

GLOBAL EDITION

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ENTRAPASS™



**Architectural and Engineering  
Specifications**

**Access Control  
and  
Integrated Systems**

**KANTECH™**

DN1606-1004 / Version 4.03

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## ENTRAPASS GLOBAL EDITION A&E SPECIFICATIONS

### **PART I**      **GENERAL**

#### **1.1 GENERAL DESCRIPTION**

The Security Management System (SMS) shall be a modular secure access management system used to better control employee and visitor movements at various establishments. The SMS shall be designed to maximize all tools offered by the Windows platform. All commands shall be accessible using only a mouse, and keyboard use shall be limited to documenting fields requiring numeric or alphanumeric data.

The operating program shall be multi-user and multi-tasking and capable of running on a non-proprietary CPU. The application software shall be based on a standard, high level programming language. The SMS shall be modular to facilitate its installation and the development of its capabilities while avoiding major modifications in its operation and in saving all defined system and historical data.

The server shall be a database server for a Paradox database. All database management tools shall be included, such as back-up, indexing, and database cleaning tools. No third party database tools or licensing shall be required. The global gateways and/or KT-NCCs (Kantech Network Communications Controllers) control communications between the various door controllers and assume complete management of the site in case of a network communication interruption with the server. The global gateway or KT-NCC shall make all decisions. The corporate gateway shall communicate system information between the server and controllers. The workstations shall be the main user interface to perform supervisory and programming functions.

The SMS shall enable the selection of at least two user languages. The basic dictionary shall include English, French, Spanish, Italian and German. However, the system shall include a vocabulary editor to be used in designing custom language dictionaries. The operator's profile shall permit the integration of one of the two basic languages.

The SMS shall include RS-232 / RS-485 communication link between the various system components as well as TCP/IP network interface capability. Field devices such as card readers, alarm inputs, control points, etc. shall be connected to fully distributed intelligent field panels capable of operating without host computer intervention.

The SMS shall be able to design customized ID cards directly from the access management software. No specific program or software other than the access management software and no additional licensing shall be required for this function. Any workstation shall be capable of being used as a badging station. Badging shall be fully integrated with the card database.

#### **1.2 SUBMITTALS**

##### **1.2.A Shop Drawings**

Prior to assembling or installing the SMS, the Contractor shall provide complete shop drawings which include the following:

1. Architectural floor plans indicating all system device locations.

2. Full schematic wiring information for all devices. Wiring information shall include cable type, cable length, conductor routings, quantities, and point-to-point termination schedules.
3. Complete access control system one-line block diagram.
4. Statement of the system sequence of operation.
5. Riser diagrams showing interconnections.
6. Detail drawings showing installation and mounting.
7. Fabrication drawings for console arrangements and equipment layout.

All drawings shall be fully dimensioned and prepared in DWG format using of AutoCAD.

#### 1.2.B Product Data

Prior to assembling or installing the SMS, the Contractor shall provide the following:

1. Complete product data and technical specification data sheets that includes manufacturer's data for all material and equipment, including terminal devices, local processors, computer equipment, access cards, and any other equipment provided as part of the SMS.
2. A system description, including analysis and calculations used in sizing equipment required by the SMS. The description shall show how the equipment shall operate as a system to meet the performance requirements of the SMS. The following information shall be supplied as a minimum:
  - a. Central processor configuration and memory size
  - b. Description of site equipment and its configuration
  - c. Protocol description
  - d. Hard disk system size and configuration
  - e. Backup/archive system size and configuration
  - f. Start up operations
  - g. System expansion capability and method of implementation
  - h. System power requirements and UPS sizing
  - i. A description of the operating system and application software

#### 1.2.C As-Built Drawings

At the conclusion of the project, the Contractor shall provide "as built" drawings. The "as built" drawings shall be a continuation of the Contractors shop drawings as modified, augmented, and reviewed during the installation, check out and acceptance phases of the project. All drawings shall be fully dimensioned and prepared in DWG format using AutoCAD.

#### 1.2.D Manuals

At the conclusion of the project, the Contractor shall provide copies of the manuals as described herein. Each manual's contents shall be identified on the cover. The manual shall include names, addresses, and telephone numbers of each security system integrator installing equipment and systems and the nearest service representatives for each item of equipment for each system. The manuals shall have a table of contents and labeled sections. The manuals shall include all modifications made during installation, checkout, and acceptance. The manuals shall contain the following:

1. Functional Design Manual

The functional design manual shall identify the operational requirements for the system and explain the theory of operation, design philosophy, and specific functions. A description of hardware and software functions, interfaces, and requirements shall be included for all system operating modes.

2. Hardware Manual

The hardware manual shall describe all equipment furnished including:

- a. General description and specifications
- b. Installation and check out procedures
- c. Equipment layout and electrical schematics to the component level
- d. System layout drawings and schematics
- e. Alignment and calibration procedures
- f. Manufacturers repair parts list indicating sources of supply

3. Software Manual

The software manual shall describe the functions of all software and shall include all other information necessary to enable proper loading, testing, and operation. The manual shall include:

- a. Definition of terms and functions
- b. Use of system and applications software
- c. Initialization, startup, and shut down
- d. Alarm reports
- e. Reports generation
- f. Data base format and data entry requirements
- g. Directory of all disk files

4. Operators Manual

The operator's manual shall fully explain all procedures and instructions for the operation of the system including:

- a. Computers and peripherals
- b. System start up and shut down procedures
- c. Use of system, command, and applications software
- d. Recovery and restart procedures
- e. Graphic alarm presentation
- f. Use of report generator and generation of reports
- g. Data entry
- h. Operator commands
- i. Alarm messages and reprinting formats
- j. System access requirements

5. Maintenance Manual

The maintenance manual shall include descriptions of maintenance for all equipment including inspection, periodic preventive maintenance, fault diagnosis, and repair or replacement of defective components.

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### 1.3 QUALITY ASSURANCE

#### 1.3.A Manufacturer Qualifications

The manufacturers of all hardware and software components employed in the SMS shall be established vendors to the access control/security monitoring industry for no less than five (5) years and shall have successfully implemented at least 5 systems of similar size and complexity.

#### 1.3.B Contractor / Integrator Qualifications

1. The security system integrator shall have been regularly engaged in the installation and maintenance of integrated access control systems and have a proven track record with similar systems of the same size, scope, and complexity.
2. The security system integrator shall supply information attesting to the fact that their firm is an authorized Kantech Global Dealer.
3. The security system integrator shall supply information attesting to the fact that their installation and service technicians are competent factory trained and certified personnel capable of maintaining the system and providing reasonable service time.
4. The security system integrator shall provide a minimum of three (3) references whose systems are of similar complexity and have been installed and maintained by the security system integrator in the last five (5) years.
5. There shall be a local representative and factory authorized local service organization that shall carry a complete stock of parts and provide maintenance for these systems.

#### 1.3.C Testing Agencies

1. The SMS shall be tested and listed by Underwriters Laboratories (UL) for UL 294 for Access Control System Units.
2. The SMS shall be tested and listed by Underwriters Laboratories (UL) for UL 1076 for Proprietary Alarm Units.
3. The SMS hardware shall comply with the following regulatory requirements:
  - a. FCC Part 15 Class A
  - b. FCC Part 15 Class B
  - c. FCC Part 68 (TIA968)
  - d. ICES-003
  - e. CE
  - f. ECCN for AES 128 bit encryption for IP communication
  - g. Government standards NISPOM 5-313 Automated Access Control Systems, DICD Annex F 2.3 Accept/Reject Threshold Criteria, JAFAN Annex D 2.3 Accept/Reject Threshold Criteria
4. The SMS shall support Americans with Disabilities Act (ADA) compliance in door and access operation.

## 1.4 WARRANTY

The Security Management System (SMS) shall be provided with a 12 month product warranty from date of registration. Software version updates shall be available for no charge during this warranty. The software media warranty shall be 90 days.

## PART II      PRODUCTS

### 2.1 MANUFACTURERS

The Security Management System (SMS) shall be the Kantech EntraPass Global Edition.

### 2.2 DESCRIPTION

The Security Management System (SMS) shall be an integrated system that utilizes a Paradox database for the storage and manipulation of related data. The SMS shall include a server with applications software, global gateways or KT-NCCs for control of door controller communications, corporate gateways for communication between the server and controllers, operator and administrator workstations with appropriate software, hard copy printers and secure backup media. The security field devices (readers, door position switches, REX, etc.) shall communicate with the field panels via a dedicated cable network. The field panels shall communicate to the server via a Fast Ethernet 10/100, TCP/IP network, RS 232/RS 485 connection, or dial-up modem.

The SMS shall allow for growth and scalability from a smaller system to a larger, high-end, or enterprise system. The SMS shall be modular in nature, allowing system capacities to be easily expanded without requiring major changes to system operation. All defined system data as well as historical information shall be maintained. Customizable user interfaces shall allow management of system information and activity for administrators and operators. The response time between the moment when a card is presented at the reader and when the door is unlocked shall not exceed one second. The SMS shall include a badging solution with a GUI for badge design. No extra licensing shall be required for the badging solution.

The SMS shall support up to:

128	Workstations
21	Concurrent WebStations
128	Redundant servers
128	Digital video recorders
128	Global gateways, KT-NCC
40	Corporate gateways (or via Dual Gateway)
1,024	Door controllers per Global gateway
17,408	Door controllers per Corporate gateway
128	Door controllers per KT-NCC (32 per local site – 8 TCP/IP per site)
1,024	Elevator controllers per Global gateway
4096	Card readers and/or keypads and/or elevator cabs of 64 floors each per Global gateway
69,632	Card readers and/or keypads and/or elevator cabs of 64 floors each per Corporate gateway

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256	Card readers and/or keypads per KT-NCC (128 x 2) (512 if using KT-400)
100,000	Access cards per Global gateway
Unlimited	Access cards
Unlimited	Card families or site codes
56,000	Cards per KT-NCC
4,456,448	Monitored points per Corporate gateway
262,144	Alarm points monitored by Global gateway
4,456,448	Control relays per Corporate gateway
262,144	Control relays per Global Gateway
2	Simultaneous user languages

## 2.3 PERFORMANCE - MONITORING

### 2.3.A Monitoring Mode

1. The SMS shall enable every operator to customize his/her desktop configuration. It shall be possible to modify the desktop appearance and to create up to eight desktops and to associate up to ten different display screens to each. It shall be possible to modify the size and position of all screens. It shall be possible to determine if these screens shall be floating anywhere on the desktop or fixed on the desktop. If the workstation is equipped with a dual output video card and two or more monitors, it shall be possible to distribute the screen to multiple monitors. However, each screen shall be able to be viewed alone or together depending on operator needs. Once these parameters are saved, the configuration shall automatically take effect whenever the operator logs in.

For all types of screens, it shall be possible to access the general properties of the screen by simply right clicking at the center of the screen. From there it shall allow for linkage between associated screens without having to exit the current screen or section. It shall be possible to right click events on the desktop for editing which shall bring the user directly to the card, door, or component window and back.

2. Message Screen

All events that occur shall appear in real time. The text shall include at least the date, time, and a pertinent description of the event as well as its condition. The display of this screen shall be customizable and a different background and message color can be used for every type of event.

Every in-coming event shall be documented by one or more icons representing video images, photos, access card, server, gateway, controller, card reader, and relay or supervision point. It shall be possible to classify the events on the screen by sequence, date and time, type of event, or type of message. In addition, a text filter shall be available to facilitate searching. It shall be possible to access the last up to 100,000 transactions from this window without the need to request a special report.

3. Card Holder Photo Screen

When a card is presented to a card reader, the software shall automatically display the photograph of the cardholder in this window. From this screen it shall be possible to select the cardholder's name, card number, event text, and comments as well as specify a door or group of doors for which the operator would like to display a photo. The SMS shall support the display of up to 4 pictures simultaneously.

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4. Filtered Message Screen

This screen shall be a copy of the text messages screen except it shall be possible to select a specific message filter. The SMS shall include a choice of pre-configured filters and the ability to create customized filters. For every new filter it shall be possible to associate a name to it, select the type of event, select door, select workstation, select gateway, select supervision input, and select output.

5. Alarm Screen

Alarms that require an acknowledgement by an operator shall be displayed on this screen in text form only. The text shall include at least the date, time and description of the alarm, and its condition. It shall be possible to classify events on the screen by sequence, date and time, type of event, or type of message. A text filter shall be available in order to facilitate the search.

If instructions about an alarm are envisaged, they shall automatically appear in a second window on the screen. If a graphic is associated with the alarm, it shall appear automatically on the screen defined to this effect. The icon associated to the control point shall be represented and show the actual state of the point.

The operator shall be able to access a log book in order to document the alarm that occurred. Once this information is recorded in the log it shall not be erasable or modifiable.

It shall be possible to associate video call-up with an alarm. When this occurs, the main screen shall become the video screen, not the alarm screen.

6. Video Screen (Video View)

When the SMS is integrated with American Dynamics digital video recorders, it shall be possible to view the video images of cameras associated with them. The SMS shall enable the creation of an unlimited number of video views, each one associated with up to 16 different cameras or graphics. It shall be possible for an operator to edit or modify an existing view or create a new one directly from this screen. For each video view it shall be possible to select sequential, mosaic pattern, or preset viewing modes.

It shall be possible for an operator to access all the commands of a motion PTZ camera to include rotate on its axis, adjust its focus, and have a larger view of the image. Accessibility to camera images and commands shall be limited by operator security level.

No additional licensing shall be required to perform this function.

2.3.B Graphics Screen

1. There are three options for graphics that appear as background on the screen. The first is a reproduction of the building(s) floor by floor. The graphic module shall be capable of importing files in BMP, EMF, WMF, JPEG, GIF, PCX, PNG, TIF, or PCD formats.

2. The second option is using web pages, or WebViews, as background on the screen. This can be used in the following manners:
  - a. Accessing to DVR web servers
  - b. Embedding default web pages into operator desktops
  - c. Adding an IP camera onto a video view
  - d. Embedding intranet pages or directories into the operator environment
  - e. Adding PDF, Word documents, etc. to the desktop
  - f. Accessing to network cameras from the WebStation
  - g. HTML or PDF pop-up instruction on alarm
  - h. Integrating report folders in the desktop for quick access
3. The third option is to assign a live video view as background on the screen if video integration is being utilized.
4. For all three options, control points shall be represented by a descriptive icon. Control points include workstations, gateways, controllers, card readers, doors equipped with either card readers or supervision contacts, cameras, relays, and input monitoring points such as motion sensors. The icons shall be animated, meaning they shall represent the state of the point to which they are associated in real time. Every graphic shall support at least 100 control points.

Right clicking on an icon shall directly access the manual commands of each control point. A door shall be capable of but not limited to temporarily unlocking, manually unlocking or locking, and enabling or disabling a reader. A supervision point shall be capable of being enabled or disabled. A control relay shall be capable of being activated, deactivated, or temporarily activated. Cameras shall be capable of viewing images or live video.

No additional licensing shall be required to perform this function.

### 2.3.C Communication Methods

1. The SMS shall ensure the communication to remote sites over a LAN or WAN/Internet using a dedicated communication server device, Kantech IP Link or the KT-400 controller. This shall only be applicable with the use of Corporate Gateways. It shall ensure secure communications by the use of 128-bit AES Encryption. It shall reduce bandwidth consumption by managing the communication protocol of Kantech controllers at the remote site. Polling of Kantech controllers shall be done by the Kantech IP Link or KT-400 in the field and not over the network. The Kantech IP Link or KT-400 shall provide support for up to 32 door controllers. The Kantech IP Link or KT-400 shall be configured from the access software or from a web page which has the security feature of being disabled after successful use.
2. For sites that do not have network links, communication to remote sites shall be ensured by Dial-up modems. This shall only be applicable with the use of Corporate Gateways. The SMS shall support up to 32 such modems that can simultaneously communicate and transmit or receive data from remote sites. No modem shall be dedicated to specific sites; communication shall be established such that the first site calling shall have access to the first available modem, and so on.
3. Each Corporate Gateway should be able to control 32 local controller loops by using the RS-232/RS-485 protocols via serial or USB port. In addition, each Corporate Gateway should be able to control up to 512 Ethernet loops using TCP or UDP protocols, via the use of the Kantech IP Link or KT-400, of 32 controllers each.

4. Each Global Gateway should be able to support up to 32 loops using the RS-232/RS-485 protocols or via Ethernet with a Lantronix® UDS1100. Each local loop can support up to 32 controller and each Ethernet loop can support up to 8 controllers.
5. Each KT-NCC should be able to support up to 3 local loops using the RS-232/RS-485 protocols. The KT-NCC should also be able to support up to 4 Ethernet loops with a Lantronix® UDS1100. Each local loop can support up to 32 controllers and each Ethernet loop can support up to 8 controllers.
6. The SMS shall ensure the communication to remote KT-NCCs over a LAN or WAN using TCP/IP. The KT-NCC shall only communicate with the Global Edition of the SMS using a proprietary Kantech communication protocol. The SMS shall ensure secure communication to the KT-NCC by having an option to enable or disable encryption for each KT-NCC individually. The SMS shall allow the custom configuration of the TCP port for each KT-NCC. The SMS shall support up to 128 KT-NCCs.
7. In all communication methods, the door controller shall retain in their memory all necessary data for controlling doors that they supervise. In case of communication failure, the door controller shall execute all its functions normally.

## 2.4 PERFORMANCE – PROGRAMMING & CONFIGURATION

### 2.4.A User Section

1. This section shall include all functions involved in the issuance of an access or ID card as well as database search and importation tools. During the addition or modification of a card, information about the card shall be sent to the door controllers affected by these new parameters as soon as the operator accepts the addition or modification. An additional command requiring a reloading of the cards database in the door controllers shall not be acceptable.
2. The SMS shall enable the creation and definition of a user access card. There can be up to five cards per user and users can be managed by cardholder name or card number. When creating user cards, the operator shall be able to select a card format directly from a Card dialog and enter the card number as it is printed on the card.
3. The following user information shall be able to be saved in the user section:
  - a. Card number
  - b. First and last name
  - c. Card type
  - d. Additional information (10 fields)
  - e. Start date
  - f. Expiry date
  - g. Personal ID number (PIN)
  - h. State of the card
  - i. Comments

In addition, it shall be possible to associate a photograph, signature, and badge template to a card.

4. The SMS shall allow for the creation of an unlimited number of card templates to be used as ID cards. Template parameters include name, number of sides, and size. It shall be possible to directly print a template on an access card. The operator shall be able to design customized badging templates directly from the access management software. No specific badging program or software other than the latter and no additional licensing shall be required for this function. Any workstation shall be capable of creating ID cards based on operator security level. The following items shall be capable of being added to and modified on a badge template:
  - a. All information fields associated to a cardholder
  - b. Bar code
  - c. Text zone
  - d. Start date, expiry date, today's date
  - e. Saved images and logos
  - f. Borders
  - g. Rectangles (including rounded rectangles, ellipse)
  - h. Lines and arrows
  - i. Photograph (can be cropped)
  - j. A background
5. The SMS shall allow for the creation of a day pass to be issued to visitors for a single day. The SMS shall also have the ability to create temporary ID visitor cards.
6. The SMS shall offer the possibility of modifying the parameters of a group of cards simultaneously based on Card Type. The system shall enable the creation of an unlimited number of card types. The following fields shall be modifiable:
  - a. Card status (valid, invalid, lost, stolen)
  - b. Card monitored (yes, no)
  - c. Start date (schedule)
  - d. End date (schedule)
  - e. Delete after expiration (yes, no)
  - f. Wait on keypad (yes, no)
  - g. Access group (selection menu)
  - h. Template model (selection menu)
7. The operator shall be able to search for a card by last or first name, card creation date, card number, or any of the ten fields of user definable information. The system shall display the last card transactions, namely the latest sixteen denied access events, authorized events, database events, and/or time & attendance events.
8. The SMS shall enable the creation of an unlimited number of Import/Export models, give them a name, select required fields, select their layout, and determine the field delimiter. This shall allow for acceleration of the data entry process by importing databases from a spreadsheet.
9. The SMS shall allow for 250 access levels programmed per Global Gateway or KT-NCC. Every card shall be assigned an access level which shall determine where and when the access card will be valid. When the system consists of several sites or gateways, it shall be possible to use batch programming of access levels. If using a Corporate Gateway the system shall support 250 access levels per site on Corporate Gateways.
10. The SMS shall support up to a total of 13 access levels for each card user per Global Gateway or KT-NCC. Each access level can have its own expiry date.

11. The SMS shall allow for creation of tenant lists that can be imported in the (Kantech Telephone Entry System) KTES units. The lists shall be easy to fill up and allow for up to 3000 tenants in each list. The SMS shall support the creation of unlimited amounts of tenant lists.
12. The SMS shall allow importing and exporting of tenant lists. The operator shall have the ability to choose which fields to import and export.
13. The following tenant information shall be able to be saved for each tenant.
  - a. Tenant name
  - b. Tenant ID (customizable in length per tenant list)
  - c. Primary Telephone Number
  - d. Secondary Telephone number
  - e. Tenant PIN (customizable in length per tenant list)
  - f. Pin access schedule
  - g. Tenant level
  - h. Tenant language
  - i. Card number
  - j. Disable card trace
  - k. Start/End date
14. The SMS shall allow for a card number to be assigned to specific tenant. The KTES unit will be able to send the card number to other controllers of a Wiegand protocol.

#### 2.4.B Video Section

1. The SMS shall be capable of being combined with up to 128 American Dynamics Intellex digital video recorders. From any of the workstations it shall be possible to do the following:
  - a. View one or more camera images from different sources
  - b. Query the history of each recorder and view images saved on disk
  - c. View, modify, or delete programming parameters of a recorder
  - d. Control the movement of all motion cameras directly with the workstation mouse of the SMS (PTZ control)
  - e. Export camera images to hard disk and video vault (capable of exporting multiple formats, password protected to protect chain of evidence)
2. The SMS shall ensure the time management and synchronization for all digital video recorders. It shall be possible to determine the time refresh frequency on the network. The SMS shall allow for configuration of each digital video recorder. For each recorder it shall be possible to:
  - a. Assign a name
  - b. Determine the recorder type
  - c. Determine the network IP address
  - d. Manually configure the video, communication and event ports
  - e. Determine the number of cameras
  - f. Determine the query frequency
  - g. Determine the number of failed queries required before a loss of communication message is displayed on the screen
  - h. Import camera details from existing video servers

3. The SMS shall define the programming parameters for every camera connected to a digital video recorder. For each camera it shall be possible to:
  - a. Assign a name
  - b. Determine the type of camera
  - c. Assign a representative icon for identification on a graphic screen
  - d. Determine if the camera image can be visible on a video view
  - e. Determine the type of recording
  - f. Determine which events from the recorder should display an alarm message on the screen
  - g. Determine the number of pre-selections desired
  - h. Determine the number of patterns desired
  - i. Add comments to record in the video vault
4. The SMS shall allow for the creation of an unlimited number of video views. For each video view it shall be possible to connect up to 16 cameras from various sources. The video view programming parameters make it possible to:
  - a. Assign a name
  - b. Determine the view size
  - c. Determine the refresh rate of the image
  - d. Determine whether to show metrics
  - e. Determine whether to show camera controls
  - f. Determine whether to show overlays
  - g. Determine whether to auto-hide text
  - h. Determine whether to activate image zoom
  - i. Determine whether to activate video sequence
  - j. Determine delay before sequence launch
  - k. Determine camera display delay
  - l. Determine display pre-selection delay
  - m. Determine pattern display delay
  - n. Determine graphic display delay
  - o. Determine display mode
  - p. Incorporate up to 16 cameras from various sources or 16 graphics
5. The SMS shall be able to trigger, from one or more specific events, the start of a recording on a recorder with one or more cameras connected to it. The SMS shall allow for the creation of an unlimited number of video triggers. The SMS shall allow for the creation of an unlimited number of recording parameters. For each recording parameter it shall be possible to:
  - a. Define a name
  - b. Select the digital video recorder to which this recording parameter refers
  - c. Select the camera to which this recording parameter refers
  - d. Associate a pre-selection or size
  - e. Determine the start recording trigger
  - f. Determine the pre-alarm time
  - g. Determine the total recording time
  - h. Determine the stop recording trigger
6. It shall be possible for a video event on one digital video recorder to trigger an action on another digital video recorder.
7. The SMS shall allow the playback of all recordings stored on the hard drive of any of the digital video recorders. The operator shall be able to save the video into the video vault.

8. The SMS shall provide the operator access to the complete list of normal and abnormal events that required the activation of video recording. The sequence of images can be saved to a hard drive for subsequent consultation and shall be encrypted. The SMS shall allow the operator to access a complete list of alarm recordings in progress including origin of the alarm. The SMS shall be capable of displaying a list of exported videos.
9. It shall be possible to view recorded video tagged to an Access or Video event by quick linking from the Message desktop.

#### 2.4.C Definition Section

1. The SMS shall allow the creation of 100 schedules per Global Gateway and per Corporate site and an unlimited number of system schedules. Each schedule can include up to 4 intervals. A schedule can be associated with a supervision point, a relay, an access level, a door, elevator floor, an operator, or an event. The SMS shall allow time zone management.
2. The SMS shall allow the creation of 366 holidays. It shall be possible to define a name, define a date, and determine the type. The SMS shall allow the operator to view all the holidays defined in holiday type and sites by viewing them all in a yearly calendar.
3. The SMS shall allow the creation of up to 100 areas per Global gateway or KT-NCC. Areas shall be basis for using input / output synchronization (anti-passback), global anti-passback and use of time and attendance. They shall define how to control circulation within an area of controlled doors. Area features shall include supervisor level control, mustering, occupancy limit, and timed anti-passback.
4. The SMS graphics shall enable operators to view the exact location of a component installed at the site, or the state of components and peripherals represented in the graphic such as doors, contacts, motion sensors, controllers, and cameras. The SMS shall allow for the creation of an unlimited number of graphics. The components on the graphics represented by icons as well as the graphics themselves shall have the ability to be modified. The SMS shall allow for printing of the graphics with their respective components on the graphical floor plan.
5. The SMS shall allow the management of 2,048 elevator cabs of 64 floors each for each gateway. It shall be possible to associate a schedule to the call button. Outside of the schedule, a valid card for a particular floor will have to be presented to the cab reader for it to be activated. The floor selection button group associated with the card's access level will become operational for a predefined duration and all other buttons shall become inactive. The SMS shall allow the creation of groups of floors and access levels.
6. The SMS shall provide the possibility of setting up guard tours with existing components of the system. Card readers, magnetic contacts and motion sensors can be used as control stations for the guard tour. Key switches can also be located at strategic points for the guard to activate.
7. The SMS shall provide the possibility to setup unlimited amount of tasks via the user friendly task builder. The operator shall be able to create emails templates that can incorporate variable to dynamically populate the emails. Using the command GUI menu, the operator can program commands for any component in the SMS. Commands such as but not limited to lock, unlock, temporary unlock, toggle, back to

schedule for the doors, relays, inputs and enable and disable readers. The operator can also program commands for specific card count. The commands should be able to accept specific components or variables that can filled dynamically.

8. The SMS shall provide the possibility to setup unlimited batch card operations via the user friendly task builder. The mass card modifications shall take effect in real time. Each mass card modifications task shall allow for mass cards to be changed based on their card type. The mass card modification task shall be able to change:
  - a. Card State
  - b. Supervisor level
  - c. Card count value
  - d. Card Tracing
  - e. Start Date
  - f. End Date
    - i. With deletion on expiration
  - g. Waiting for keypad
  - h. Card access group
    - i. Replacing access levels
    - ii. Updating access levels
    - iii. Adding new access levels
    - iv. Updating and adding new access levels
  - i. Card Badge layout
9. The SMS shall provide the possibility to assign the tasks previously created to be triggered on specific components and specific events.
10. The SmartLink Task Commander shall process the command from the first available SmartLink application on the SMS.
  - a. The use of a specific SmartLink to run the SmartLink Task Commander shall not be accepted. The SMS shall accept many SmartLinks to be installed thus providing a redundant SmartLink for all SmartLink Task Commander tasks.
11. It shall be possible to associate a relay or group of relays to an event from any controller using a Global gateway or KT-NCC. These event parameters allow activating, de-activating or temporarily activating individual or groups of relays from any controller within a Global Gateway or KT-NCC based off any IO or other controller generated event within the gateway.

#### 2.4.D Devices Section

1. The physical components of the SMS including workstations, corporate gateways, gateway, site, controllers, Kantech Telephone Entry System (KTES), doors, relays, and monitored inputs shall be individually configured and defined. Individual sites shall also be defined. The software shall allow the use of a controller Express Setup feature in order to minimize the time needed for controller definition.

#### 2.4.E Alarm Interface

1. The SMS shall allow interface with any external alarm system thereby arming or disarming the system by presenting a valid card to an entry / exit door. It also shall be possible to associate a keypad with a reader forcing the cardholder to enter a number in the keypad after presenting a card. This integration shall only be possible with the use of a Corporate gateway. It shall be possible at a minimum to:

- a. Set a monitored input as an arming button
- b. Associate a usage schedule with an arming button
- c. Set the exit and entry delay
- d. Determine whether the system must wait for a valid access to arm
- e. Determine whether the door must relock on arming request
- f. Associate a monitored input with an alarm panel condition
- g. Lock a door unlocked by a schedule when armed

#### 2.4.F Intrusion Integration

1. The SMS shall allow interface with the DSC PowerSeries® intrusion panel thereby eliminating hardwired integration between the SMS controllers and the DSC PowerSeries® intrusion panel. The DSC PowerSeries® intrusion panel shall communicate with the Corporate gateway via rs-232 or directly to a KT-400 controller. The SMS shall allow for:
  - a. Single / multiple partition arming and disarming via reader
  - b. Single / multiple partition arming and disarming via operator commands
  - c. Receive events from intrusion panel
  - d. Receive partition names, user codes and zone names programming.
  - e. Update user codes
  - f. Assign user codes to cardholders

#### 2.4.G Virtual Alarm System

1. The SMS shall include an alarm system function to automate building supervision. As a result, no module or additional electronic equipment shall be required. Each partition shall have a reader or group of readers that will be used to arm, disarm, or delay the arming of a supervision point or group of points within the partition. Partitions can be programmed to arm via reader only, input only, or reader and input.
2. The SMS shall allow for the creation of over 100 partitions per Global gateway or KT-NCC. It shall be possible to define the following programming parameters:
  - a. A name
  - b. A delay duration
  - c. An entry and exit delay
  - d. An activation time for the alarm siren
  - e. A maximum number of delays
  - f. An access level required to arm/disarm
  - g. An arming, disarming, and delay group of readers
  - h. A reader or group of readers that will be disabled when the area is armed
  - i. A door or group of doors that will be locked when armed
  - j. Arm one or more partition from one reader
  - k. Associate a supervision point(s) to one or more partition at one time
  - l. Associate one or more alarm relays with a partition
  - m. Associate a time zone
3. The SMS shall make it possible to associate an automatic arming schedule for each partition. It shall be possible to manually arm, disarm, or delay arming a partition or group of partitions from a workstation. An audible signal shall warn the operator during an alarm.

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#### 2.4.G System Section

1. The SMS shall define the profile of a system operator based on name, password, language, privileges, login schedule, security level, workspaces, and password expiry date. The SMS shall provide the possibility to force the operators to assign a mandatory card type to the users. The operator shall be able to provide a default card.
2. The SMS shall determine access rights granted to an operator based on security levels. There shall be three predefined access levels called Installer, Administrator, and Guard. The SMS shall have the ability to create an unlimited number of security levels that can be assigned to one or more operators. It shall be possible to determine from which system components the operator shall be authorized to receive events and take action. It shall be possible to specify for each programming window if the operator can (any combination):
  - a. View the component in read only
  - b. Add new components
  - c. Modify existing components (cannot add new)
  - d. Delete components
  - e. Save as
  - f. Print components
  - g. View links
3. The SMS shall allow System Administrators to grant or deny operators access to system physical components such as gateways, sites, relays, etc. using Workspaces. This allows greater ease for larger sites to locate and assign components that pertain to specific gateways and sites. System administrators shall be able to tailor specific system applications and workstations Workspaces, therefore restricting access to information to all levels of operators. Operators shall be able to use temporary workspaces to narrow their fields of view when accomplishing specific tasks, and then easily revert back to their main workspace.
4. The SMS shall allow for the creation of unlimited instructions. These instructions shall be attributed to one or more events that will be used in documenting the event and guide the operator on duty in performing tasks. It shall be possible to edit the instructions in two different languages.
5. The SMS shall make it possible to customize system events. All events shall be pre-defined to display on all system workstations. For each event it shall be possible to:
  - a. Determine a display schedule
  - b. Determine a color
  - c. Assign a printer
  - d. Associate one or more workstations
  - e. Associate an instruction
  - f. Associate a schedule for an acknowledgement request
  - g. Determine the priority level

#### 2.4.H Report Section

1. The SMS shall include templates for various types of reports to include the following:
  - a. Card use reports
  - b. Manual operations reports
  - c. Alarm reports

- d. Historical reports
  - e. Time & Attendance reports
  - f. Detailed reports
  - g. Summary reports
  - h. Statistical reports
  - i. Muster reports
  - j. Roll Call Reports
2. The SMS shall allow for the creation of custom reports based on any event or component in the system. The SMS shall support an unlimited amount of customized reports.
  3. All reports shall be able to be displayed on screen, printed, or sent by e-mail on a daily, weekly, or monthly basis. All event reports can be automated to be generated and sent at a specific time for a specific time period.
  4. The SMS shall support at a minimum the following report formats: Paradox, Dbase IV, CSV, XLS, PDF, RTF, and TXT.
  5. The SMS shall be able to generate an access report in CSV with all the card information associated to that access event.
  6. The system shall support for the creation of custom Time and Attendance reports. Each time and attendance report shall support up to 32 rules for masking the entry and exit times of each card. Also each report shall support a "First entry and last exit" feature.
  7. The SMS shall allow the creation of custom Roll Call reports, which can without operator intervention be emailed to multiple people and/or printed on multiple printers. The Roll Call report shall be a system wide feature.
  8. The SMS shall allow the creation of custom Muster reports, which can without operator intervention be emailed to multiple people and/or printed on multiple printers. The muster report shall be ported by Global gateway or KT-NCC.

#### 2.4.I Options Section

1. The SMS shall allow operators to access basic server and display functions and allow the operator to determine default settings for the server hard drive. The operator shall also be able to determine the time to perform a server backup, programmable on monthly, weekly, or daily basis. It shall be possible to schedule and plan masse automatic KT-400 firmware updates.

#### 2.4.J System Status Section

1. The SMS shall allow operators to view the state of various access system components in text or numerical form. A specific controller's state shall also be able to be viewed in graphic form via the picture of the controller with the status of each terminal. Workstation and database status shall also be able to be displayed.

#### 2.4.K Various Tools

1. The SMS shall employ an Express Setup to configure system components such as sites and controllers, as well as peripherals associated to these components such as ports and inputs. This utility will reduce the programming time to a minimum.
2. The SMS shall employ a database utility to allow the re-indexation and verification of archived files and verify the integrity of indexes, links, and database arborescence.
3. The KT-Finder tool shall help troubleshoot the Kantech IP Link, KT-400 and KT-NCC on site or remotely. It can also be used as an alternate method of configuration for both.
4. The SMS shall include a vocabulary editor to be used in designing custom language dictionaries.

#### 2.4.L Video Vault

1. Video Vault is an optional remote networked application used to automate recovery of video data from the digital video recorders and save it on a disk for long term video storage and retrieval. The information can be stored on an independent system or within the server. The footage that shall be tagged and recoverable from the digital video recorders shall include SMS triggers, manual triggers, and saved video server footage.
2. For the archived video files it shall be possible to:
  - a. Assign a folder name to index the archived files
  - b. Create sub folders based on day of the week, day, week, month of the year, month, video server name, camera name and/or event description name.
  - c. Determine the hard drive to store the recovered videos
  - d. Determine the composition of the name of the saved file
  - e. Determine the format of the saved video
  - f. Assign a frame from the saved video to represent as a saved file
  - g. Determine the number of simultaneous downloads
  - h. Determine a size limit for recoverable videos
  - i. Assign a password to videos stored
  - j. Determine a delay between requests to the server
3. There shall be scheduled transfers for archiving thereby reducing video network traffic during peak times.

### 2.5 PERFORMANCE – WEBSTATION

#### 2.5.A WebStation

1. WebStation is an optional tool that will allow for performing certain functions from a remote location to be used with the regular SMS system via Web Browser. The WebStation provides card management to guards, secretaries, or managers without the need to deploy a full workstation. A concurrent connection option shall provide access to a pre-determined number of users.

2. The WebStation shall have the ability to be viewed in multiple languages. Each WebStation shall come in English and French. Customer Languages can be created using an easy to use tool. The WebStation shall automatically detect the Web Browser's preferred language.
3. The following functions are available using WebStation:
  - a. Card management (including 5 cards per username)
  - b. Viewing the cards last transactions
  - c. Forgot Password & Reset password
  - d. Create, modify and delete access levels
  - e. Create, modify and delete schedules
  - f. Assigning access levels
  - g. Performing door operation
  - h. Performing relay operation
  - i. Performing input operation
  - j. Performing elevator operations
  - k. Requesting historical reports via email
  - l. Using WebViews

## **2.6 INTEGRATION**

### **2.6.A SmartLink**

1. The SmartLink application offers the ability to send messages to pagers and cell phones and through the use of e-mail. SmartLink provided instant e-mail notification of alarm events and the ability to e-mail reports.
2. Integration with other systems can also be done through the SmartLink API. This tool is used for advanced integration with third party applications like visitor management software, human resources systems, time and attendance systems, video systems, HVAC, etc.

### **2.6.B Card Gateway**

1. The Card Gateway is an optional external interface that shall allow the client to make modifications to the system card database through an Oracle or MS-SQL database. The application may be installed and run on the server's CPU. It shall allow for HR software integration and enable operators to modify, add, or obtain information on cards in real time.

## **2.7 REDUNDANCY & MIRRORING**

### **2.7.A Redundant Server**

1. The SMS shall be able to support an optional redundant server whose main function shall be to monitor the primary server and ensure automatic (Hot Standby) take over if necessary. The redundant server shall have all the same characteristics and functions as the primary server.
2. The transition between these servers shall be completely transparent. When the primary server is operational once more, it shall be capable of synchronizing its database automatically with the redundant server and then resume absolute control

of the access management system. No human intervention shall be required in this operation.

3. The operator shall be able to perform any and all operations during a fail-over synchronization between the primary server and redundant server.
4. The system shall support the use of multiple simultaneous redundant servers. The need to install third party (not EntraPass) licensing shall not be acceptable.

## 2.8 OPERATION

The SMS shall perform the following tasks:

1. Allow card access management for one or more buildings.
2. Control access to various doors equipped with a card reader. Allow the ability to set card use count options to limit the number of times a card can be used.
3. Ensure more secure control with the global anti-passback control function.
4. A command from a door controller may demand an immediate reaction from another door controller located at another site. This is a Global functionality.
5. Allow automatic transfer of cards to an Unknown area by a push of a button for emergency exit purposes.
6. Allow for a global mantrap using the synchronization of up to 255 groups of multiple doors and inputs within a Global Gateway or KT-NCC.
7. Monitor all defined alarm points as well as all doors controlled by card readers based on programmed schedules.
8. Manage the guard tour system.
9. Send transactions for which printing is required to one or more printers, based on a set schedule.
10. Access the system using the main and secondary menus (to which access is limited by a password) to make additions and required changes to various data files so that they can be updated by the user without the manufacturer's assistance.
11. Enable the entry of access code data for every card or group of cards.
12. Seamlessly connect to onsite alarm systems.
13. Fully functional virtual keypad with DSC® PowerSeries alarm system. The operator shall perform all functions available on a standard keypad with the PowerSeries alarm system. The operator shall be able to use the computer keyboard or the mouse to perform actions on the virtual keypad.
14. Associate to each event a recording schedule for each destination (hard drive, monitor).
15. Automatically display all alarms on screen in text with optional graphic or picture and trigger a sound requiring an acknowledgement on the keyboard to stop the alarm.

16. Each event should print on a log printer. For security reasons, each event shall be incremented with a print number. Numbering shall start from 0 every day.
17. Generate reports and view them on the screen, output them to a printer, or send them to an email address.
18. Supervise based on programmed schedules of specific points such as door contacts, volumetric detectors, mechanical points, high and low temperature sensors, or any other equipment necessary for good building management.
19. View and/or save video images.
20. When integrated into a digital video recording system (American Dynamics), allow the management of the recordings of all the cameras via access system workstations.
21. When connected to a digital video recording system (American Dynamics), allow the orientation of all PTZ cameras directly using the workstation mouse of the access system.
22. When connected to a digital video recording system (American Dynamics), allow the recovery and storage of selected videos to an independent server.
23. Save the database manually or automatically backup following a schedule.
24. Uninterrupted backups. The operator shall be able to perform any task during a SMS backup.
25. The operator shall be able to perform any and all operations during a fail-over synchronization between the primary server and redundant server.
26. When the access control system manages parking lot entry and exit, it shall be possible to set a maximum number of vehicles authorized to simultaneously access the parking area. Once the parking lot is full, the system shall prevent access to any cardholder for as long as a parking space has not become available.
27. Allow the definition of a controller-based interlock function, that is, a cab or room delimited by two electronically controlled doors will not open simultaneously, creating a buffer between a low-security and a high-security area. The door leading to the high-security area will not open if the first door was locked until the person who is trying to access the high-security area meets all identity verification parameters. Allow for the definition of a Global Gateway or KT-NCC wide mantrap with interlocking groups (up to 255) of doors and inputs.
28. Allow for a Dual Custody option to add extra security to a door by requesting that two card holders must access the door together.
29. Save events on a hard drive according to required criteria.
30. Perform the following operations from all workstations:
  - a. Lock or unlock one door or a group of doors.
  - b. Activate or deactivate a relay or a group of relays.

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- c. Activate or deactivate the recording of one camera or a group of cameras.
    - d. Activate or deactivate a point or a group of points.
    - e. Program or modify one card or a group of cards.
    - f. Validate or invalidate one card or a group of cards.
    - g. Change time and date.
    - h. Demand the system state in text or graphic mode.
    - i. Query, create and/or modify data on: Access levels, Schedules and holidays, Access card, Instructions, Reports and log, Doors, Supervision points and relays, Operator levels, and Graphics.
    - j. Ability to use an easy to use system tree view to select the components.
    - k. View which cards are in the Roll Call sectors.
    - l. View the card's last known access in the roll call sector.
  
  31. Each Global windows gateway application shall support a global gateway and a corporate gateway. One application per global gateway and corporate gateway shall be needed. The system shall support up to 40 corporate gateways.
  
  32. Perform the following operations from the SmartLink Task Commander:
    - a. Lock, unlock toggle, return to schedule, temporary unlock, arm and disarm any door.
    - b. Disable and enable any reader.
    - c. Lock, unlock, temporary unlock return to schedule, disable enable any elevator and elevator floor.
    - d. Activate, deactivate, temporary activate, toggle and return to schedule of any relay.
    - e. Shunt, unshunt, temporary shunt, toggle, return to schedule and continuous supervision of any input.
    - f. Arm, disarm and postpone any alarm system in a global gateway or KT-NCC.
    - g. Set count usage, manually overwrite the count, disable count usage, decrement count usage, increment count usage for all the cards.
    - h. Send alarm emails.
    - i. The use of variables in the SmartLink Task Commander can be used instead of hard coded values.
    - j. Mass card modifications on without operator intervention.
    - k. Ability to use generically created commands to perform task on different components.
    - l. Each specific card shall have the ability to activate a specific component in the above mentioned states without the need to create hard coded the commands.
    - m. The SmartLink Task Commander shall process the commands on the first available SmartLink on the SMS.
      1. The use of a specific SmartLink to run a specific SmartLink Task Commander shall not be accepted.
      2. The SMS all allow for many SmartLinks to be installed without the need to purchase additional option codes.
      3. The SmartLink Task Commander shall be run from any of the available SmartLink.
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## 2.9 EQUIPMENT

### 2.9.A Server and Redundant Server Requirements

The SMS server and redundant server shall meet the following minimum requirements:

1. The server shall have an Pentium IV processor, 1.8 GHz or better
2. The server shall have a 500-watt power unit
3. The server shall have 1 GB RAM.
4. The server shall have 20 GB hard disk drive space
5. The server shall have a 48x CD-ROM drive
6. The server operating system shall be Windows 2000/XP/2003 Standard and Enterprise Server Edition/ Vista Home, Home Premium, Enterprise, Business and Ultimate/ Windows 2008 Server/Windows 7. All OS's must be 32-bit.
7. The server shall have a 10/100/1000 Base-T network adapter
8. The server shall have a high quality multilingual keyboard
9. The server shall have a two button ergonomic mouse
10. The server shall have an On-Off switch
11. The server shall have an appropriate UPS

### 2.9.B Global and Corporate Gateway Requirements

The SMS corporate gateway shall meet the following minimum requirements:

1. The global or corporate gateway shall have an Pentium IV processor, 1.8 GHz or better
2. The global or corporate gateway shall have a 500-watt power unit
3. The global or corporate gateway shall have 1 GB RAM.
4. The global or corporate gateway shall have 20 GB hard disk drive space
5. The global or corporate gateway shall have a 48x CD-ROM drive
6. The global or corporate gateway operating system shall be Windows 2000/XP/2003 Standard and Enterprise Server Edition/ Vista Home, Home Premium, Enterprise, Business and Ultimate/ Windows 2008 Server/Windows 7. All OS's must be 32-bit.
7. The global or corporate gateway shall have a 10/100/1000 Base-T network adapter
8. The global or corporate gateway shall have a high quality multilingual keyboard
9. The global or corporate gateway shall have a two button ergonomic mouse
10. The global or corporate gateway shall have an On-Off switch
11. The global or corporate gateway shall have an appropriate UPS

### 2.9.C Workstation Requirements

The SMS workstations shall meet the following minimum requirements:

1. The workstation shall have an Pentium IV processor, 1.8 GHz or better
2. The workstation shall have a 500-watt power unit
3. The workstation shall have 1 GB RAM.
4. The workstation shall have 20 GB hard disk drive space
5. The workstation shall have a 48x CD-ROM drive
6. The workstation operating system shall be Windows 2000/XP/2003 Standard and Enterprise Server Edition/ Vista Home, Home Premium, Enterprise, Business and Ultimate/ Windows 2008 Server/Windows 7. All OS's must be 32-bit.
7. The workstation shall have a 10/100/1000 Base-T network adapter
8. The workstation shall have a high quality multilingual keyboard
9. The workstation shall have a two button ergonomic mouse
10. The workstation shall have 32 MB graphic adapter card

11. The workstation shall have a 24-bit (16 million colors) color depth monitor with a screen resolution of 1024 x 768
12. The workstation shall have an On-Off switch
13. The workstation shall have an appropriate UPS

#### 2.9.D Controllers

The SMS shall support the following door controllers:

1. Kantech KT-400

The KT-400 is an Ethernet-ready four door controller with sixteen monitored points, on-board door strike power, sixteen reader outputs, four relay outputs, and auxiliary power output. It shall accept Wiegand, proximity, ABA clock and data, bar code, magnetic, integrated keypad, and smart card reader types. It shall also support FIPS 201 cards, with and without checking the expiration date. It supports RS-232, RS-485 and 128-bit AES Encrypted Ethernet 10/100Base-T communication. It supports expansion modules to provide 256 inputs and 256 outputs. It shall support 136 double end of line inputs.

2. Kantech KT-300

The KT-300 is a two door controller with eight monitored points on board expandable to sixteen, door strike power, auxiliary power output, and two auxiliary outputs. It shall accept Wiegand, proximity, bar code, magnetic, and integrated keypad reader types. It supports RS-232, RS-485, and Combus communication. It supports relay, input, and output expansion modules. The KT-300 is available in 128k and 512k memory versions.

3. Kantech KT-100

The KT-100 is a one door controller with four monitored points, door strike power, and four auxiliary outputs. It shall accept Wiegand, proximity, bar code, magnetic, and integrated keypad reader types. It supports RS-485 communication.

4. Kantech KT-200 (Legacy)

#### 2.9.E KTES (Kantech Telephone Entry System)

1. The KTES enables tenants to grant access to the building, to their visitors, via their own telephone line or cellular telephone. The KTES supports 125 tenants with the option of supporting up to 3000 tenants. The KTES also includes:
  - 4 lines x 20 characters LCD module with controllable LED backlighting
  - Programming menus available in three (3) languages (English, French and Spanish)
  - Built-in RS-485
  - 128-bit AES encrypted Ethernet
  - Internal modem
  - Three (3) relays
  - Microphone
  - Speaker
  - Backup battery
2. Optional KTES accessories are:
  - Heater kit

- Postal lock
  - Color camera
  - Goose neck mounting
  - Paper index (flush mounted)
3. The KTES shall be programmed via the keypad and LCD for stand alone mode or via the SMS.
  4. The unit shall support a Wiegand reader that will allow tenants to wipe their cards and enter the building.
  5. The KTES shall employ flashable firmware with auto update.

#### 2.9.F KT-NCC Network Communications Controller

1. The KT-NCC shall replace a Global gateway and remove a layer of PC's. It shall acquire all information from all input channels and relay the results back to all output channels through the controller loops. The KT-NCC shall communicate with the server through an Ethernet 10/100 Base-T port. It shall connect up to seven loops per gateway and shall feature four relays. The KT-NCC shall support up to 128 controllers and 256 doors.
2. The KT-NCC shall employ flashable firmware with auto update. There shall be embedded redundancy to protect critical data.

#### 2.9.G Card and Reader Support

1. The SMS shall support configuration of unlimited card formats.
2. The SMS shall support up to 2 card formats per controller (3 with DUAL ioProx driver).
3. The SMS shall support readers that provide Wiegand signaling and magnetic ABA signaling to include:
  - a. Kantech ioProx family of readers
  - b. Wiegand swipe readers
  - c. Proximity readers
  - d. Biometric readers
  - e. Smart card readers
  - f. Wireless readers
  - g. Magnetic readers

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**PART III**      **EXECUTION**

**3.1 TESTING**

1. The software shall be entered into the SMS computer systems and debugged. The Contractor shall be responsible for documenting and entering the initial database into the system. The Contractor shall provide the necessary blank forms with instructions to fill-in all the required data information that will make up the database. The database shall then be reviewed by the Contractor and entered into the system. Prior to full operation, a complete demonstration of the computer real-time functions shall be performed. A printed validation log shall be provided as proof of operation for each software application package. In addition, a point utilization report shall be furnished listing each point, the associated programs utilizing that point as an input or output and the programs which that point initiates.
2. Upon satisfactory on-line operation of the system software, the entire installation including all subsystems shall be inspected. The Contractor shall perform all tests, furnish all test equipment and consumable supplies necessary and perform any work as required to establish performance levels for the system in accordance with the specifications. Each device shall be tested as a working component of the completed system. All system controls shall be inspected for proper operation and response.
3. Tests shall demonstrate the response time and display format of each different type of input sensor and output control device. Response time shall be measured with the system functioning at full capacity. Computer operation shall be tested with the complete data file.
4. The Contractor shall maintain a complete log of all inspections and tests. Upon final completion of system tests, a copy of the log records shall be submitted as part of the as-built documentation.

**3.2 TRAINING**

The Contractor shall provide a competent trainer who has extensive experience on the installed systems and in delivering training to provide the instruction. As an alternate, the Contractor may propose the use of factory training personnel and coordinate the number of personnel to be trained.

**3.3 MAINTENANCE**

1. The Contractor shall offer a Kantech Advantage Program (KAP) to provide twelve additional months of free software updates and online training for the end user.
2. Technical support is available at no charge to all Kantech dealers whether or not they have a KAP activated for the systems they are supporting.

END OF SPECIFICATIONS