false door/lock openings.
- g) Emergency Door Release Button
 - The emergency door release button complete with break glass shall be installed on the inside of the door, in case the unlocking mechanism fails during emergency.
 - The emergency door release button shall have casing especially moulded with selected engineering materials with high impact strength and high resistance to heat.
 - The emergency door release button shall have metal parts made of brass and phosphor bronze to ensure lifelong resistance against corrosion.
 - The unit shall also include a high reliability micro switch.
- h) Bypass ON-OFF Keyswitch
 - Bypass ON-OFF keyswitch shall be installed on the outside, in case the door cannot unlock.
 - The override keyswitch shall be suitable for open or close circuit system and shall provide terminals for such functionality.
 - The unit shall have aluminium casing with high impact strength and high resistance to heat.
 - The unit shall provide LED indication for door override; door normal and door unlock events.
 - The unit shall also include a high reliability override keys.
- i) Back-up battery for HID Proximity Reader/EML during power outage (duration depends on the local conditions) 4-hrs back-up battery that can keep the reader/EM Lock working during power outage (duration depends on the local conditions);
- j) It shall be integrated with an Intruder Alarm System such that the alarm will sound when a forced entry is detected.
- k) It shall be integrated with addressable I/O device and interface to door lock for failsafe release of all access-controlled doors upon activation of fire alarm.