



ARCHITECT AND ENGINEER SPECIFICATION

**SECTION 13850 – DETECTION AND ALARM
SECURITY ACCESS AND SURVEILLANCE**

DSC MAXSYS PC4020 V3.5 Rev0x2

Digital Security Controls 3301 Langstaff Rd., Concord, ON Canada L4K 4L2 1-888-888-7838



MAXSYS PC4020

SECTION 13850 DETECTION AND ALARM

PART 1 – GENERAL

1.01 – SUMMARY

- 1 SECTION INCLUDES
 - a) Control Panel
 - b) Keypad
 - c) Associated Equipment

- 2 ASSOCIATED SECTIONS
 - a) 13703 – Access Control
 - b) 16721 - Fire Alarm And Detection Systems
 - c) 16750 - Building Management/Security/Access Systems

1.02 – LISTINGS

- 1) US Approvals
 - a) UNDERWRITERS LABORATORY (UL)
 - i) UL864 - Control Units System for Fire-Protective Signaling System
 - ii) UL1610 - Central Station Burglar-Alarm Units
 - iii) UL609 - Local Burglar Alarm Units and Systems
 - iv) UL365 - Police Station Connected Burglar Alarm Units and Systems
 - v) UL985- Household Fire Warning System Units
 - vi) UL1023 - Household Burglar Alarm System Units
 - vii) UL High Line Security
 - b) FEDERAL COMMUNICATIONS COMMISSION (FCC)
 - i) Part 15 – Radio Frequency Devices
 - ii) Part 68 – Connection of Terminal Equipment to the Telephone Network

- 2) Canadian Approvals
 - a) CS03
 - b) IC (Industry Canada)
 - c) UNDERWRITERS LABORATORY CANADA (ULC)
 - i) ULC-S527 – “Central Station Fire Alarm System Units”
 - ii) ULC-S303 – “Local Alarm Units Burglary”
 - iii) ULC-S304 – “Central & Monitoring Station Burglar Alarm System Units”

- iv) ULC-S310 – “Household Burglar Alarm”
- v) ULC-S545 – “Household Fire Warning”
- vi) UL-294 – “Access Control”
- vii) ULC Level 5

- 3) International Approvals
 - a) CE (Europe)
 - b) CNC (Argentina)
 - c) IRAM (Argentina)
 - d) ACA (Australia)
 - e) ANATEL (Brazil)
 - f) INCERT (Belgium)
 - g) NCP (Netherlands)

1.03 – SYSTEM OVERVIEW

- 1. The system shall be a Burglary/Fire/Access Control integrated control panel, with the following capabilities:
 - a) Up to 8 System Partitions
 - b) 1,500 User Codes
 - c) 3,000 Event Buffer
 - d) 34 Programmable Zone Types
 - e) 61 Programmable Output Options
 - f) Local And Remote Upload/Download
 - g) 99 Date Schedules
 - h) 50 Arm/Disarm Schedules
 - i) 99 Open/Close Suppression Schedules
 - j) 50 Seismic Sensor Test Schedules
 - k) 50 CTT (Close-Time Timer) Arming Schedules
 - l) Two-Year Holiday Scheduling
 - m) Automatic Daylight Savings Adjustment
 - n) Expandable to 128 Zones Via Hardwire, Wireless and 2-Wire Addressable Loop Devices
 - o) Add Up To 16 LCD Keypads
 - p) Add Up To 64 Programmable Relays
 - q) Add Up To 144 Low Power Outputs
 - r) Add Point/Graphic Annunciation
 - s) UL & ULC Listed For Residential And Commercial Applications
 - t) Internet (IP) Communication
 - u) 2-Way Communication Port (RS-232) For Use with 3rd Party Software Packages
 - v) Remote System Administrator Software

PART 2 – PRODUCTS

2.01 – SYSTEM PERFORMANCE

1 BASE PANEL

The security control panel shall have a base capacity of 16 fully supervised and programmable zones with integral power supply and supervised battery charger, auxiliary power for powering security detection devices, program switched auxiliary power supply for 4-wire smoke detectors, integral supervised digital alarm communicator, two general purpose program controllable outputs which can be programmed as general purpose outputs or as Addressable loops and a supervised bell/siren output.

2 PANEL ZONE EXPANSION

The panel shall be expandable to a maximum of 128 zones by adding standard hardwired 8 and/or 16 zone modules connected to the base panel via a supervised four-wire power/communication bus, by adding up to 112 addressable detection devices to one or both of the addressable loops on the base panel or by adding 64 zone 433 MHz. Narrow Band wireless receivers (to expand coverage area, up to 8 receivers shall be supported) to the four-wire communication bus. The system shall be capable of expansion using hardwired, addressable and wireless simultaneously in any mix that suits the application. The system shall support hardwired seismic sensors and programmable scheduled testing of these seismic sensors.

3 SYSTEM KEYPADS

The system shall accommodate up to 16 LCD keypads which are powered from the base panel via the four-wire communications bus. LCD keypads shall have a display capacity of at least 32 alphanumeric characters with the display having brightness and contrast control. Control keys shall be backlit for low light level ease of use. The keypads shall include individual “Armed”, “Ready” and “Trouble” indicators and five programmable ‘function’ buttons and three keypad activated alarm buttons. Keypads shall have the capability to operate in a power-save mode in the event of a power failure.

4 FIRE MONITORING AND REPORTING

The system shall be capable of being easily expanded to provide local fire alarm panel monitoring of alarm and trouble and reporting fire status using redundant digital alarm communicators. The dual digital alarm communicators shall be fully supervised and automatically report telephone line troubles and report alarms over the ‘good’ line.

5 UL LISTED FIRE ALARM SYSTEM

The UL Listed commercial fire alarm version of the system shall have all the capabilities of the alarm system with the following changes and additions:

The base system panel shall be supplied in a red enclosure and be complete with a 16VAC 40VA transformer and a fire module complete with 1 Class 'B' two-wire smoke detector zone accommodating 30 12VDC smoke detectors, 1 Class 'B' waterflow zone, 2 supervised communicator outputs, terminal connection for house telephone, 1 fire alarm-actuated relay with Form 'C' contacts rated 2A @ 30VDC, and one fire trouble-actuated relay with Form 'C' contacts rated 2A @ 30VDC. All zones shall be programmable as fire zones. Addressable loops shall accommodate 112 smoke detectors programmed as standard fire zones or auto-verify fire zones. Hardwired fire zones shall be programmable as standard fire zones, auto-verify fire zones, waterflow zones, or fire supervisory zones. All zones shall be supervised for open circuit and ground fault. Addressable loops shall support supervised inputs for heat detectors and pull stations. System shall support 4 dual bell output panels on the Combus, each complete with red enclosure, 2 supervised Class 'B' bell outputs, supervised 350mA 24VDC battery charger, and 28VAC 170VA power transformer. Bell outputs shall be supervised for short circuit, open circuit, and ground fault. Fire bell outputs shall be rated for 1.8A @ 24VDC each and be programmable as steady, temporal pattern, CA pattern, or pulsed. Each bell output shall also be programmable as a fire strobe output, which will remain energized until the system is reset. Fire alarms shall autoscroll on all system LCD keypads, and fire silence and reset shall be limited by programming to specific access codes. System software shall include the following test functions: fire drill, fire inspector's test, scheduled smoke detector tests, and annunciator lamp test. Power supply/relay output modules shall be in red panels complete with a supervised 350mA 12VDC battery charger, 16VAC 40VA transformer, and integral power supply to provide up to 550mA of auxiliary power at 12VDC to power direct-connected devices or repower the Combus. The system shall support fire-specific annunciators, each providing annunciation of 10 fire zones, 2 fire supervisory zones, 1 common bell zone trouble, 1 common fire zone trouble, 1 common system trouble, and 1 AC 'ON' indicator.

6 ALTERNATE REPORTING METHODS

The system shall be capable of reporting all alarms, trouble and system status information over various combinations of : the single integral digital alarm communicator, the dual digital alarm communicators, a cellular transmitter, an internet (IP) communicator and over a dedicated line DVAC channel.

7 CENTRAL STATION REPORTING

The system shall provide high speed 20 bps 1400/2300 Hz. handshake, contact ID and SIA reporting formats and shall be capable of being programmed to call up to 3 telephone numbers. The system shall also allow communication to a pager. The telephone numbers shall be programmable for 'backup' dialing should the primary number fail. The system shall be programmable for split reporting such that alarms/restorals, openings/closing and miscellaneous events can be sent to different telephone numbers or communication paths.

The system shall report an account code for each partition and a separate account code for non-partition (system) events.

The system shall provide opening/closing scheduled suppression to prevent opens and closes from being reported to the central station.

8 HARD COPY PRINTOUT

The system shall be capable of including a serial output for a hard copy printer. All system events, alarms and restorals shall be printed and each event shall include the date and time.

9 OUTPUT RELAYS

The system shall be capable of including up to 64 fully programmable output relays with each relay having form 'C' contacts rated 2 Amps at 30 VDC. Relays shall be added in increments of four and may be located anywhere on the communication bus. Relay modules shall include an integral power supply, supervised battery charger and supply up to 1.0 Amp of auxiliary power at 12 VDC.

10 LOW POWER OUTPUTS

The system shall be capable of including up to 144 low power outputs with each output able to source 50 mA at 12 VDC. Outputs shall be added in increments of 16 and may be added anywhere on the communications bus.

11 REMOTE ANNUNCIATION

The system shall be capable of remote zone alarm and system status annunciation, up to 144 points, by adding 32 and/or 64 point annunciators anywhere on the 4-wire communications bus. Annunciators shall be capable of being flush mounted. The annunciators shall provide bull's eye and graphic annunciation capability.

12 ACCESS CONTROL

The system shall be capable of accepting up to 16 dual card reader modules for a total of 32 access readers. Each dual module shall be complete with an integral power supply, supervised battery charger and shall provide full standalone operation if communication with the base

panel is lost. The module shall include non-volatile memory to retain all schedules and programming information even if AC and battery power are lost. The dual reader panels shall be capable of being added to the system anywhere on the 4-wire communication bus up to 1,000 feet per leg from the base panel.

The dual access control module shall accept a variety of proximity readers, magnetic stripe readers and any 26 bit Wiegand reader and readers shall be capable of being located up to 500 feet from the module. The dual module shall have inputs for two 'request-to-exit' detectors, two 'postpone arm' pushbuttons, two 'arm' pushbuttons, two 'door' contacts and two outputs for door strikes.

Access control software shall be an integral component of the base panel software and shall provide the following functions: capacity for 1,500 cards and up to 64 access levels, 99 seven day schedules with 4 intervals per schedule, holiday scheduling for a two year period, individual door unlock schedules, a programmable option to require 2 cards to open a specific door, ability to unlock doors automatically on fire alarm and automatic daylight saving time adjust. Access control functions shall be fully programmable through any system keypad and either locally or remotely using any PC and the upload/download software.

All access control transactions shall be recorded in the systems 3,000 event buffer for viewing via the keypad, for printing on a local printer or viewing locally or remotely via the upload/download software.

13 VOICE ASSISTED STATUS AND CONTROL

The system shall be capable of adding a module to provide system status and control via any local or remote touch-tone telephone with the system providing system status information by voice. The system shall include a word library and allow custom words for zone labels.

14 AUTOMATION CONTROL

The system shall be capable of controlling by event and/or by schedule up to 32 X-10 control devices. The automation control module shall connect to the system via the 4-wire communications bus. The system shall include 16 schedules to control the automation devices. Automation shall be controllable via any keypad and local or remote touch-tone telephone.

15 SYSTEM SOFTWARE

The base panel shall come complete with all the software to implement every system feature and allow the addition of every expansion or functional module without changes or addition to the basic software.

16 SYSTEM PROGRAMMING

The system shall be fully programmable via the LCD keypads and shall also allow event buffer viewing via the keypads.

Separate PC based Upload/Download software shall provide the ability to fully program the system and read all current system programming and the event buffer. The system shall provide a connector on the base panel to allow local upload/download operation and shall be capable of being remotely, over the telephone lines or internet (IP network), uploaded or downloaded. The system shall provide a separate telephone number that can be called for the remote upload/download operation. Remote upload/download access shall be controllable by the user to prevent unauthorized access.

All system programming shall be maintained in non-volatile memory such that program information is maintained even if all AC and battery power is removed.

17 USER CODES

The system shall provide for 1,500 user codes selectable as either 4 or 6 digits. For Access Control, user codes shall be assignable to 1 of 64 access levels. User codes shall assignable to one or multiple partitions. The system shall offer a programmable option to allow users to program their own access code. The system shall offer a programmable option to require 2 users to disarm certain partitions.

18 PARTITIONS

The system shall be programmable for up to 8 fully independent partitions each partition shall have its own account code. Keypads shall be assignable as 'partition' keypads or 'global' keypads. Each zone in the system shall be assignable to one or more partitions.

19 SCHEDULING

The system shall provide for 99 date schedules with 4 intervals per schedule, 4 holiday schedules with 2 years of scheduling capacity, 50 open/close suppression schedules and 16 automation schedules. All schedules shall be programmable via the LCD keypads and via downloading either locally or remotely.

20 GROUND FAULT DETECTION

For commercial fire installations, the system shall include an integral ground fault detector which shall detect a single ground fault on any extended conductor in the system.

21 SUPERVISION

Each zone in the system shall be supervised. General system supervision shall include; loss of AC for the base panel and any remote functional

panel with its own AC input, batteries for the base panel and all remote functional panels shall be supervised and short circuit protected, each addressable device and each wireless input device shall be supervised for its presence and the 4-wire communication bus shall be supervised for low voltage and the presence of each enrolled module and keypad. Digital alarm communicators shall be supervised for telephone line trouble and failure to communicate and the system shall report any cellular or IP network communication panel trouble.

22 FALSE ALARM PREVENTION

The system shall include the following false alarm prevention features: audible exit delay, arm/disarm bell squawk, audible exit fault, urgency on entry delay, no entry arming/disarming, swinger shutdown programmable by zone, transmission delay by zone, AC fail, TLM trouble and low battery trouble transmission delay, rotating keypress buffer, recent close code transmission, police code (cross zone) transmission, scheduled seismic sensor testing and opening after alarm transmission.

23 AUTOMATIC ARMING/DISARMING

The system shall allow for automatic arming and disarming partition(s) according to a programmable schedule. The system shall include a method to automatically arm a partition after it has been disarmed for a set period of time. The system shall include a programmable limitation for basic users which shall delay disarming a specific partition for a set period of time.

24 TEMPORARY ZONE DISABLING/BYPASSING

The system shall include the following temporary zone disabling/bypassing features: arm partition with zone violated and arm zone upon restore, manual zone bypass by user, temporary bypass of a programmable group of zones which shall re-activate zones after programmable time.

25 NETWORK COMMUNICATIONS

The system shall be capable of network (LAW/WAN) and Internet communications according to ULC Level5 and/or UL-AA (Highline Security) standards. The Network communicator shall utilize 128-bit AES encryption over 10/100 base-T networks and support static or dynamic IP addressing. The IP communicator shall be capable of sending alarm events to a primary and backup IP receiver address and up to two standard email addresses. The internet communicator shall perform full alarm reporting directly to the central monitoring station as well as performing full system configuration programming and viewing system status using remote upload/download software over encrypted connection. For security purposes, the internet communicator shall be capable of end-to-end supervision and hardware substitution detection.

2.02 – MECHANICAL SPECIFICATIONS

1 CABINET

Surface mount

Hinged door with screw closure

Provision for door keylock

Provision for door and wall tamper switches.

Space for two 12volt 7ah lead-acid rechargeable batteries

14.8"h x 12.0"w x 4.9"d (37.6 x 30.5 x 12.5cm)

2.03 – ELECTRICAL SPECIFICATIONS (Base panel)

1 BELL OUTPUT

12VDC, 700mA max. continuous up to 2A for 4 minutes using battery assist.

PTC over current protected – self-restoring.

2 AUX+ OUTPUT

12VDC, 500mA max.

3 SAUX+ OUTPUT

12VDC, 300mA max. SAUX+ output is normally +12VDC and power is removed upon activation. Typically used to reset 4-wire smoke detectors.

Note: Total for AUX+ output and SAUX+ output is 500mA max. e.g. If the SAUX+ output is loaded to 200mA then only 300mA remains for the AUX+ output. AUX+ and SAUX+ outputs protected by a common PTC over current device which is self-restoring.

4 PGM OUTPUTS

As standard PGM outputs... 12VDC, 50mA max. each. PGM outputs are normally unpowered and switch to +12VDC upon activation. As addressable outputs... 12VDC, 170mA max. each

Note: PGM outputs are individually programmable as addressable loops or as general purpose PGM outputs.

5 COMBUS

500mA max. from the PC4020 main panel additional power is provided by PC4204CX modules and/or up to 16 Combus data repeaters. Maximum Combus capacitance is 80nF which is typically 4,000feet (1,219m) of 22AWG wire. Each Combus data repeater shall allow an additional 1,000 feet (306m) of 22 AWG wire (maximum of 16 repeaters). Consult wire manufacturer for specifications of wire to be used.

Note: Total loading for the Bell output, AUX+, SAUX+, PGM1, PGM2 and the Combus from the PC4020 main panel must not exceed 900mA.

This limit may be exceeded by bell output if extra current required is drawn from the battery.

6 BATTERY CHARGER

Up to 350mA to charge 12volt lead-acid batteries up to 14Ah capacity. Battery charger is supervised for opens and is protected by PTC over current device which is self-restoring.

7 INPUT POWER

16VAC, 40VA

8 GROUND FAULT DETECTION

Built-in and enabled by connecting earth ground to EGND terminal on PC4020 main panel. (Use for 'CF' version panels only.)

2.04 – ENVIRONMENTAL SPECIFICATIONS

1 OPERATING ENVIRONMENT

32 to 122°F (0 to 50°C)

90% RH non-condensing

PART 3 – EXECUTION

3.01 – INSTALLATION

1. The system shall be installed according to manufacturer's installation instructions and recommendations.

3.02 – SYSTEM TESTING AND CERTIFICATION

1. The system shall be tested in accordance to manufacturer's recommendations and standard industry practices.

END OF SECTION