D6412   Control/Communicator

Architectural & Engineering Specifications

radionics

GENERAL

1.0 GENERAL

1.1 SCOPE OF WORK

1.1.1 Introduction

The system shall be the standard product of one manufacturer, and the manufacturer shall have been in business manufacturing similar products for at least 5 years.

1.2 GENERAL CONDITIONS

1.2.1 After-Sales Support

The Contractor shall be a factory-authorized and trained dealer of the system and shall be factory-trained and certified to maintain/repair the system after system acceptance.

1.2.2 Quality assurance

All equipment, systems, and materials furnished and installed shall be installed in accordance with the applicable standards of:

1. National codes: NEC, NFPA, UBC
2. Approvals and listings: UL
3. Security Industry Association (SIA)
4. Local Authorities Having Jurisdiction

1.2.3 Warranty

All components, parts, and assemblies supplied by the Manufacturer and installed by the Contractor shall be warranted against defects in material and workmanship for a period of at least 36 months (parts and labor), commencing upon date of acceptance by Owner. A qualified factory-trained service representative shall provide warranty service.

2.0 PRODUCTS

2.1 SYSTEM DESCRIPTION

The Digital Alarm Communicator System (DACS) specified herein shall include a Digital Alarm Communicator Transmitter (DACT), test timer, battery charging / voltage supervision circuitry, powered two-wire smoke detector circuit, diagnostics displays, lightning / EMI protection circuits, and the associated optional modules and components for a complete DACS system.

The DACT firmware shall support programmable "software" features as detailed in section 2.2 *System Features/Capability Summary*. The following describes the general functional requirements of the DACS system:

A. The DACS shall support the connection and reporting of intrusion and residential fire detection devices.

B. The DACS shall provide identification, annunciation, and communication of alarmed detectors by point.

C. The DACS shall be "modularly" expandable using hard-wired modules and wireless receivers or connected to a command center.

D. The DACS shall have electrically-supervised detection loops and power supplies (mains and battery(s)). This supervision shall be programmable for the purposes of reporting this information to the DACR. The battery supervision must include missing-battery supervision. The mains supervision reporting must be able to be suppressed until another signal is sent to the Digital Alarm Communicator Receiver (DACR) (tag along reporting).

E. The DACS shall be capable of reporting and communicating alarm or trouble event data by reporting to one (1) or two (2) off-site remote (DACR) via dial-up analog telephone lines. Pulse or Dual-Tone Multi-Frequency (DTMF) dialing option is required.

F. The DACS shall be capable of sending (manually or automatically) test and status reports to remote DACRs. Automatic tests shall be capable of being sent daily, weekly or once each 28 days. Automatic test times shall be capable of being set as an offset of up to 24 hours from the current time. Automatic test reports shall be capable of being deferred by one test interval if any other report is transmitted in the current interval.

G. The DACS shall be programmable locally or remotely. Programming shall be accomplished via a command center or a computer with a remote programmer and diagnostic software package. An on-site user must be able to initiate remote programming while on-line with the servicing location. The remote programming device must provide a compare feature and allow for downloading either the stored program or the (un)modified program copied from the panel.

The number of system programmers shall be severely restricted via the use of program locking features and passwords. Passcode protection in excess of 16 million combinations is required. The panel must allow the local programming option to be disabled and must provide a method to program a panel, while no one is home, when the panel shares a line with an answering machine.

H. The DACS shall annunciate alarm, trouble, service reminders, and other relevant system status messages in English text at the command center. Point description text is to be 16 custom characters per point.

I. The DACS shall be capable of executing diagnostics and testing functions locally or remotely.

J. The DACS shall be capable of activating 2 relays for auxiliary functions. Each relay output shall be capable of operating as an "AND" or an "OR" for two of the functions.

2.2 SYSTEM FEATURE/CAPABILITY SUMMARY

The following indicates system software/hardware capabilities, capacities, and formats:

A. **Security Industry Association (SIA) False Alarm Reduction Compliance:** By factory default settings, the DACS shall be compliant with SIA's *Control Panel Standard for False Alarm Reduction* (ANSI/SIA CP-01-2000, © 1994-2000 SIA).

B. **Number of Loops/Sensors:** 40 separately-identifiable points. 8 are on-board loops and up to 40 are off-board addressable points connected to 5 point expansion modules (max) and/or 2 RF Receivers (max).

C. **Programming Point Functionality:** Each point in the system shall provide for the following matrix of selectable type of response in the system.

Type	Response	Options
1. 24-hour, Fire	1. No Alarm Response	1. No Point Options
2. 24-hour, Fire Alarm with Verification	2. Reports	2. Trouble on Open
3. 24-hour, Voice Active	3. Alarm Report Delay	3. Trouble on Short
4. 24-hour, Tamper	4. Swinger Bypass	4. Trouble on Open or Short
5. 24 Hour, Emergency	5. Smart Swinger Bypass	5. Cross Point
6. 24 Hour, Visible Panic	6. Alarm Output	6. Part Arming
7. 24 Hour, Invisible Panic	7. Log Event	7. Pulse Count/Time
8. 24-hour, Burglary		8. Sensor Monitor Trouble
9. 24 Hour, Independent Point Control		
10. Controlled, Keyswitch		
11. Controlled, Entry/Exit Delay 1		
12. Controlled, Entry/Exit Delay 2		
13. Controlled, Follower		
14. Controlled, Instant		
15. Controlled, Instant (Part On Mode)		

D. **Configurable Independent Areas:** The DACS shall provide a maximum of 4 areas that may be configured independently of the other 3 areas.

E. **RF Compatibility:** The DACS shall be compatible with RF/wireless detection devices, smoke detectors, command centers and keyfobs.

F. **Number of Command Centers:** A maximum of 8 command centers, each capable of displaying custom English text on liquid crystal or vacuum fluorescent (VF) displays and sounding different patterns of audible alarm for different events, shall be required. LED Command Centers may also be used to display point status and arm/disarm status, and carry out user command functions.

G. **Number of User Passcodes:** Up to 32 different passcodes shall be required. Passcodes shall be 3 to 7 digits in length. Passcodes shall be assigned one of 4 different authority levels to carry out functions such as changing passcodes from the command center, activating one-time passcodes and changing watch tone responses. These passcodes shall also be required for performing various system functions such as arming/disarming the system, transmitting a duress code, and silencing sounders.

H. **Communication Formats:** The Modem IIIa^2 format shall be utilized for optimum system performance. The DACT shall report to a Commercial Central Station using a Radionics D6500 or D6600 Alarm Receiver that supports the Modem IIIa^2 communication format. One such advantage is point identification information transmission to DACRs (Alarms, Troubles and Restorals by point). Others include actual point number; point text; actual user number; by-passed points; relay activation; and opening/closing reports by user.

I. **Testing, Diagnostic, and Programming Facilities:** Automatic test reports and remote system access for diagnostics, and programming shall also be supported via a remote central station computer utilizing the RAM IV software.

J. **Reports:** Reports to DACRs at commercial central stations as a result of system supervision shall include alarm, trouble, missing modules, restoral, system status, AC failure and low battery. The DACS shall also transmit test reports once every hour, 24 hours, 7 days, or 28 days. CPU failure shall be annunciated locally.

K. **"Phone Routing":** The DACS shall have the capability of communicating with up to 2 different DACRs (destinations). Each destination can support up to 2 phone numbers. Each phone number can be up to 32 digits long. The DACS reports shall be classified into 24 sub-categories or "report groups." Each DACR shall be designated as a primary or duplicate destination for each report group. The transmission of events allows the reporting of different types of information to different remote DACRs. The report groups shall be as follows:

- 24-hour, Fire
- 24-hour, Fire Alarm w/ Verification
- 24-hour, Independent Point Control
- 24-hour, Tamper
- 24-hour, Emergency
- 24-hour, Visible Panic
- 24-hour, Invisible Panic
- 24-hour, Burglary
- 24-hour, Voice Active
- Controlled, Keyswitch
- Controlled, Entry/Exit Delay 1
- Controlled, Entry/Exit Delay 2
- Controlled, Follower
- Controlled, Instant
- Controlled, Instant (Part On Mode)
- System Status Reports
- Walk Test Start/End Reports
- ABC Key/Duress Reports
- Test Reports
- Open/Close Reports
- Alarm Reports
- Restoral Reports
- Bypass/Force Bypass Reports
- Point trouble/Point Trouble Restoral Reports

L. **Number of Programmable Outputs:** The DACS shall provide a minimum of 4 on-board programmable outputs, which may be expanded to 20 by connecting up to 2 output modules to the DACS. Each output module shall provide eight fully programmable Form "C" outputs for a total of 16 outputs (8 per output module). The following functions can be executed:

- Arming
- Arming Beeps (keyswitch & RF arming)
- Auto Arm Pre-Arming Alert
- Follow Command Center Sounder
- Entry/Exit Delay
- Bell Test on Close
- Phone Line Fail
- Ack Received
- AC Fail
- Low/Missing Battery
- Siren Supervision Fail
- Sensor Trouble Monitor
- Duress
- User Tamper
- Bell Time
- Strobe
- Silent Alarm
- Alarm/Fire Alarm
- Fire Verification
- System Trouble
- RF Keyfob Functions
- ABC Key Functions
- Unsuccessful Dialing Attempts
- Comm Fail Event
- Panel Off-Hook
- Ring Detect
- Voice Request
- Ready to Arm
- Watch
- Exit Error
- AC 60 Hz
- Ground Start
- Follow Point Index
- Follow Passcode
- Sked Only
- Change Outputs

J. **Output Mode:** The DACS shall provide outputs with the following mode functions:

- Steady
- Latch
- Toggle
- Pulse
- One Shot
- One Shot with Re-Trigger
- One Shot with Reset

Output modes shall also perform reverse logic functions (output activate/deactivate states are reversed).

K. **Alarm Output Selections:** Two different types of alarm output selections shall be supported by the DACS: Steady and Temporal Code 3.

L. **Miscellaneous Features:** The DACS shall provide programmable Swinger count (1, 2, 3 or 4), separate programmable swinger counts for alarm output and alarm reporting, smart swinger option and momentary and maintained keyswitch on/off operation. See below for keyswitch arming states:

- Maintained, All On, Off from Any
- Maintained, All On, No Off
- Maintained, No On, Off from Any
- Maintained, Part On, Off from Any
- Maintained, Part On, No Off
- Maintained, No On, Off from Part On/Part 2 On

- Momentary, All On, Off from Any
- Momentary, All On, No Off
- Momentary, No On, Off from Any
- Momentary, Part On, Off from Any
- Momentary, Part On, No Off
- Momentary, No On, Off from Part On/Part 2 On

M. **DACS Power Ratings:** The DACS shall provide 600 mA of auxiliary power and 1.85 A of alarm power, both rated at 12VDC. Additional auxiliary power shall be provided by adding battery/charger modules up to a maximum of 2 amps.

N. **DACS Fault Detection:** The DACS shall provide a programmable point scan time at either 300 ms or 20 ms.

O. **User-Programmable Features:** The DACS shall provide a "user-friendly" interface for operating the system to the operational criteria of the application.

A service passcode with the appropriate authority level can be assigned to the servicing agent allowing him limited access to system functions. User-programmable/activated functions assigned by authority level include:

1. **Arming the system:** The required authority level can perform the following arming functions:
   - All/Part/Part 2 On with Delay
   - All/Part/Part 2 On with Delay, no Exit Tone
   - All/Part/Part 2 On with no Delay

2. **Disarming the system:** The required authority level may disarm the system and perform one-time system disarm.

3. **Disable Open/Close Reports:** The sending of opening/closing reports may be restricted by authority level.

4. **Force arm/Bypass Points:** The required authority level may force arm or bypass faulted points.

5. **Arm/Disarm All Areas by Command Function:** The required authority level may arm and disarm all areas using a command function.

6. **System Operation Command Functions:** The required authority level may perform the following system operations via command functions:

   - View Alarm Memory
   - System Test
   - View System Trouble
   - Remote Program
   - Walk Test
   - Reset Sensors
   - View Point Trouble
   - Set Time and Date
   - Change Skeds
   - Renew One-Time Passcodes

   - Change/Add Other Passcodes
   - Delete Passcodes
   - Set Watch Tone
   - Set Watch Points
   - Set Part 2 Points
   - Toggle Auto Call Forwarding On/Off
   - Auto Call Forwarding Enable
   - Auto Call Forwarding Disable
   - Adjust Command Center keystroke volume/display lighting
   - Toggle Watch Feature On/Off

7. **Move to Area Command Function:** The required authority level may perform the Move to Area command function.

8. **Extend Close Command Function:** The required authority level may perform the Extend Close (Automatic Arming) function.

9. **View Log Function:** The required authority level may view the system log.

P. **Auto Call Forwarding:** The DACS shall provide an automatic call forwarding feature that dials the entered digits to activate the telephone company's call forwarding service when the system is armed All On. The enabling/disabling of this feature may be restricted by authority level.

Q. **254 Event Log:** The DACS shall provide a history log capable of holding up to 254 events, including alarm events, arming the system and disarming the system.

R. **Programmable Skeds:** The DACS shall provide up to 8 programmable scheduled events (skeds) that occur at a specific time of day and day of week. These events can be used to automatically arm/disarm the system or control output functions.

S. **Optional Printer Interface Module Compatibility:** The DACS shall provide a connection port for a compatible optional printer interface module to print panel events.

T. **Sequential Entry Delay:** The DACS shall commence the Entry Delay sequence when the location with an Entry/Exit Delay point type is faulted and continues with the faulting of consecutive locations (lowest to highest) assigned to Follower point types. The sequence of point types must be consecutive and without any gaps. For example, Location sequence 2, 3, 4 and 5 with Location 2 as an Entry/Exit point type and Locations 3-5 as Follower point types is OK. A location sequence of 2, 3, 5 with Location 4 as a Fire point type is not a valid sequence.

2.3   SYSTEM INTERFACE REQUIREMENTS

A. **Grounding:** The Contractor shall properly earth ground the DACS.

B. **Primary power:** The Contractor shall provide a dedicated 120 VAC power circuit to the DACS system. This circuit shall be connected to the emergency power system. The 120 VAC is stepped down to 18 VAC to power the DACS panel using a class two, plug-in transformer. This power circuit shall be properly rated to continuously power all points and functions indefinitely in full alarm condition.

C. **Primary power supervision:** When the primary power source fails, the system can be configured to report an "AC Fail" message to a commercial central station. The creation of this message is suppressed if the AC Failure is less than 60 seconds. The message can be programmed to "tag-along" with another message transmitted to the central station. The system will always display a loss of primary power on the command center and may be configured to provide additional audible warning.

D. **Secondary power (standby battery):** The Contractor shall provide adequate battery power as defined by the relevant application criteria, (UL 985 and 865 for alarm installations or NFPA 72 chapters for fire applications). Appropriate battery chargers shall be provided consistent with the battery backup capacity.

E. **Secondary power supervision:** When the secondary power source experiences an 85% depletion of its standby capacity, the system can be configured to report a "Low Battery " message to a commercial central station. The system will always display a low battery condition on the command center and may be configured to provide additional audible warning.

F. **Wiring:** The contractor shall provide cables consistent with the manufacturer's recommendations. The following general guideline shall be followed for wiring installation: Wiring shall be appropriately color-coded with permanent wire markers.

G. **EMI / Lightning Protection:** The DACS system shall be protected from EMI and lightning surges.

H. **Telephone interface:** This interface shall conform with FCC rules part 15 and 68.

I. **Auxiliary function control interfaces:** Auxiliary functions such as activating bells, strobes, or lights shall be accomplished using the optional relay modules. These auxiliary interfaces shall be electrically isolated to avoid inter-system interference or damages.

J. **Non-Volatile Backup:** Functional criteria programmed into system memory shall be backed up non-volatile. Additionally, the number of system programmers shall be severely restricted via the use of program locking features and passwords.

3.0   EXECUTION

3.1   PROGRAMMING

Programming of the system shall include the following tasks:

A.   Programming system configuration parameters (hardware and software, zone/circuit numbers, communication parameters).

B.   Programming operational parameters such as opening/closing reports, system response text (custom English) displays of events, activation of relays that drive auxiliary devices, and identifying types of zones/loops.

C.   Programming passcodes according to the authorities and functions defined by the owner.

D.   Other system programming tasks required by the owner. These additional programming requirements shall be coordinated between the owner and the contractor.