



Access Control Systems

apC/8X[®]

Intelligent Access Control and Alarm Monitoring Panels



The apC/8X[®] Advanced Processing Controller is an intelligent access control and alarm monitoring panel which serves as a basic building block for all Sensormatic C•CURE[®] security management systems.

The CMOS Motorola 68306 16-bit processor gives the apC/8X maximum flexibility in card population and in utilizing its numerous firmware features. The apC/8X is available with up to 4 MB static RAM and 4 MB EPROM and FLASH ROM. The panel's CMOS static RAM consumes minimal power for data storage, allowing longer on-board preservation. The FLASH ROM makes firmware updates quick and easy.

The apC/8X supports optional add-on modules that make the apC/8X a powerful and flexible platform for a wide variety of access control, alarm monitoring, and integrated security applications. Multiple card technologies and card formats can be used on the same apC/8X, making it ideal for single and multiple tenant applications and for retrofitting existing systems. Its bus architecture reduces wiring requirements and overall installation costs.

The apC/8X is designed to provide advanced functionality in the off-line mode, including elevator control, local anti-passback and alarm or event-initiated output activation. The apC/8X is also capable of redundant communications for high security applications.

FEATURES

- Fast, stand-alone processing with FLASH ROM support
- Distributed database processing for up to 160,000 cardholders with optional expansion
- 255 time commands for automatic input, output, and reader mode control
- Support for magnetic stripe, Wiegand, and proximity card technologies
- Card, keypad, or card and keypad access support
- Reader-by-reader support for variable card formats, site codes, company codes, and card technologies
- Class A, 2-wire supervised input capability
- Elevator control
- Internal activation and expiration dates for cardholders
- Real time full-year clock and calendar
- Optional FLASH Memory
- Dynamic memory allocation between card and events storage
- Software-linked inputs and outputs for offline control
- Communication between host and apC/8X through direct connect or dialup mode*
- Up to 80 hours onboard memory retention in case of power failure
- Star, bus, or combination star and bus reader configuration
- Battery backup available for uninterrupted on-line operation
- UL Listed - 294, 1076
- X.25, Ethernet, Token Ring support*
- CE Compliant
- FCC class B device

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ADVANCED SOFTWARE FEATURES

The apC/8X offers many powerful software features not commonly found in "locally intelligent" panels such as timed activation and expiration of cards, 32-bit card numbers, elevator access control and anti-passback control. The apC/8X's full-year, real time calendar and clock allows activation and deactivation of cards on specified days. The apC/8X also has power, host communication, and fault indicator lights visible on the front of the panel to aid in system diagnosis.

The panel's static RAM consumes minimal power for storing memory and data. The apC/8X is also capable of redundant communication through an optional module.

FLASH MEMORY TECHNOLOGY

The apC/8X Features the latest in Flash ROM technology, allowing you to download panel firmware from the host software. Flash ROM support means the end to expensive and time consuming trips to the panel site in order to upgrade firmware. All you need is a modem and the latest firmware version and you can quickly and cost-effectively upgrade your panels to support the latest software version. As an added service feature, firmware can also be downloaded remotely from the security service provider or from the Sensormatic Customer Service Center.

ACCESS CONTROL

Multiple card technologies and variable card formats can be used on the same apC/8X, including: Wiegand, magnetic stripe, and various proximity cards. With a complete database downloaded from the host, the apC/8X responds to access requests in less than one-half second, regardless of the number of readers in the system. When an alarm occurs, the apC/8X immediately transmits a signal to the host.

ALARM MONITORING

The apC/8X supports both unsupervised and supervised inputs. Unsupervised inputs are normally closed and report two conditions to the apC/8X: open or closed. Supervised inputs can be normally open or

normally closed and report four circuit conditions: short, open, secure, or alarm.

Eight supervised inputs are provided on the apC/8X. Removable resistors are installed on-board so that unused points are never in the trouble state. An additional 32 supervised inputs are available with the optional apC/8X-I/32 Supervisory Module.

CARD READER CONFIGURATION

The apC/8X can be used in a wide variety of configurations. In its base configuration, up to eight card readers can be connected through a single RS-485, two-wire bus. The addition of the Star Coupler module allows you to configure the reader ports in either star, bus, or a combination of the two.

apC/8X MEMORY

The apC/8X event storage capacity is automatically adjusted according to the memory required for storing cardholder information. Increasing the number of cardholder records stored decreases the number of events (transactions) that can be held. Adding optional features may reduce the number of cardholder records and event storage space as the record size increases. The table below shows a standard apC/8X memory configuration of cardholder record-to-event storage based on a 16-byte card record

Card to Transaction Storage

Ram Size	# of Cardholder Records	# of Events (Transactions)
256K (Standard)	10,000	5,750
	7,500	9,250
	5,000	14,250
1M*	50,000	10,000
	40,000	25,000
	30,000	50,000

*Contact the factory for expanded capacities.

apC/8X DIALUP MODE*

The Dialup Mode is a communication technique that connects apC/8X to a host system using standard telephone lines and modems, instead of hardwired or leased telephone lines.

The Dialup Mode connection exists only when communication between the apC/8X and host is needed. Connections are usually of short duration and are continuously made and broken, allowing many apC/8X devices to share few host I/O ports and telephone lines.

Typically, the host initiates communication with an apC/8X to download new data or change the state of a relay or lock output. The apC/8X initiates communication with the host to report an important event, such as an alarm, or to transfer data when its memory is almost full.

The frequency at which the host dials the apC/8X can be adjusted according to the time of day. In addition, each apC/8X can be set to a local time different from the host's time regardless of time zone differences.

Dialup features may vary according to the host system.

GENERAL SPECIFICATIONS

• Power Consumption

Less than 40 Watts typical (12W typical with 4 RMs, 18W with 8 RMs)

• Temperature Ranges

Operating: . . . 32° to 158°F (0° to 70°C)
Storage: 9° to 185°F (-25° to 85°C)
Operating and Storage: . . . 32° to 122°F with apS battery backup (0° to 50°C)

• Housing

16 AWG metal wall mounted cabinet with tamper switches on door and rear

• Power Supply

Autoranging input: 90 to 260 VAC
47 to 440 Hz
Output: 12 VDC at 3.3 Amp max.

• Auxiliary Hardware

Relay contacts rated at 30 V AC/DC 2.5 Amp inductive, 5 Amps non-inductive

• Physical Dimensions

Height 24.25 in. (61.60 cm)
Width 16.5 in. (41.91 cm)
Depth 4 in. (10.16 cm)
Weight apC/8X and power supply 23.31 lbs. (10.49 kg)
apC/8X with Star Coupler Module and power supply 24 lbs. (10.8 kg)

STAR COUPLER MODULE

The Star Coupler Module provides star wiring for card readers in addition to the standard RS-485 bus wiring. Each reader port can be configured independently to suit the installation. The Star Coupler comes with an additional eight unsupervised inputs and eight relay outputs.

MINI STAR COUPLER MODULE

The Mini Star Coupler Module provides an economical way to star wire when additional inputs and outputs are not eight required. Like the Star Coupler, the Mini Star Coupler allows configuration of eight readers.

WIEGAND/PROXIMITY STAR COUPLER MODULE SET

The Wiegand/Proximity Star Coupler (WPSC) Module is a two board set that connects proximity, Wiegand and Wiegand compatible readers directly to the apC/8X. It eliminates the need for the RM-4 Personality Board. One WPSC module provides four reader connections and four inputs and the addition of the second module provides a total of eight reader connections and eight inputs.

apC/8X-R/48 RELAY MODULE

The R/48 Relay Module provides 48 additional outputs for elevator, lights, HVAC, or control of other security related

devices such as, CCTV switchers and alarm dialers. Two R/48 Modules can be installed on one apC/8X.

RM-4 PERSONALITY MODULE

The RM-4 Personality Module creates the connectivity between a magnetic, proximity, Wiegand, or Wiegand-compatible reader and the apC/8X. The RM-4 also provides two supervised inputs and two outputs when used with optional ARM-1 Modules.

ARM-1 AUXILIARY RELAY MODULE

The ARM-1 provides outputs for controlling door strikes or other equipment located at an RM Series card reader. Installation of the ARM reduces wire runs back to the apC/8X. Each RM Card Reader and RM-4 Personality Module can support two ARM-1 modules.

apC/8X-I/32 SUPERVISED INPUT MODULE

The I/32 Supervised Input Module provides additional inputs for monitoring security alarms as well as environmental, fire, and non-security related devices. The I/32 module allows 32 Class-A, two-wire input circuits which are supervised regardless of whether the point is armed or disarmed.

INPUT MODULE

The Input Module provides eight Class-A supervised inputs. A total of eight Input

Modules can be connected to one apC/8X. Input Modules connect on the card reader bus reducing wiring.

OUTPUT MODULE

The Output Module provides an additional eight outputs. A total of eight Output Modules can be installed on one apC/8X. Output Modules connect on the card reader bus reducing wiring.

RM SERIES CARD READERS

The RM Series Card Readers support magnetic stripe, Wiegand, and proximity technologies within a universal housing. Among its many unique features are an LCD display, integral keypad, and audible feedback. The RM card readers provides two supervised inputs and two outputs when used with the ARM-1.

apS ADVANCED POWER SYSTEM

The apS is a stand-alone power supply for the apC/8X. The apS can be used in place of the standard apC/8X power supply and as a backup power supply providing up to 34 Amp-hours of uninterrupted battery backup power for the apC/8X and the readers connected to it. The power supply connects directly to the power input of the apC/8X.

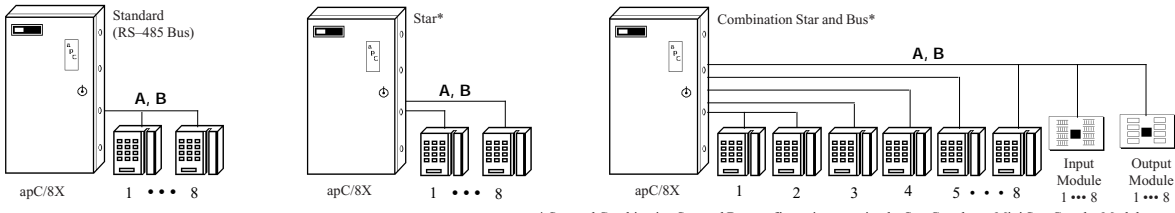
Configuration Options

	Module	Maximum Number of Modules per Unit	Reader Ports	Readers	Inputs	Outputs
Standard	apC/8X	1	1 RS-485	8 Bus	8 Class A Supervised	8
Optional	Star Coupler ¹	1	8 RS-485	8 Star or Bus	8 Unsupervised	8
	WPSC ¹	1 (set of 2 modules)		8 Star	8 Class A Supervised	
	Mini Star Coupler ¹	1		8 Star or Bus		
	I/32	1			32 Class A Supervised	
	R/48	2				48 or 96
	Input Module	8			8 Class A Supervised	
	Output Module	8				8
	RM Reader	8			2 Class A Supervised	2 ²
	RM - 4 ²	8			2 Class A Supervised	2 ²

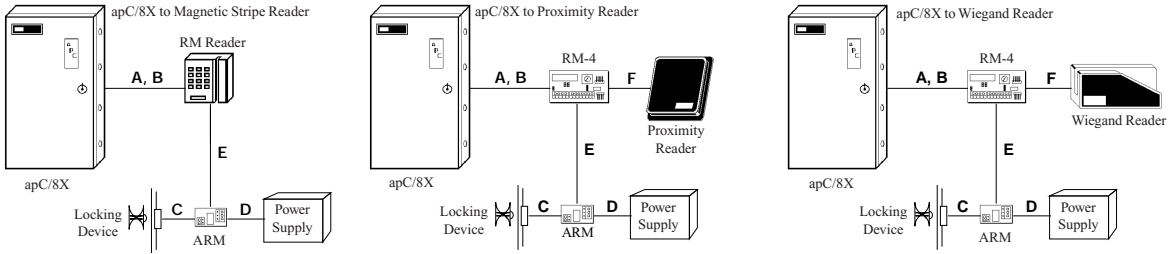
¹ A maximum of three modules and either a Star Coupler, WPSC or Mini Star Coupler can be installed on one apC/8X. ² A maximum of 8 RM-4 Modules (one per reader) may be used per panel. ³ Output requires the ARM-1.

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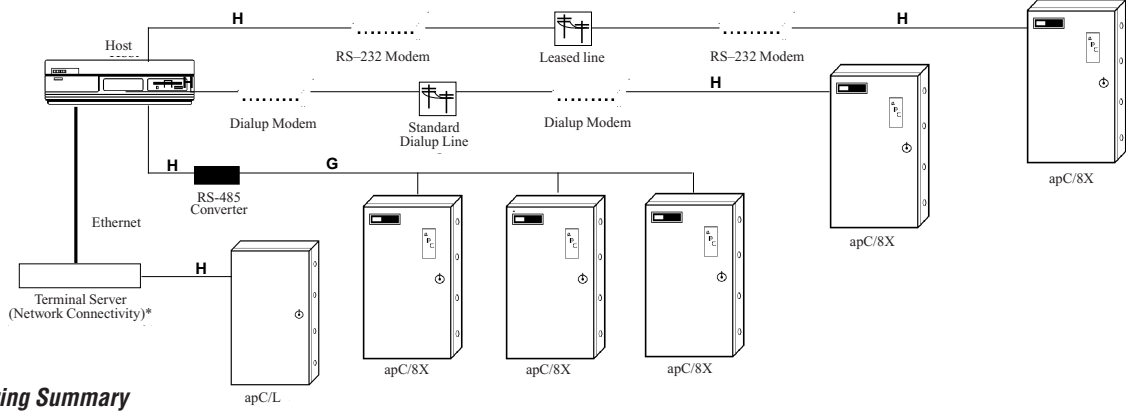
Wiring Configurations



* Star and Combination Star and Bus configurations require the Star Coupler or Mini Star Coupler Module



Communication Configurations



Wiring Summary

Wire Label	From	To	Function	Belden Part No. ¹	Gauge (AWG)	No. of Pairs	Shielded	Max. Length (ft.)
A	apC/8	MRM	Communication	9841	24	1	Yes	4000
B	X	MRM	Power ²	8442/8461	22/18 ³	1	No	varies ⁴
C	apC/8	Locking Device	Control	9462	22	1	Yes	25
D	X	Power Supply	Power	9462	22	1	Yes	25
E	ARM	ARM	Relay Switching	9462	22	1	Yes	25
F	ARM	Proximity/Wiegand	Reader Comm.	9536	24	3	Yes	500
G	RM	apC/8X	(RS-485) Comm.	9842	24	2	Yes	4000
H	RM	Modem	(RS-232) Comm.	9855	22	2	Yes	50

¹ Use Belden Part Number specified or equivalent product. ² Not required if powered locally. ³ Gauge varies according to length of wire. Consult apC/8X manual for details. ⁴ Length varies according to application.
^{*} Not supported by all hosts. Contact factory for supported configurations.

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