Actall Corporation

PALS 9K

System Specification

2018

NOTE:

CONTACT

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PALS® 9000
Personal Alarm Locating System
System Specifications

PERSONAL DURESS SYSTEM

Acceptable Manufacturers: The Personal Alarm Locating System (PALS®) will be wireless and will rely upon the wearing of a Personal Mobile Transmitter (PMT) at all times that protection is needed, as manufactured by Actall Corporation or approved equal.

Normal Operation: PMTs will be permanently assigned to all staff where duress or emergency situations may occur in the facility. Staff shall be able to alarm the PMT with panic button, pull cord, or person-down options. Visitors to the facility shall be issued PMTs on a temporary basis while inside the institution or facility.

• PMTs 60014-E with Actall's 60110 IR Lapel Reader will be worn in an exposed location, so the signal to and from the transmitter is not blocked by clothing. Belt holsters will be available for staff not wearing heavy clothing. Lapel Readers will be available for attaching to the outside of heavy or casual clothing as an extension device for detecting infrared signal.

• The PMT issuance point can also function as a test point. Operating procedures should require all persons receiving a PMT to test it before proceeding into the institution. After activating the PMT at the test point, the person assigned to the unit will be identified on the test CPU monitor. This routing testing will be self-service for use by persons carrying PMTs, so staff members at the issuance point are not burdened by these activities. If an incorrect identity is shown, the person doing the testing will then request the system administrator to enter the correct name into the alarm database for that particular PMT.

• Upon leaving the test point and entering the institution, the person will then receive a short "beep" (if programmed to do so) each time they pass a new IR locator unit (normally mounted in the ceiling in order to zone the facility)

• The PMTs will be battery powered with a battery life of 6 to 12 months under normal operating conditions (feature dependent). A low batter indication will also be transmitted to the Alert Monitoring Center for replacement. Upon a low battery condition, the PMT will still operate for approximately 7 days. Spare batteries can be stocked and distributed at the issuance point for easy replacement by the user or control officer.

• The Personal Alarm Locating System shall have the capability to download all system information and data via Ethernet to a main computer. This will allow selected personnel to monitor multiple facilities/areas as to alarm activity

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generated by each location on a particular day. All individual systems must be compatible with the system and software at the main monitoring CPU.

Emergency Operation: When the red button on the PMT is pressed or the pull cord is pulled, the unit will immediately transmit an alarm and its identification code. The person-down alarm on the PMT must be programmed with a number of warning beeps it will give before a transmission will be sent out. The PMT must also send its current location code, the previous location code, date/time stamp, ID of person, and the alarm type (e.g. panic button, pull cord or person-down).

If the PMT unit is pulled off the person, an emergency pull cord shall break away from the unit and send an automatic alarm notification to the Alert Monitoring Center CPU (the pull cord must be reattached to the unit before the alarm can be reset at the monitoring station).

Person-Down Operation: Under normal operation, the PMT shall remain upright. However, should the PMT be tilted by more than 60 degrees from a vertical position (it is tilted by 90 degrees when lying on its side), a warning tone must sound. After an adjustable period of time (initially set for 5 seconds), if it is not returned to a vertical position, an alarm transmission will be sent. This pre-tone shall assist in eliminating false alarms when the unit is tilted and no emergency situation has taken place.

It is required that the PMT be upright when it is not being worn to prevent false person-down alarms. A feature allowing the user to turn off the person-down function shall be incorporated into the PMT.

Normal Administrative Operations: The PMT issuance point will be the location where spare transmitters and batteries are stocked. It may also be necessary to issue PMTs to visitors from this location (staff will need to have the ability to add/update personal information on any person utilizing the PMT).

In addition, all persons assigned to a PMT should routinely test the unit at the issuance point. If their identity has been changed or the unit swapped, a name change will be required within the alarm database.

Issuing PMTs will normally be performed on a dedicated, administrative workstation at a predetermined point and not on the main alarm computer in the Control Center. This will prevent alarm reception from being interrupted or delayed by system administration activities.

Periodic Reporting: The system will be designed to provide comprehensive and periodic reports. Monthly summary reports can provide alarm totals for the month, a distribution by alarm category (incident type or nuisance), and any other relevant data. Other periodic reports might include an alarm detail report and a PMT assignment report.

Control Center: The Control Center will receive all alarms. Additional Remote Alert

Monitoring Centers may provide alarm notification locally in multiple building applications or campus type environment. The system shall have the capability to transmit all alarms back to the main control CPU via a wireless network of repeaters and receivers. No hard wiring shall be required to achieve this wireless network capability.

Normal Monitoring Operations: With no PMTs in alarm, a site plan will be displayed on the CPU Monitor. The system will continuously supervise all transmitters, repeaters and RF locators. If any of these components fail or if communications are interrupted, these faults can be logged on the system printer and will be written to the alarm database.

Emergency Operation: When a PMT is activated, a tone will sound on the CPU speakers. An alarm will be displayed in text form on the monitor machine and the system will "zoom" to the appropriate color-graphic map for the alarm location. Outdoor zones will automatically display on a site plan of the entire institution, while indoor zones will automatically display on a floor plan of their respective building. A flashing icon will be displayed at the alarm location and the identity of the person assigned to the PMT will be displayed. In addition, the type of alarm (panic button, pull cord or person-down) will be identified. This information, and the alarm date and time, can be printed on the alarm printer and recorded onto a disk in the alarm database.

Integration Options: In the event of an alarm, the alert monitoring software has the capability for input/output dry contacts or integrated video and audio paths to that specific location. This option gives you the ability to watch and communicate with a person in an alarm condition as they move through the building.
- The control officer shall click the "acknowledge" icon on the monitor to silence the tone if programmed to do so. A solid icon will now be The control officer may reset and clear the alarm even as soon as it is categorized. After resetting the alarm, the alert monitoring screen shall automatically return to its previous mode and condition.

Submittals: As per Engineer's specifications and/or requirements.

Quality Assurance: As per Engineer's specifications and/or requirements.

- Installer: Qualified with at least five (5) successful installations on projects with personal alarm system work similar to that required for this project. Contractor must be a fully authorized dealer of Actall Corporation products and trained by Actall Corporation. Proof of authorization shall accompany all documents. Contractor must show proof of trained technical personnel as per Manufacturer's requirements.
- Contractor: Shall perform a site test to determine radio frequency (RF) coverage from PMTs to receivers. Site test will determine proper system configuration and repeater networks to cover areas that are specified on the plans. A report shall be provided to the owner on the tests performed to ensure proper RF coverage.

Project Conditions: As per Engineer's specifications and/or requirements.

Sequencing and Scheduling: As per Engineer's specifications and/or requirements.

Extra Materials: The following shall be a recommended spare parts list to be delivered upon installation of the system:

One (1) of each serial receiver, repeater, and system module.
One (1) solar panel and battery pack assembly (if required).
One (1) power supply of each type.
5% of PMTs and locators of each type.

Manufacturers: Subject to compliance with requirements, provide equipment and components including, but not limited to, the following items manufactured by Actall Corporation. System supplied shall be the Personal Alarm Locating System PALS® 9000. Systems specified above shall have no substitutions unless otherwise directed by the engineer or owner.

1.   Personal Alarm Locating System PALS® 9000
2.   60011-E Personal Mobile Transmitter (PMT)
3.   60110 IR Lapel Reader
4.   60401 Master IRT-M Locator
5.   60402 Slave IRT-S Locator
6.   60405 Wireless RF Locator
7.   60201-E Serial Receiver
8.   60220-E Wireless Repeater
9.   60610 SIO32 Alarm Module
10.   70011 Alarm Printer, Laser Jet
11.   91901 Page Alert 2 Watt Transmitter
12.   90149 Motorola Adviser Gold Pager
13.   80113 3 V lithium battery, PMT, one per unit
14.   60115 Nylon Holster
15.   90201 Uninterruptable Power Supply
16.   60701 IRT Locator Test Unit
17.   60703 IRT Locator Test Unit
18.   60850 Solar Panel with Battery Pack in Weather Resistant Enclosure w/Mount
19.   60650 Bar code Reader
20.   91919 Dipole Antenna
21.   60612 Alert Communicator Serial Protocol Interface Module
22.   60613 Alert Communicator Modem 56 Kbps
23.   70007 Alert Remote Diagnostics Communications Software Program
24.   60410 Master IRT Locator 45°
25.   60411 Slave IRT Locator 45°

General: Provide an integrated Personal Alarm Locating System (PALS®) of type, size, capacity, and characteristics as indicated consisting of PMTs, infrared (IR) locators, UHF serial receivers, wireless repeaters, wireless RF locators, system input/output modules,

supplies, one (1) hour battery back-up power supplies, terminal cabinets, enclosures, brackets, wall plates, outlets, special purpose back boxes, connectors, mounting hardware, identification, raceways, wiring, cabling, boxes and fittings, supporting devices, grounding, and other components as required for a complete installation compatible with wireless alarm equipment as specified. Provide PALS® 9000 components, designs, construction, programs, installations, tests, and documents in accordance with published product information, unless otherwise indicated.

All systems, products and equipment shall be rated for 24-hour per day continuous operation. Equipment shall be rated for operation at 110 V, 60 Hz AC power, unless otherwise noted. Provide tamper resistant, stainless steel faceplates for all IR locator devices with tamper-proof screws.

Program system and assign device/zone numbers as per manufacturer's program perimeters and owner's directives.

Systems and Component Features: The Personal Alarm Locating System shall be capable of receiving transmissions by way of UHG 900 MHz, spread spectrum radio signals from appropriate PMTs. In addition to identifying the PMT by way of its radio signal, the system shall be capable of locating that PMT within a specific zone or areas within the facility. The PMT shall store the ID code data in memory until such time that an alarm is activated. It shall then transmit stored data upon alarm activation, via coded radio signals to a central computer. The system shall have expansion capabilities of up to 65,535 PMTs and 65,535 ID locators without additional hardware or software.

The Personal Alarm Locating System shall utilize local power to install IR locators into specific zones and wireless repeaters to extend RF coverage. All transmissions of alarms shall be activated and transmitted through RF signals to accommodate large campus or multiple building environments. No additional wiring, trenching, or conduit runs shall be acceptable to achieve alarm status between multiple structures.

The Personal Alarm Locating System shall have several ways of displaying incoming alarms. Central computer and alarm software shall control all alarms and configurations of how they are displayed.

The system shall have the capability through software upgrades to accommodate real time Guard Tour capabilities. This shall be accomplished without any additional hardware, wiring or installation costs.

The system shall have the capability to transmit alarm data information directly to alphanumeric paging systems for localized notification of alarms. Actall's "Page Alert" module shall be interfaced via RS232 from a central computer. The "Page Alert" module within the alert monitoring software program shall also provide data protocol. The system will provide data that includes transmitter ID, user name, last two locations received, type of alarm, and date/time stamp. It will also provide system fault notification directly to the pagers upon any problems relating to the system supervision

of equipment. Appropriate power for the paging transmitters, antennas, or amplifiers to cover designated areas and buildings will be supplied.

System modules and PMTs shall be field programmable through the use of a programming module. No components of the system shall require disassembly in order to change features or software programming parameters. All components of the system are controlled and programmed by the alarm software and central CPU Package. Manufacturer can provide off-site programming capabilities via modem interface and diagnostics program with central CPU package and software.

60011-E Personal Mobile Transmitter (PMT): The PMT shall be capable of simultaneous UHF radio transmissions. PMTs shall be small, compact and lightweight units constructed of durable, high impact Lexan® plastic housings. 900 MHz spread spectrum frequencies shall be used for excellent penetration within the facility. Provide _____ PMTs and ____ extra batteries. Provide ____ nylon holsters for PMT.

PMT shall use one (1) standard 3 V lithium battery. Battery life shall be approximately 8,000 hours per unit or 12 months based on an 8 hour per day usage (dependent on features used). Systems requiring special order batteries of NiCad rechargeable batteries to achieve the above mentioned life will not be acceptable. PMT shall indicate low battery condition to the Crisis Controller® software when batteries are to be replaced. PMT must utilize Actall's 60110 IR Lapel Reader for increased reception of the IR light from the locators. The Lapel Reader shall plug into the PMTs and can be used when personnel wear heavy clothing, jackets, and/or overcoats. The Lapel Reader will allow the user to wear the PMT under heavy clothing and still have the capability to read IR locator signals for alarm location. This Lapel Reader will also be used with the Guard Tour feature that is an option to the software program. The Lapel Reader shall be weather resistant and provide a clip to attach to any desired location on the person. IR receivers in the PMT and the Lapel Reader will operate simultaneously for increased reception of IR light.

PMT shall provide full supervision of the unit to the software program if a malfunction occurs. The system shall have the capability of programming the supervision time from 30 seconds to 18 hours, programmable in second intervals within the range for transmitters and wireless repeaters. If a malfunction occurs, an alarm will be transmitted with the information to the alarm software, indicating the alarm ID of the unit, and that a problem has occurred. Systems not utilizing fully supervised PMTs will not be acceptable.

Actuation of Alarms: The PMT shall provide three (3) ways to start an alarm transmission sequence.
- A panic button is pushed momentarily. A sequence of digital alarm signals shall be sent immediately to alarm computer.
- The PMT unit is tilted more than 60 degrees from vertical indicating a person-down alarm, in which a preprogrammed warning tone shall sound for a minimum of one (1) second to an unlimited maximum number of seconds. This will allow

the wearer to prevent a possible false alarm by righting the unit or disabling the person-down feature with the 3-position slide switch on the PMT. If the unit remains tilted, an alarm signal is sent automatically to the alarm computer indicating that a "person-down" alarm has been initiated. The PMT will set off a local audible alarm indicating the location of the person. The alarm will continue until the PMT has been physically acknowledged at the alarm location.

- PMT shall also have the capability of a "no-new-location" alarm that will be sent if the location code has not been changed for a preset period of time. This function will be part of the Guard Tour feature of the alarm software package.
- PMT shall transmit various types of data upon an alarm transmission. Transmitted data includes identity of the PMT, person ID, type of alarm, and the two last received location codes. After a person-down alarm is transmitted, an audible signal my be programmed to facilitate the location of the PMT.
- PMTs shall have a programmable feature that allows the person wearing the unit to hear a "beep tone" as they pass through an IR locator unit confirming that the PMT has received the code. This function can be enabled or disabled through programming of the unit.
- PMTs shall incorporate the recording of a special code from IR locators that enables an alarm transmission to indicate the last position of a user on the alarm computer. This feature will allow automatic activation of outputs to control CCTV, card access system, intercom, or other security devices without human intervention when applicable.

Address Capacity: The PMT shall be given an address between 1 and 65,532 inclusive. It shall also be given a proprietary house code or "System ID", which will facilitate reusing the same radio frequency with overlapping coverage areas without losing any address capacity or interfering with other PMTs of multiple systems.

60402 Master IRT-M Locator & 60402 Slave IRT-S Locator: Infrared transmitters shall be powered by 12 VDC. Each Master Locator shall draw no more than 155 mA. These infrared transmitters can be set to a maximum of 65,535 different ID codes via 60703 IR Locator Test Unit. Each code will be associated with a zone or distinct area that will relate to the software program in a graphical display at the time of an alarm transmission. No data or home run wiring is required for these units to function. Each unit can be powered separately or in series. Locators will emit an ID code that the PMT will store until an alarm function is initiated. Systems requiring data wiring runs back to a central control point to identify location of alarm will not be acceptable. IRT Locators shall be programmable for "exit" locators when using RF Locator devices to indicate when a person has left a building and is in an outdoor zone.

It shall be possible for Master Locators to be tied with Slave Locators for large area applications that require single zone identification. System shall have the capability to tie an unlimited number of Slave Locators to Master Locators to create a single zone. Only three-conductor wiring between these units is required. A maximum wiring run of 400 feet between the Master Locator and Slave Locators shall be required. Master and Slave Locator units will be available in either flush or surface mount configuration.

Tamper resistant faceplates, housings and screws shall be required where noted on the drawings. Units shall be configured in deep, 2-gang electrical box housings. Depth of electrical boxes shall be capable of housing a transformer to power a Locator when required. Units shall provide IR compatible, bubble lens configurations to increase the IR light dispersion to the PMT. IR light shall be emitted in a 360° dispersion pattern.

60405 Wireless RF Locator: System shall have the capability to incorporate RF Locator devices that will zone PMTs in an outdoor area. The RF Locators will function on adjustable RF sensitivity settings. IRT Locators programmed as "exit" devices shall activate the PMT to start looking for RF Locator signals in outdoor zones. When a PMT is within range of the RF Locator device and an alarm is initiated, the RF Locator device will attach a unique ID code to the alarm information that is being received at the main monitoring station. This unique ID code will then be processed by the alarm software initiating an alarm sequence and enunciate a graphical map display of the alarm zone on the monitor. RF Locators shall be programmed by the Alarm Monitoring Software Program and will be fully supervised. Units shall only require 110 V/14 VAC power. A 12 VCD battery backup shall be included for any type of power loss.

60201-E Serial Receiver: The Personal Alarm Locating System shall use 900 MHz serial receiver modules on the 902-928 MHz band utilizing spread spectrum technology. The Serial Receiver shall be small and compact for easy installation with diversity antennas for enhanced reception in any receiver orientation. It shall be connected to the CPU within the facility to receive signals from all PMTs. Cabling between the Serial Receiver and CPU shall be standard RS232 wiring. The wire distance from the Serial Receiver to the CPU shall not exceed 150 feet. Distance can be extended up to 5 miles with line driver interfaces.

It shall be possible to use up to a maximum of 16 Serial Receivers in an application. Serial Receivers can be wired together in series for large facilities if RF traffic becomes a problem. All Serial Receivers must be able to communicate and be supervised by the alarm software and shall be capable of receiving alarm from fixed position transmitters and PMTs.

60220-E Wireless Repeater: System shall utilize Wireless Repeaters to increase the RF coverage in the facility, which shall be compatible with system receivers, CPU, and software. Wireless Repeaters shall be programmed by the alert monitoring software program and shall be fully supervised for faults. They shall only require 110 V/14 VAC local power for operation. Wireless Repeaters shall be installed in areas where RF coverage from PMTs to Serial Receivers is not sufficient for alarm signals to be received. Wireless Repeaters shall not require any data or long wire runs to re-transmit alarm data to alarm receiver. Battery backup shall be included with the repeater in case of power failures. Wireless Repeaters shall provide the capability of solar packs where power is not available and shall be housed in a weather resistant enclosure that will provide space for 12 VDC battery backup. Multiple quantities of repeaters can be used to increase or enhance coverage of the PALS® 9000. Wireless Repeaters that utilize hard wiring or data runs will not be acceptable.

Wireless Repeaters shall be fully supervised by the alarm software. Any malfunction including low battery shall directly report to the software indicating a problem. Wireless Repeaters shall employ proprietary radio protocols and Signal Synchronization Technology to allow the repeater to act intelligently, amplifying transmissions from any PMT in the system back to the serial receiver and CPU software.

60610 SIO32 Alarm Module: The Alarm Module shall be used to reduce the wiring requirements for controlling a multitude of remote functions, typically in the form of cameras, doors, lights, buzzers, alarms, intercoms, and access control systems. The Alarm Module shall have a minimum of 32 monitored, addressable inputs or outputs (I/O). The inputs or outputs shall be configured in blocks of 8 and can be configured for either function. The Alarm Module shall be controlled and programmable from the alarm software program.

Alarm Modules shall be controlled through an RS232 connection to the computer. Up to 8 I/O boards, 256 inputs or outputs can be connected in series to a single Serial Port. If additional boards are required, additional serial ports can be utilized to expand modules up to 64 and a maximum of 2,048 individual inputs or outputs. Alarm Modules shall be fully supervised by the alarm software in case of a malfunction. All alarms shall report to the central computer and graphical alarm software. Alarm Modules shall be capable of remote location communications to the central Alert Monitoring Center via line drivers or standard RS232 wireless data modems.

PALS® Alert Monitoring Center: The Alert Monitoring Center shall control the entire Personal Alarm Locating System and shall include the Crisis Controller® software package, computer, receivers, and alert modules. All alarms and system faults will be processed by the Alert Monitoring Center and presented on the monitor and/or automatically transmitted out via the alphanumeric paging system interface for immediate responses.

The central computer shall be IBM® compatible, Pentium® 4, 2.0 GHz (minimum), 256 MB RAM, 40.0 GB hard drive, 48x CD ROM, (3) PCI slots, integrated Video, Sound and PS2 bus mouse, and keyboard. Operating system shall be Windows® XP Professional. An Actall "Alert Communicator" board (for utilizing up to 8 additional COM ports) may be installed and programmed into the system for use with the Serial Receiver, PMT pager interface and I/O Board Control. One (1) parallel port for printer interface shall be equipped. A 101 key enhanced keyboard shall be included. A minimum 56K modem may be installed into the system for off-site remote diagnostics, programming and system upgrades to the system. Monitor shall be upgradeable to a larger touch screen without further modifications to the software program.

System shall be equipped with an alarm printer that will print hard copies of all alarms, acknowledgments, system faults, dates and times of alarms, and shall be compatible with system software. It shall be possible through the alarm software to generate special reports relating to a particular alarm date, which shall include all data and mapping relating to that particular incident. Reports can be viewed through the report menu on the software or printed on the alarm printer.

Provide uninterruptable power supply (UPS) or battery backup on computer system and all modules within the Personal Alarm Locating System for a minimum of 1 hour in the case of power failure.

System and software shall provide the capability of utilizing up to 8 serial ports for the control of RS232 Serial Devices such as Serial Receivers, Alarm Modules, and paging transmitters.

91901 Page Alert System: An RF Paging System shall be provided to alert administrative staff and response teams to all alarms generated by the Personal Alarm Locating System. The paging system shall indicate, on individual mobile alphanumeric pagers, information regarding the alarm. This information shall include alarm ID code, the person's name, present and previous locations, and type of alarm (such as panic button, pull cord and/or person-down).

Paging system shall include software protocol interface modules that are compatible with the Crisis Controller® software. Paging system shall provide no less than 2 watts of output power for site coverage. Frequency shall be in the 450-470 MHz FCC band allocated as a "Shared Use Frequency Band" to provide immediate installation of equipment without the need of FCC licensing. Paging system shall provide the capability for 100 alphanumeric pagers.

90419 Pagers: System shall provide RF Mobile alarm receivers (Pagers) to notify alarm response personnel in the event of an alarm. Receivers shall be small, compact units that have the capability to be placed in a belt clip type holder. Unit shall provide a minimum of a 4 line, 120 character display that can be scrolled to view alarm information, date/time, 8 selectable audible alerts, silent vibration mode, built in audible alarm clock, and programmable on/off feature. Units shall operate on a standard single AA battery.

60701 Alert Programmer for Alarm Transmitters (PMTs): System shall provide a programming module that is used to program options and features into the PMT. It shall be connected to the Alert Monitoring Center via RS232 serial connections. The programmer shall directly plug into the PMT via a stereo jack connection and into the Alert Monitoring Center with a 25-pin connector. The programmer and alarm software shall be capable of programming all features and functions of the PMT without disassembling the unit. Transmitter devices that required disassembly for programming purposes shall not be acceptable.

60703 IRT Locator test Unit: System shall provide an IRT Locator Test Unit to check all IR Locators in the facility. The unit shall provide an IR receiver with a digital display that will read the data code that is programmed into the IR Locator device. This Test Unit will act as a maintenance tool to check all locators on a periodic basis for proper ID coding and functionality. Device shall be compatible with the IR Locator devices to read the proper code that is programmed into them.

60850 Solar Panel for Remote Power: System shall provide a Solar Panel module for the operation of RF Locator devices and Wireless RF Repeaters where power is not available. The Solar Power module is optimal for locations where there is no power. This will prevent costly power runs to these locations. Solar panel shall provide battery power sufficient to power units continuously. Solar Panels shall be housed in weather resistant housing and shall have provisions for different mounting hardware for poles, walls and fences.

60650 Bar code Reader Interface Log In/Out: System shall provide the capability through the Alert Monitoring Center for a Bar code Reader. This bar code reader feature will provide fast and efficient updates to the Alert Monitoring Center when PMTs are given to different individuals or upon shift changes. A bar code on the PMT will indicate the ID code of the unit and a bar code on a name tag will indicate person's name and other pertinent information that is needed to update the software. This will facilitate quicker issuing of units to staff and personnel so manual input is not needed.

91919 UHF High Gain Antenna for RF Paging System: Provide a high gain antenna to provide site wide coverage for the RF Alarm Notification Paging System. Antenna shall be a fixed position, UHF coaxial dipole, broad band that will function on the 420-470 MHz frequency bands. Antenna shall provide the capability for a maximum of 150 watts of output power. Provide RG8 Coax for connection to the paging system transmitter.

60612 Alert Communicator Serial Protocol Interface Module: Provide a serial protocol interface module that incorporates 4 serial ports for communication to each serial device in the Alert Monitoring Center. The system shall be capable of utilizing 4 modules per system for a total of 8 serial outputs for ancillary equipment. Modules shall be supplied with 2, 4 or 8 serial ports and be inserted into the PCI Slot of the main CPU computer. Modules shall be compatible with the Alert Monitoring Center with no additional software modifications.

70007 Alert Remote Diagnostics Communications Software Program: Provide a remote diagnostics and maintenance program that will directly interface with the Alert Monitoring Center for remote communications to factory or contractor for software modifications, updates, data storage and backups. A 56K BPS data modem for the CPU for communications setup between on-site Alert Monitoring Center and off-site diagnostics CPU. Facility shall provide a direct telco line for connection to the modem.

Supervision: The CPU and alarm software shall continually check all the units connected to it, as well as supervise all PMTs and repeaters within the system reporting to the central computer. If a fault occurs, the CPU and alarm software will indicate an alarm function on the presentation screen. It shall be possible, via system software, to visually read out which module or wiring in the system is at fault, also indicating date and time of that fault. Systems without full supervision and report of faults via software will not be accepted.

Wireless Networking: System shall provide the capability to alarm multiple computer

points simultaneously or independently upon alarm activation from PMTs via a wireless network link to include Serial Receivers, Wireless RF Repeaters, and CPUs. System shall provide this capability through software programming to allow individual buildings to receive only alarms associated with that building at their respective CPU points so as not to disturb or disrupt other buildings during an alarm situation. System shall also provide the capability to transmit all alarms to a main control center(s) for full site wide alarm status via wireless transmissions. No hard wire or wired networking shall be required to accomplish the above tasks.

Alarm Monitoring Software (AMS) Description
General Operation:

- The alert monitoring software package must be compatible with all equipment or components relating tot his specification. It shall be written for ease of operation, both by the user and installation by the contractor. Three programming levels, administrative, operator and supervisor modes, with password protection, shall be included. The software shall be compatible with Windows® XP Professional for ease of use and for multitasking with other programs. System software shall provide network capabilities between Alert Monitoring Centers.
- When an alarm is received, the date and time of the alarm, who and where the alarm came from is displayed in plain text. The display also includes the person's previous location to assist in determining the direction in which the person was moving. The type of alarm is also displayed, e.g. panic button, pull cord or person-down. The alarms will automatically be displayed in graphical form on the screen. Graphical representation of each area shall be displayed and zoomed into a specific, more detailed view of the area.
- Alarms shall be acknowledged and reset from the PC keyboard, mouse or touch screen modes. Historical alarm data can be stored on the CPU for retrieval at a alter date or can be printed for hard copy storage. It shall be possible to print lists of all associated system equipment such as IR Locators, PMT, and Serial Receivers to the alarm printer.
- Graphical drawings of the installation shall be stored in the central alarm computer. These drawings shall be easily edited or new drawings produced with a compatible editing program that reads .BMP and/or .JPG formats. System shall have the capability of using any size picture on the screen and not limited to preset formats. Zoom functions shall be capable of showing designated alarm areas up close on the monitor. Unlimited multiple layer drawings shall be capable of alarm presentation (only limited to hard disk size). Software shall be capable of showing different alarm points. Receiver, repeater locations, IR Locators, and PMT locations are under the supervisor mode for easy reference. Locations and presentation of these alarm points on existing drawings shall be easily added, deleted, or moved by touch screen, keyboard or mouse without any editing program. Icons indicating items such as transmitters, receivers, IR locators and repeaters shall be programmable into the graphics screen. It shall be possible to indicate and verify all equipment locations on the maps for

servicing and maintenance.

- It shall be possible from the alarm computer via software programming to change certain parameters of the PMTs and modules at any time. This will allow the operator to change names of personnel on different shifts or control output devices such as cameras, lights and/or alarms. Software shall also be compatible and programmed to accept a bar code reader device that will automatically program system PMTs with ID code badges from staff or visiting personnel.
- System software shall provide real time Guard Tour capabilities. This shall be accomplished without the need of additional hardware to the system and shall utilize standard PMTs, locators, repeaters and receivers.

AMS Pointing Device Modes: Provide a minimum of two pointing device modes including both touch screen and mouse/keyboard modes. Configure alarm monitoring station for touch screen mode and administrative station for mouse/keyboard mode (administrative station will not have a touch screen overlay).

Touch Screen Mode:

- Provide a touch screen mode for system alarm monitoring views relating to features and functions described in AMS description. Use touch screen controller as the primary pointing device, but permit simultaneous use of a mouse, trackball, or other secondary pointing device.
- Size touch screen views to accommodate graphical mapping formats. Also include window title bars, menu bars, or task bars relating to the AMS only (refer to sample screen graphic accompanying these specifications for an illustration). Provide a security program within AMS to eliminate the capabilities of accessing non-related Windows® screens, icons, games, exiting capabilities, or other software program within the operator or administrative levels.
- Design control objects (buttons, icons, lists and other controls) and "activation zones" (the regions surrounding control objects that respond to touch) for a minimum size of 0.5 inches square. Design for minimal data entry and facilitate required data through use of control objects, selection lists or pull down menus.

Mouse/Keyboard Mode:

- Design all views other than alarm monitoring for mouse/keyboard mode.
- Software program should be consistent with the standard Windows® user interface taking full advantage of its multiple windows, control objects, toolbars, menus and other features. AMS shall restrict users in the operator and administrator modes to only the appropriate screen and shall not have access to the standard Windows® programs.
- Facilitate all data entry by keyboard.

AMS User Levels and Login/Logout: Provide a minimum of three (3) user levels based on user name and password.

- **Administrative Level:** Shall be able to log PMTs in/out of the system to update AMS program. This level will have access to associating personnel Ids and PMT numbers for PMT activation or deactivation. Do not permit access to functions relating to operating system, configuration menus, or other applications outside the AMS. Upon check in of PMT and check in screen, each unit logging into the system for operational assurance can perform a test function.
- **Operator Level:** Upon log in of control center officer, access to alarm monitoring screen for full monitoring privileges via touch screen shall be permitted. Do not permit access to functions relating to operating system, configuration menus or other applications outside the AMS. If programmed by a Supervisor, allow tab functions for viewing Tracking, System status, Pager status and Day/Night operation. Allow access to print item or list tabs. Alarm status window shall have an acknowledgment and reset button for the operator to confirm all alarms.
- **Supervisor Level:** Upon log in of Supervisor, permit Supervisor access to all views and functions within the AMS.

AMS Main Menu:

- **File:** Standard Windows® menu with 'Print Setup'.
- **Edit:** Standard Windows® menu with "Undo", "Cut", "Copy", "Paste" and other functions. This shall only be accessible in the Supervisor level. Dim these functions in the Administrative and Operator levels.
- **Monitoring:** Shall provide a "Start Monitoring" and "Stop Monitoring" mode. This shall allow a Supervisor to access configuration and programming menus relating to the AMS program.
- **Configuration:** Shall provide a drop down list of programming applications relating to the AMS (access by Supervisors only):
  1. Accounts: Provide an account screen that will program information regarding the facility(s) for which the system is being programmed. Provide menu for including name, address and phone. Provide programming tabs within this section for PMT template setup, contact input and output control, paging and optional notes section for information relating to this account. Provide the capability for 500 different programmable accounts for AMS program.
  2. Pagers: Provide programming for pager systems and mobile annunciation pagers. Provide software interface capability with Actall's 91901 Page Alert 2 Watt Transmitter. Provide setup features that allow on site or off site paging capabilities. Provide alphanumeric display capabilities for on site paging.
  3. Transmitters: Provide transmitter setup for staff that includes personnel information with the option of a photo in .JPG format. Include information regarding name, address, phone number and a notes section for any other pertinent information. This section shall also include all transmitter programming parameters, alarm actions upon an alarm, and paging parameters for individual transmitters, IRT Locator programming parameters and Real Time Guard Tour routes setup.

4. Program: Provide menus for AMS programming that include Action Taken lists upon an alarm, Day/Night Status, Intercom and Audio Assessment System Setup, Printer Logging, Relay Contact Input/Output Board Parameters, and setup of passwords for users.

   a) Under the program mode provide a sub-function menu for programming the audio assessment system. Provide a data module that directly interfaces via matched data protocol (RS232) with the audio assessment system. Relay contacts for integration from the Personal Alarm Locating System to the audio assessment system are not acceptable. Provide software support for up to 864 intercom station per serial port. Provide support for up to 8 serial ports that allow up to 6,912 stations to be connected to the AMS. Provide the capability to associate an audio assessment station with a fixed-point alarm, IRT location, or a wireless RF locator through software programming. Provide automatic connection to the audio assessment system when an alarm occurs based on the location the alarm originated from via a fixed point, IRT location or a Wireless RF Locator. The software shall automatically switch connections when the operator highlights a different alarm on the alarm monitoring screen to analyze the situation, if more than one alarm is currently in progress. The system shall cancel the audio assessment call when the alarm has either been acknowledged or reset, depending on programming of the AMS.

   b) Under the program mode provide a serial input/output data protocol module that will support basic alarm reporting and location change messages over a serial port via a series of defined resources. The AMS shall support remote acknowledgment and resetting of alarm conditions via the same serial port. This module shall be used to interface with other devices or security systems integrated with the Personal Alarm Locating System such as CCTV, PLC, intercom, Door or Card Access systems.

5. Receivers: Provide menus for setup of programming parameters and supervision of RF Receivers within the system infrastructure. Provide the capability to configure serial port setup within this menu. Provide the capability to associate the position of the receiver(s) on the graphical map with the AMS program for maintenance or service personnel. Upon a supervision alarm, an icon shall display on the alarm-monitoring screen with the associated graphical map indicating the position of the receiver for maintenance or service personnel.

6. Wireless Repeaters: Provide menus for setup of programming parameters and supervision of Wireless RF Repeaters and RF Locators within the system infrastructure. Provide the capability to associate the position of the receiver(s) on the graphical mapping with the AMS program for maintenance or service personnel. Upon a supervision alarm, an icon shall display on the alarm-monitoring screen with the associated graphical map indicating the position of the repeater or locator for

maintenance or service personnel.

7. <u>Maps</u>: Provide a menu for inserting graphical maps for alarm display in the monitoring view mode. These maps shall be in .BMP and/or .JPG formats. Provide automatic screen formatting that will allow graphical mapping of alarms to be centered in the middle of the screen upon alarm activation. This will allow any size map to be included with the software program and shall not restrict the map to the monitor screen size of layout of AMS graphical map area. An unlimited number of maps and unlimited layering (disk space dependent) shall be possible within the AMS. It shall be possible to overlay sub-map routines that permit the display of an additional map for detailed views. The operator can click with a mouse or touch the area on the main map with a touch screen and the sub-map will appear in greater detail. Unlimited sub-map routines shall be capable with the AMS program.

8. <u>Utilities</u>: Provide a serial port usage and terminal emulator menu for technical evaluation of AMS and equipment. Screens shall display what serial ports are in use or permit supervisors to view possible conflicting assignments of COM ports and to identify what equipment is connected to them. It shall also display the status of the serial port. The terminal emulator shall be used to test a serial port input/output of data or to change communications settings for COM ports.

9. <u>Test Mode</u>: Provide a test mode for the entire AMS and Personal Alarm Locating system with maintenance and technical information relating to the system infrastructure. Sub function tabs for evaluation of the system will include Alarm Monitoring, transmitter status for evaluation of any transmitter, repeater, receiver, or RF locator programmed in the system, input status that provides data on all hard wired alarm inputs to the system, system messages for confirmation of password log ins/outs and any supervision alarms, paging status of messages transmitted to pagers in the system, and tracking that shall include testing of RF signal strengths and noise levels in the area. These features shall also be used for evaluating new transmitter or repeater points that shall be added at future dates to provide adequate RF coverage for the entire facility.

10. <u>Reports</u>: This menu shall provide the capability of printouts via the alarm printer. Reporting shall include account lists, IRT locators, transmitter listings including a detailed list of all parameters programmed into each individual unit, receiver, repeater, and RF locator lists. An event history log shall be printable to include any combination of alarms, panics, person-downs, tampers, low batteries, inactive, system messages, actions taken, notes, acknowledgments, and resets. All printouts shall be accessible by date ranges.

11. <u>Software</u>: Shall have the capability through the reporting menu to log location change information to a data file for specific programmed transmitters, people, locations, or all people filtered for a selected date range. This feature can be enabled or disabled globally through programming functions within the AMS program.

AMS Alarm Monitoring Icon Bar:

- **Start/Stop Monitoring Icon:** This shall allow a supervisor to stop/start monitoring functions to access the main menu for programming or changing software parameters or configuration files to the system. This bar shall only be accessible by supervisors.
- **Paging Icon:** This shall allow an operator (when given access) and supervisors the capability to page a staff member that is wearing a PMT pager. A drop down box shall appear indicating all pagers in the system. When a pager (or group of pagers) is selected, the operator can type a message on the screen with the keyboard. A "send page" button can be activated and the message will be sent to the appropriate pagers in the system.
- **Day/Night Mode Icon:** This shall give access to features and functions that are programmed to activate or deactivate during daylight or nighttime usage. These functions are only accessible by supervisor level personnel.
- **Transmitter Groups Icon:** This shall give access to activating or deactivating certain transmitter groups within the AMS program. Supervisor level personnel can only access this feature.

- **Zoom Icons:** It shall be possible to "zoom" any graphic map displayed on the AMS screen with a zoom in and zoom out icon.

AMS Alarm Monitoring Tabs:

- **Alarm Monitoring:** This tab is accessible to operator and supervisor levels. This shall activate the alarm-monitoring screen that is sued to monitor all alarm status within the system. Alarm monitoring windows shall provide date/time, account/name, present/past location status, status to include type of alarm (e.g. panic button, pull cord and/or person-down), and ID number of PMT. It shall provide an acknowledgment and reset button for confirming incoming duress alarms and supervision alarms. It shall provide a "Print List" and "Print Item" button for print outs of alarm conditions. A "More Info" button shall be provided for detailed information regarding the alarm location or staff member information including a .JPG format picture. It shall also display a site facility graphical map, appropriated alarm location map upon an alarm status, or screen saver as programmed.
- **Transmitter Status:** This tab will allow an operator (when given access) and supervisors to monitor all PMTs, repeaters, RF locators, fixed position transmitters, and their status. It shall give information regarding ID number, account name, location, status, and a date/time stamp.
- **Input Status:** This tab will allow operators or supervisors to monitor all hard-wired alarm inputs to the system and their status. It shall give information regarding ID number, account name, location, status and a date/time stamp.
- **System Messages:** This tab shall allow the supervisor or operator (when programmed to do so) to view the status of the AMS (system faults, alarms, tampers, log ins/outs). This information shall be displayed by date/time and system message viewing area. Any information relating to the status of the AMS program shall be viewed from this screen. All information shall be printable through a print list or item button on the screen for verification of operation.
- **Pager Messages:** All pager messages generated by the AMS program can be viewed through this screen. A log shall be maintained on the screen and in the CPU for future reference. If a page is initiated, the log will read out the information that is sent directly to the pager for verification of operation.

Network Support: Software shall provide the capability of networking the AMS program on a hard-wired network system utilizing peer to peer or server applications. The AMS shall support up to 1,024 CPUs attached to a common set of data files located on a network server or up to 32 monitoring CPUs requiring no server hardware utilizing Windows® 2000 workstations or higher.

A) Network Server Applications: Shall provide the capability to utilize a bar code reader at any CPU, continually updating other CPUs on the network. The AMS shall maintain specific CPU information relating to receivers, paging systems, contact boards and printer logs for retrieval via alarm printer. AMS shall be able to print event history from a single CPU or the entire network perspective. AMS

shall have the ability to display the status of the other machine(s) currently attached to the network.

B) Network Mapping: AMS shall allow the supervisor to select which CPU alarm events shall be displayed. When an icon or location description is placed on a graphical map the supervisor shall be able to select which CPU points those alarms shall be displayed at, thus allowing some events to only register on defined CPUs.

C) Network Paging: The AMS shall support remote paging via the network to specific defined CPUs when an alarm is activated. The software will forward these pages to the CPUs attached to the paging system(s)

Screen Layout:

- **Screen Design:** Design each view with consistent elements. In order from top to bottom include AMS Main Menu, AMS Alarm Monitoring Icon Bar, AMS Alarm Monitoring Tabs, Alarm Monitoring Information Window, map area and status bars.
- **Building Plan Designs:** Draw building plans showing walls with a 50% gray scale laid over a 10% gray scale background. Place both elements on top of a white background. Within floor plan delineate and label alarm zones using ideal zone boundaries. Use room labels and other label nomenclature most meaningful to the user.
- **3-D Icons and Buttons:** Use button/icon designs with clip art that shall be intuitive to the user. Provide both visual and color cues (for color-blind users) to represent state changes.

Installation: As per engineers specifications and/or requirements.

A)   Install Personal Alarm Locating System and ancillary equipment as indicated, in accordance with equipment manufacturer's written instructions and with recognized industry practices, and complying with requirements of National Electrical Code (NEC) and NECAs "Standard of Installation" to ensure that the Personal Alarm Locating System fulfills requirements.

B)   Comply with manufacturer's recommendations, procedures, and standards for the assembly and operation of the Personal Alarm Locating System. Provide system feature program requirements as per owner's directives. Provide detailed documentation for the owners on all programming and numbering the system's modules, locators and PMTs for future reference.

C) Consideration shall be given to heat sensitive equipment so that it is not placed near or immediately over a heat source, such as a large power supply or a high power transceiver. All system modules that include microprocessor chips and related component equipment have an operating range of 0 to +40 degrees Centigrade. Data and UHF equipment shall be located away from interference sources. It shall be the contractor's responsibility to ensure that no interference on the UHF frequency will disrupt or impede the performance or function of the Personal Alarm Locating System. System should not be installed next to or near high voltage transformers or electrical devices. Receivers shall not be installed into metal cabinets or restrictive areas where RF signal would be impeded.

D) All terminator and connectors throughout the system shall have coaxial connectors, multi-pin connectors, solder terminals, telephone-type punch down terminal strips, or machine wire-wrapped terminals in cabinets, crimp connectors and outlet boxes (crimp stranded wire only) and screw type or plug and socket connections at all equipment locations. Properly utilize terminations in the applications for which the manufacturer intends them.

E) Observe the wire separation requirements of the NEC and best commercial practice. Maintain NEC Class 1 and Class 2 separation requirements.

F) Do not install control cables and power distribution wiring adjacent to signal cables. Power distribution cabling shall be on the opposite side from signal wiring in equipment enclosures and shall be uniformly located throughout and installation.

G) Construct racks and cabinets to easily accommodate interconnecting cables entering from above or below. Provide interconnecting cables with plugs for disconnecting each incoming and outgoing cable on at least one end.

H) Provide metal outlet strips (grounding type) mounted vertically in each rack or console section. A minimum of two (2) unused receptacles shall be provided in each rack or console section for future expansion.
   1. All power wiring interconnects in each group of equipment racks or consoles shall be done with flexible conduit, properly installed and of the proper size.
   2. Power cords from individual equipment to power outlet strips shall be neatly shortened to the proper length and dressed into the rack or console.

Field Quality Control: After installation of the Personal Alarm Locating System and prior to point-by-point performance testing, perform the necessary adjustments and balancing of all signals and levels to ensure proper system operation and compliance with requirements. If proper system operation and compliance with requirements is not achieved, correct malfunctioning units at site by making necessary changes or remove and replace with new units. Then proceed with necessary re-adjustment and re-balancing of all signals and levels to ensure proper system operation and compliance with requirements. Functionally test all repeaters, locators, IR/RF coverage, other hardware interconnections, and all interfaces to the PALS® 9000.

Point-by-Point Performance Testing: Perform a thorough, point-by-point operational test including system integration to other systems when applicable. Demonstrate software performance and system reporting in accordance with owner's requirements and all previous owners review comments. Demonstrate complete functionality of all integrated Personal Alarm Locating System functions. Perform a site test to determine RF coverage from PMTs to receivers. Site test will determine proper system configuration to cover area that is specified on the plans for coverage and to determine the repeater network for proper and reliable operation. If test results are not in compliance with requirements, make necessary changes, corrections, repairs or adjustments at no additional cost and arrange for another point-by-point performance test. This process shall continue until the systems are acceptable to the owner.