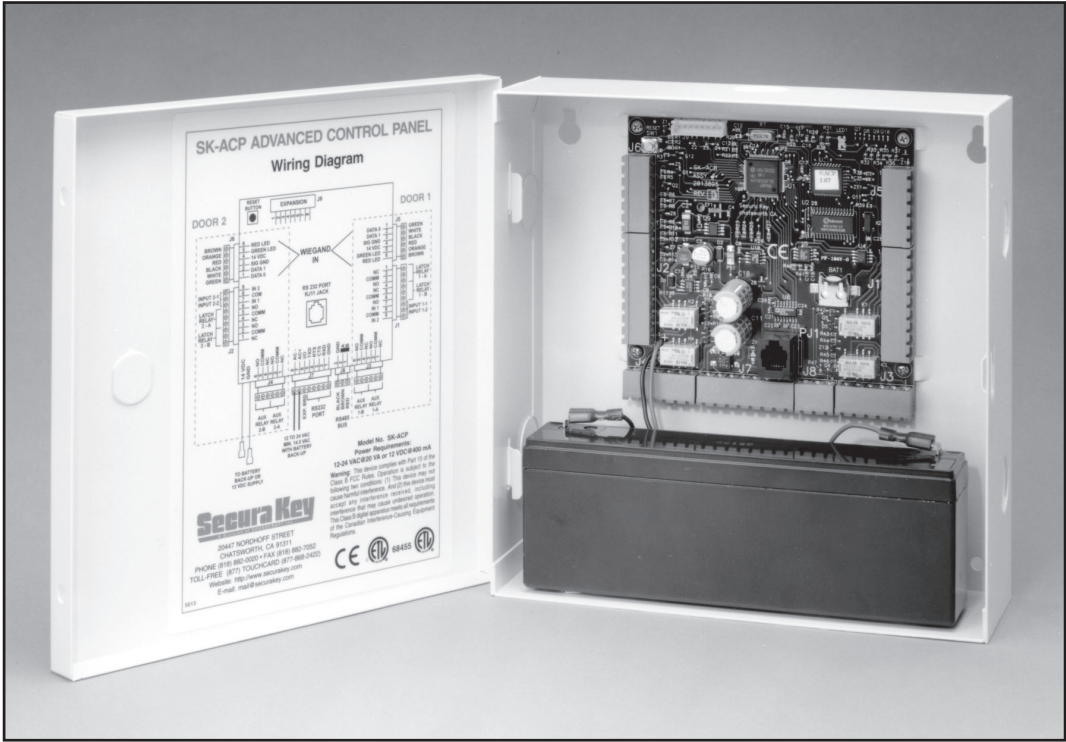


SK-ACP

User/Installation Manual



Secura Key
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INTRODUCTION

The **SK-ACP** Advanced Control Panel is a highly sophisticated, yet simple to use, two door access control unit. The unit accepts readers of almost any technology, with a Wiegand output up to 40 bits, including Proximity, Touch Card, Wiegand, Magnetic Stripe, Bar Code, Optical, and Biometric. Each of the two passageways controlled by the unit is completely independent of the other and is configured, programmed and viewed separately.

Up to 100 **SK-ACP** Panels may be linked together on a twisted pair (plus signal ground) RS-485 bus. When used with SK-NET™ software, a highly featured, easy to use, distributed intelligence access control system can be created.

Each of the two passageways controlled by the **SK-ACP** has two programmable inputs which may be programmed by the user to function as a Door Monitor, Tamper Monitor, Remote Open, Remote Inactive, Bell, Arming Circuit, or User Defined Input.

Each of the two passageways controlled by the **SK-ACP** has two outputs. One output is the Relay that operates the door operating device. The other output is programmable by the user to activate under one of several possible alarm or special conditions.

SK-ACP will control access for up to 65,535 individuals in 15 weekly time schedules (Time Zones) independently for each of the two passageways. Time Zones include a holiday schedule that is followed when one of the 32 user programmable holidays occur.

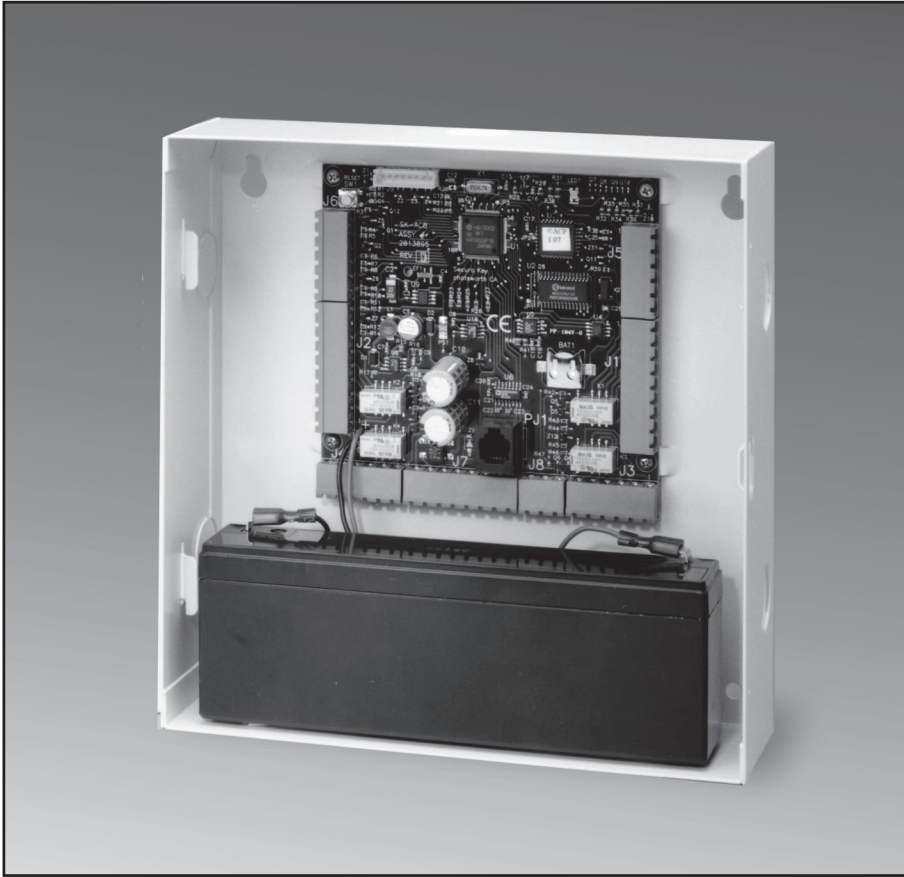
Certain Access Cards may be designated as “Limited Use” cards, and their use may be restricted to allow access for a given number of days or weeks or for a given number of times.

The **SK-ACP** may be programmed with a terminal or PC. Transaction information is stored by the unit and may be downloaded to a terminal, PC, or serial printer. Up to 4,864 transactions are stored.

Since the **SK-ACP** has nonvolatile memory, reprogramming after a power loss is unnecessary.

CARD ID NUMBERS AND FACILITY CODES

Access cards used with the SK-ACP have two encoded numbers: the ID number which is different on each card, and the Facility Code, (also called a system or site code) which is normally the same for all cards at a given site. When a card is read, the system first verifies the Facility Code, then it checks the ID Number against its internal “card list” in memory to see if the card is void or valid. It also checks the Time Zone, the card’s Antipassback status, and the Limited Use count.



SETTING THE FACILITY (SYSTEM) CODE

IMPORTANT

Before programming or using a new unit, the correct Facility Code must be set.

When power is first applied, or when the reset button is pushed (see Figure 3) the LED on each of the two readers will flash red and green alternately. While the LED is flashing, present an Access Card with the proper facility code to one of the readers and remove it (note LED turns solid green for about 1 second and the beeper beeps to indicate that the card has been read). The **SK-ACP** will “remember” the facility code and retain it until reprogrammed. It is not necessary to present the access card to the second reader since it is automatically set for both passageways. After setting the facility code, wait for the LED to stop flashing before attempting to use the reader.

To change a facility code (or to set the facility code if the LED is not flashing red/green), momentarily depress the reset button. The LED indicator will flash red and green alternately. If the reset button is pushed, but no card is presented to the reader before the LED indicator times out, the system code will be unchanged.

In some cases it may be necessary for the unit to recognize more than one facility code. Typical instances are when it is necessary to read cards that work in two independent locations that already have different facility codes or when two different reader technologies are used in the same system, each of which has a different facility codes.

The **SK-ACP** can be set to recognize up to sixteen different facility codes. To program multiple facility codes, follow the procedure above for programming a single facility code, but present a card with the second facility code (and additional facility codes if necessary) to the reader before the red/green LED indicator times out.

Note that it is not generally recommended to combine sets of cards with different facility codes, because the unit cannot distinguish between access cards having different facility codes and the same ID number.

For example, if you have two sets of cards numbered 1-100, with facility codes 12345 and 23456, and you delete cards 1 - 10 from the reader’s internal “card list,” then cards 1 - 10 with either facility code will be denied entry at the reader.

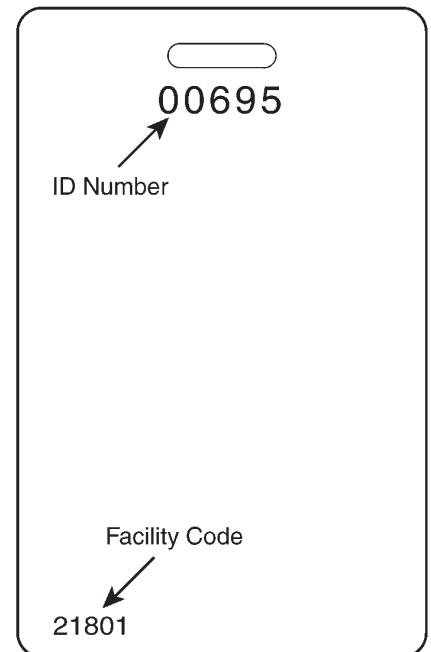


FIGURE 1

INSTALLATION

CAUTION SHOULD BE TAKEN NOT TO TOUCH CIRCUIT BOARD OR ELECTRONIC COMPONENTS PRIOR TO AND DURING INSTALLATION TO AVOID ELECTRO-STATIC DISCHARGE (ESD) DAMAGE.

INSTALLING THE SK-ACP

1. Select a location for the **SK-ACP** unit that is secure and sheltered from weather and extreme humidity. Choose a location that facilitates access to power and is reasonably close to the doors that are to be controlled (no further than 500 feet).
2. Using the unit as a template, mark on the mounting surface the location of the four mounting holes.
3. Install appropriate mounting hardware (anchors, retainers, etc.) to the mounting surface if necessary.
4. Screw #6 or #8 mounting screws into the top 2 mounting holes of the mounting surface, leaving about 1/4" clearance.
5. Place panel top key-way mounting holes over installed mounting screws and slide panel down.
6. Tighten top mounting screws.
7. Install two bottom mounting screws (see figure 2).
8. Route cables into the enclosure through knockouts in sides or back of box, being careful not to nick or scrape insulation on any rough edges.

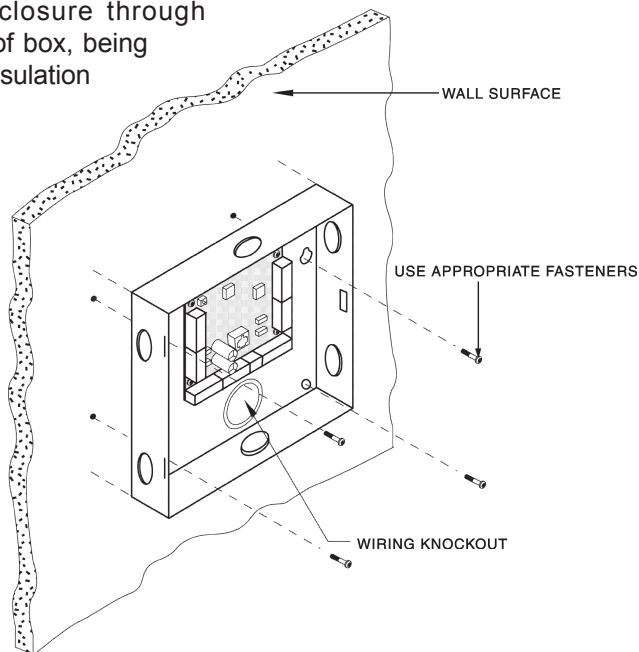


FIGURE 2

WIRING

The **SK-ACP** unit is organized so that the wiring for door #1 is on the right side of the panel and the wiring for door #2 is on the left side of the panel (see figure 3).

For ease of installation and servicing, plug-in terminal blocks are provided.

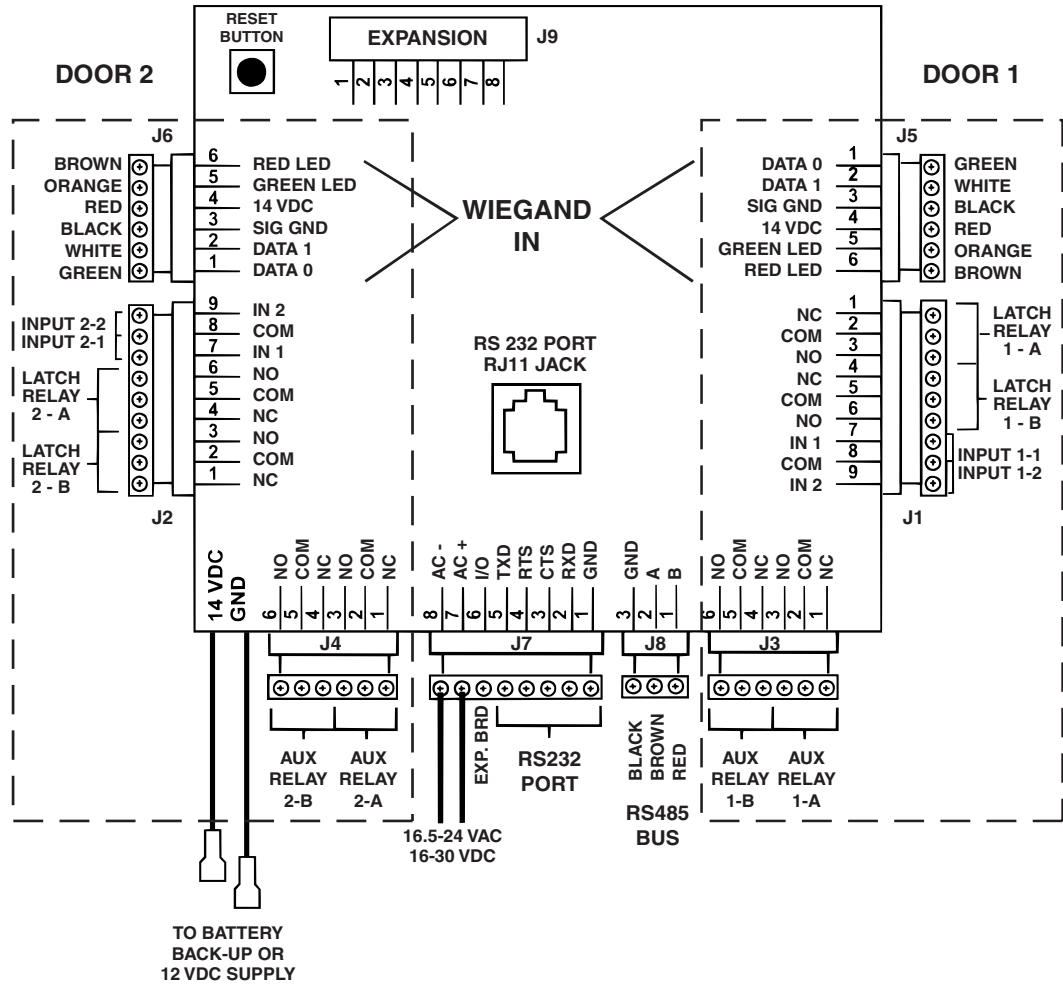


FIGURE 3

POWER & BATTERIES

The **SK-ACP** unit must be connected to a source of low voltage power. The **SK-ACP** should **NOT** be connected to the same power supply that is providing power to an electric lock or strike. We recommend that you use the Secura Key SK-ACP-PS, which includes a 24 VDC, 500 mA transformer and a 12VDC, 1.9AH standby battery, to power the SK-ACP.

Terminals 7 & 8 on plug “J7” must be connected to 16.5 to 24 volts, AC or DC. You may also connect the **SK-ACP** to 12 VDC, but in this case you must connect your power supply to the red (+) and black (-) wire leads on the lower left corner of the panel instead of the “J7” plug. If you use 12 VDC you cannot install a standby battery in the SK-ACP.

When 16.5 – 24 volts is used to power the **SK-ACP**, you may connect the red and black wires to a 12 volt standby battery. Polarity (+/-) must be observed. The standard **SK-ACP** has space for a small (1.9AH) battery, while the 10” X 11” **SK-ACP-LE** can accommodate larger batteries. A battery up to 4.5 Amp-hours can be connected to each **SK-ACP**.

Do not energize the **SK-ACP** until all other connections are made.

READERS

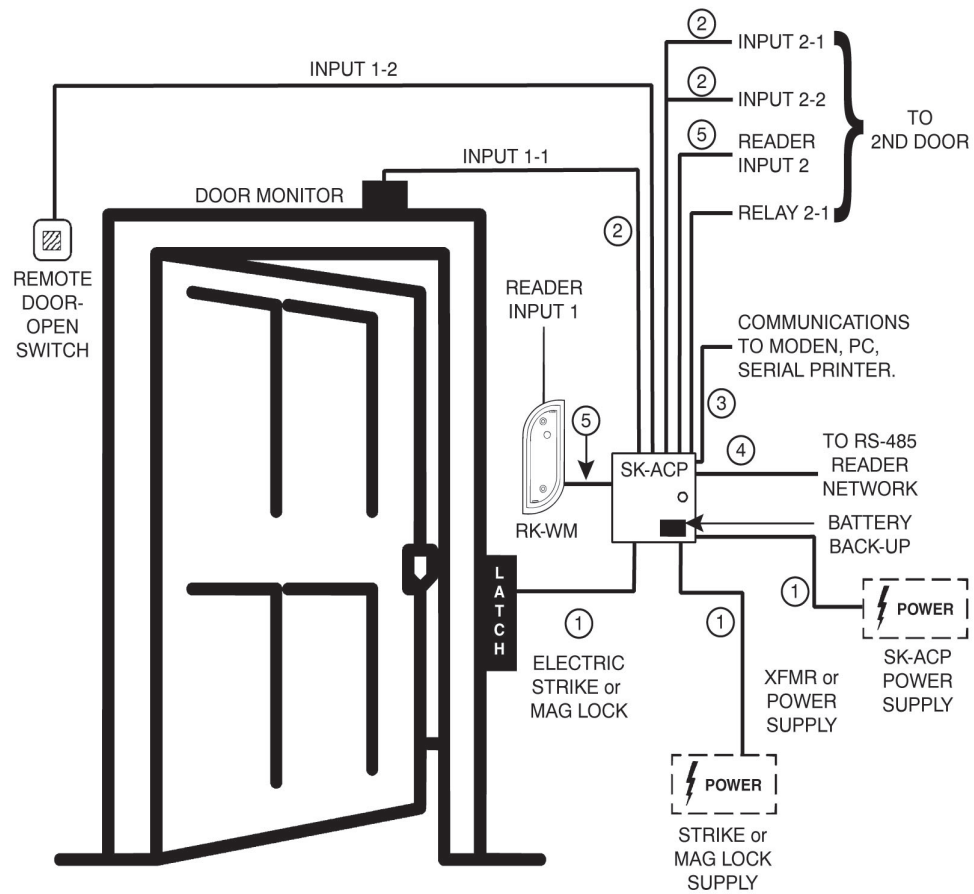
SK-ACP is designed to accept any reader or keypad with a standard Wiegand interface. The reader for door #1 is connected to plug “J5”, the reader for door #2 is connected to plug “J6”. (See figure 3) SUGGESTED CABLE IS Eastman 725-5720 SJ. The **SK-ACP** will provide up to 150mA to power each reader. If the readers you use require more current, an external power supply must be used.

INPUTS

Each reader may be associated with up to two auxiliary inputs. Inputs might include remote switches, door contact sensors, vehicle presence detectors, etc. If you connect inputs to the **SK-ACP** you must define those inputs using **SK-NET™** software (see SK-NET™ manual, section 5.31). Note that input 1 (#7) and input 2 (#9) share a common terminal (#8) on plugs “J1” and “J2”. All inputs are configured as normally open circuits. However, in many cases a “Door Monitor” input should be a normally closed circuit. To convert any input defined as “Door Monitor” to normally closed, disconnect power from the panel, remove the jumper from pins 3 and 4 in the J9 expansion slot and place the jumper on pins 4 and 5. Restore power to the panel and test the “Door Monitor” input.

OUTPUTS

Each door controlled by the **SK-ACP** has two double pole, double throw relays associated with it. The “latch relays” are located on “J1” and “J2”, terminals 1-6. The “auxiliary relays” are located on “J3” and “J4”. One pole of the latch relay is typically used to open or close a circuit to unlock a door or activate a gate operator. The other pole of the latch relay operates simultaneously and may be used to shunt an alarm contact, start a video recorder, etc. The auxiliary relay may operate according to a variety of user-defined conditions. These must be



- CABLE TYPES:**
- ① 2 COND, UNSHIELDED 16-18 AWG
 - ② 2 COND, UNSHIELDED 18-24 AWG
 - ③ 5 COND, SHIELDED 18-24 AWG
 - ④ RS-485-SINGLE TWISTED PAIR, 18-24 AWG
 - ⑤ 5 TO 7 CONDUCTOR SHIELDED, 20 AWG (DEPENDS ON LED AND BUZZER CONTROLS USED)

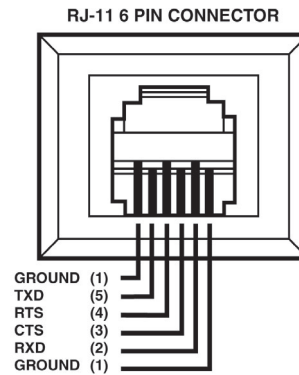
FIGURE 4

programmed using **SK-NET™** software (see SK-NET™ manual, section 5.33) NOTE: Two MOVs (metal-oxide varistors) are provided with each **SK-ACP**. These must be installed between the “Common” and either the “Normally Open” or the “Normally Closed” terminals where power to the electric lock or strike is being switched (See Figures 6 and 7).

PIN NUMBER CONNECTIONS						
SK-ACP ADVANCED CONTROL PANEL		PC OR TERMINAL		PRINTER	SK-LAN OR MODEM	MODEM
SIGNAL DESCRIPTION	J7	DB-25S (FEMALE) PIN #	DB-9S (FEMALE) PIN #	DB-25P (MALE) PIN #	DB-25P (MALE) PIN #	DB-9P (MALE) PIN#
SIGNAL GROUND	1	1 & 7	5	1 & 7	7	5
RECEIVE DATA (RXD)	2*	2	3	N/C *	3	2
CLEAR TO SEND (CTS)	3	4	7	20	8	1
REQUEST TO SEND (RTS)	4*	5	8	6 & 8	4	7
TRANSMIT DATA (TXD)	5	3	2	3	2	3

* FOR HARD-WIRED PRINTER MODE, CONNECT TERMINAL 2 TO TERMINAL 4 .

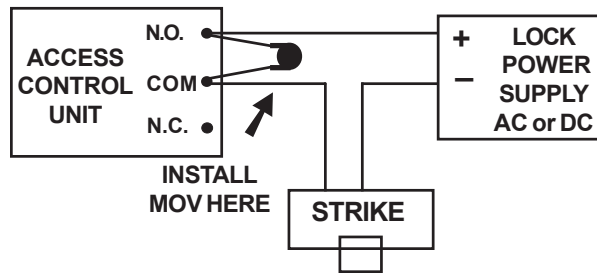
FIGURE 5



RS-232

You may connect RS-232 communications to the **SK-ACP** either by using plug “J7”, terminals 1-5, or by plugging into the RJ11 jack in the center of the circuit board. (See figure 3) RS-232 requires at least 5-conductor cable. SUGGESTED CABLE IS Belden 6304FE. RS-232 is used to connect the COM port of a p.c. to a single **SK-ACP**, or as a gateway to a network of **SK-ACPs**. (COM ports are typically DB9 male or DB25 male jacks on the back of a personal computer.) When connecting a p.c. via RS-232 the distance from the panel to the computer should not exceed 100'. (For longer distances, see “RS-485” below.) A serial printer may also be connected to the RS-232 port of any **SK-ACP**. This will allow all system transactions to be printed as they occur. (A printer may be connected to one SK-ACP even if a computer is connected to another SK-ACP in the same network.) An external modem might also be connected to the RS-232 port of an **SK-ACP** for dial-up applications using SK-NET-MLD software. While any Hayes compatible 56K modem may be used, we highly recommend that you use the Secura Key SK-MDM. The SK-ACP contains the configuration data, or “setup string” which allows this modem to be configured in the field without the use of a computer and without setting DIP switches. (See Appendix C for modem instructions.) Figure 5 shows the RS-232 pin connections for a p.c., printer, or modem. **WARNING: Never connect a telephone line directly to the RJ11 jack on an SK-ACP!**

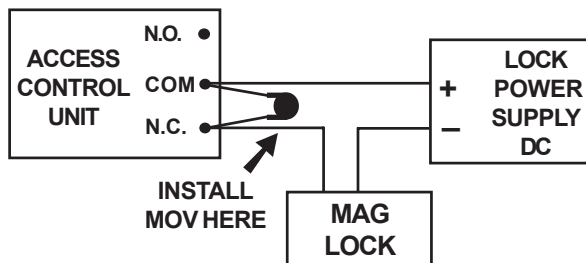
Installation of Metal Oxide Varistor with Electric Strike



Install the enclosed 40-volt MOV (Metal Oxide Varistor) across the relay contacts in the access control unit, as shown. The Access Control Unit must have its own power supply.

FIGURE 6

Installation of Metal Oxide Varistor with Magnetic Lock



Install the enclosed 40-volt MOV (Metal Oxide Varistor) across the relay contacts in the access control unit, as shown. The Access Control Unit must have its own power supply.

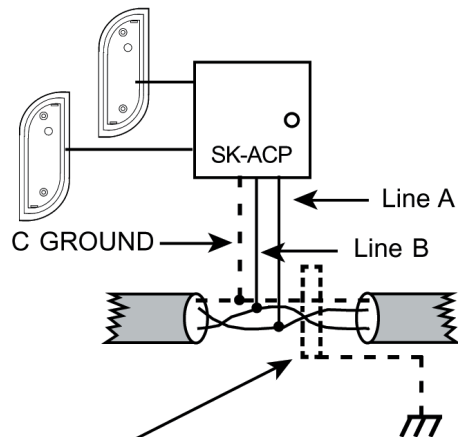
FIGURE 7

RS-485

The RS-485 bus is used to link multiple **SK-ACP** units into a network. Where two or more **SK-ACPs** are linked, you must run cable between the “J8” plugs on each panel. Terminals 1 & 2 must be a twisted pair of wires. SUGGESTED CABLE IS Belden 1585A. Terminal 3, if used, may be connected to one conductor of another twisted pair. (Terminal 3 is a “signal ground”. If used, this must be an insulated conductor and it should NOT be connected to earth ground.)

Where the distance from the p.c. to any one of the **SK-ACP** units is greater than 100', you may install an RS-232 to RS-485 converter (Secura Key p/n NET-CONV-P) to the COM port of the computer. From the converter you then run RS-485 cable and connect it anywhere along the RS-485 bus. The total RS-485 cable distance, including the distance between all **SK-ACPs**, may be up to 4000'.

Figure 8 shows how each **SK-ACP** is connected to the RS-485 bus.



Earth Grounded Shield is highly recommended in environments subject to high voltage electrical discharge (ie. lightning). Shield should be connected to earth ground only at one end of the cable. DC Signal Ground may be necessary in networks with very long wire runs. DC Ground wire is NOT to be connected to earth ground.

FIGURE 8

PROGRAMMING THE SK-ACP WITH SK-NET™

The SK-ACP must be programmed with SK-NET™ software. Please refer to the SK-NET™ manual for programming instructions. (The SK-NET™ manual is available at www.securakey.com/manuals/SKNET_5879.pdf)

FACTORY SETTINGS

When shipped from the factory, the **SK-ACP** has the following settings:

Facility Code	None*
All Cards	Time Zone 0 (void) No Limited Use Cards
Settings	Latch timer = 1 Second APB Timer = 0 Minutes (off) Baud Rate = 38,400* Reader ID = (none) Password = 12345* Date = Undetermined* Time = Undetermined*
Time Zones	APB = Timed Hard* Date Restrictions = None 0 = Always Void 1 = Always Valid (no restriction) 2 = Mon - Fri, 8am - 5:30pm 3 = Mon - Fri, 6am - 6pm 4 = Sat & Sun, 24 hours 5 = Sat & Sun, 6am - 6pm 6 = Always Valid (Timed Antipassback) 7 & Up = Mon-Sun, 6am - 6pm
Door Zone	Off For All Time Segments
Holidays	None Set
Daylight Savings	
Correction	Automatic*
Inputs 1	Door Monitor
2	Disabled
Auxiliary Output	Disabled
Anti-Passback Parameters	
Reader (In/Out)	None
Daily APB Forgive Hour	00

* Common to Panel, all other settings are per reader (2 readers per panel)

READERS AND CARDS

USING SK-ACP WITH SECURA KEY PROXIMITY READERS AND CARDS

Secura Key offers proximity readers in a variety of sizes for use with the SK-ACP panel. Secura Key proximity readers read Secura Key cards only. Secura Key proximity cards have two encoded numbers: the ID Number which is different on each card, and the Facility Code (also called a system or site code) which is normally the same for all cards at a given site. When a card is read, the system first verifies the Facility Code, then it checks the ID Number against its internal “card list” to see if the card is void or valid. It also checks the card’s Antipass-back Status, Time Zone and Limited Use count.

ORDERING ADDITIONAL CARDS FOR YOUR SYSTEM

The SK-ACP can learn up to 16 different facility codes, but it is not generally recommended that you combine sets of cards with different Facility Codes in the same system. The SK-ACP cannot distinguish between cards which have different Facility Codes and the same ID Number. For example, if you have a card with Facility Code A1 and ID Number 15 and you have a card with Facility Code B2 and ID Number 15, and the SK-ACP has been programmed to accept both Facility Codes, it will see these as the same card.

When ordering additional cards it is recommended that you place a factory order specifying the existing Facility Code and beginning with the ID Number which is one higher than the highest card already in use.

SETTING THE FACILITY CODE

When power is first applied to the SK-ACP the LED on each of the connected readers will flash alternately Red and Green. While the LED is flashing, hold an Access Card with the correct Facility Code near a reader for about one second. The LED should show a long Green flash and the reader will beep. If an additional Facility Code is to be

entered, present an Access Card with that Facility Code in the same manner. Repeat for each Facility Code to be entered. Let the LED stop flashing Red/Green before attempting to use an Access Card.

To change a Facility Code (or to set a Facility Code if the LED is not flashing Red/Green) momentarily depress the reset button on the SK-ACP. Depressing the reset button will NOT erase memory or disrupt other programming.

To add an additional Facility Code to a system, while retaining the existing Facility Code, you must depress the reset button and then present a card with each Facility Code to the readers while the Red/Green flashing is occurring. If you only present a card with the “new” Facility Code the system will “forget” the old Facility Code.

It is only necessary to present an Access Card to one of the two readers connected to each SK-ACP in the system.

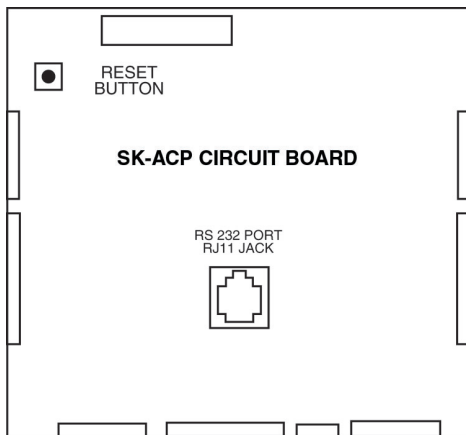
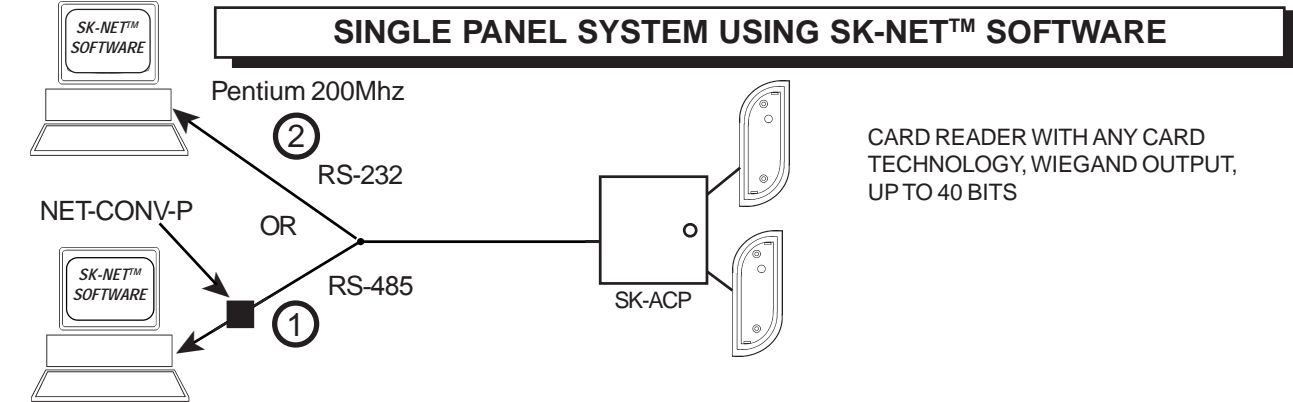


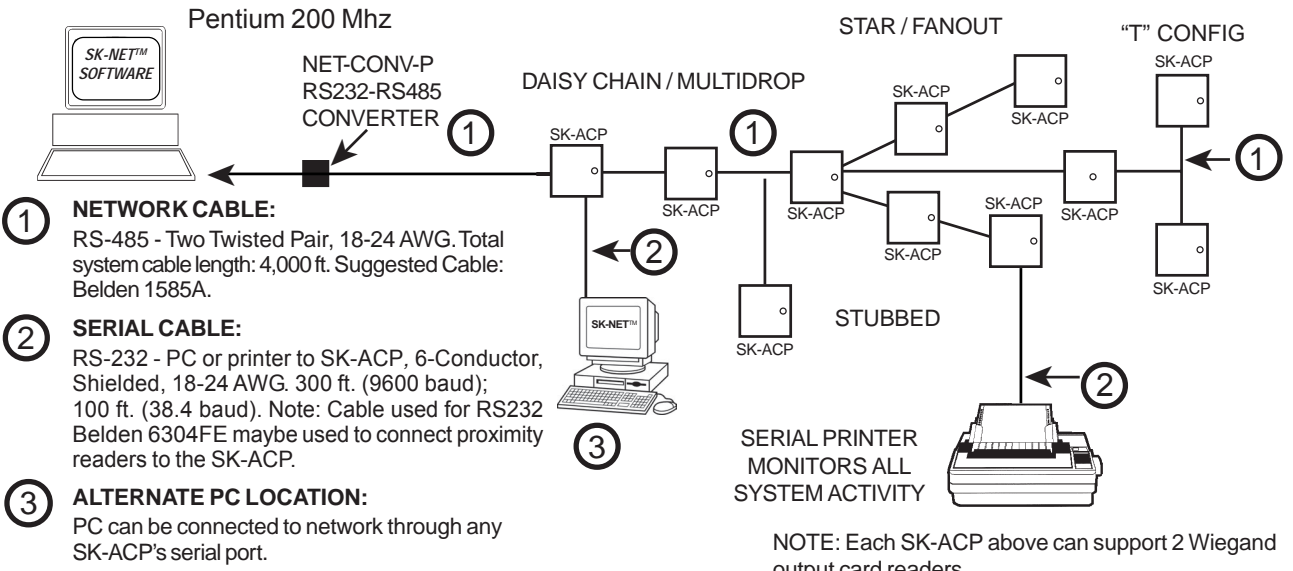
FIGURE 14

APPENDIX A

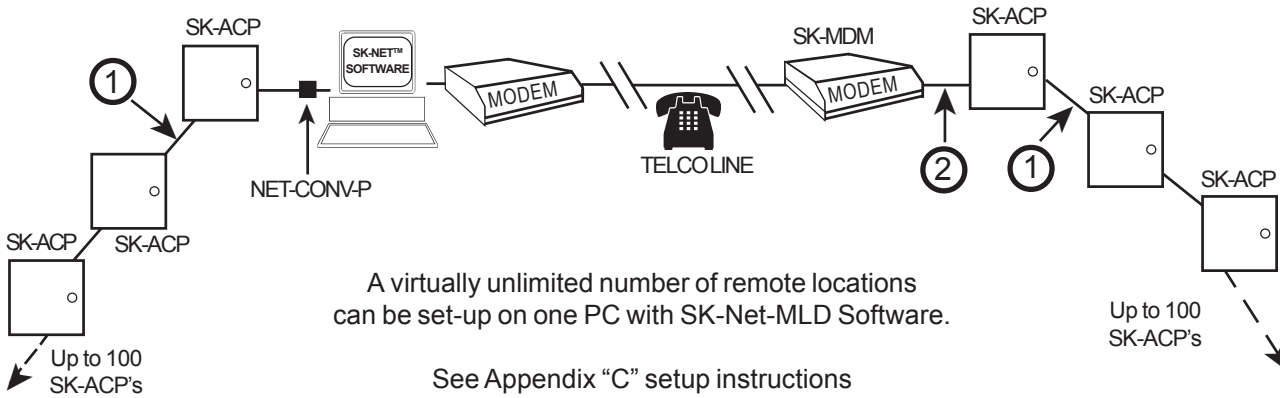
WIRING AND SYSTEM CONFIGURATIONS



MULTI-PANEL SYSTEM USING SK-NET™ SOFTWARE- SINGLE LOCATION



MULTI LOCATION SYSTEM WITH SK-NET-MLD SOFTWARE

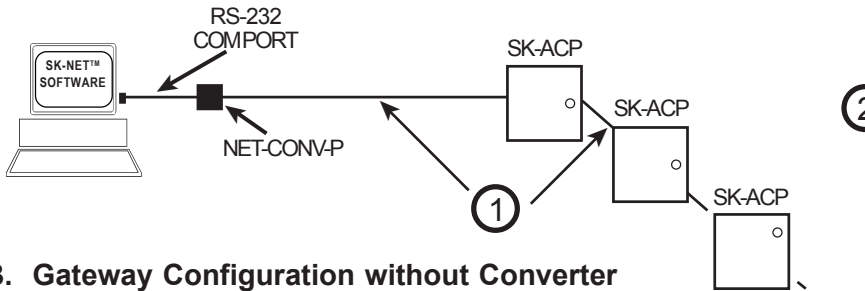


OPTIONS FOR CONNECTION OF THE SK-ACP NETWORK TO A PC

There are two ways to connect a PC to the panel network:

Option A is recommended for large systems or systems with high traffic volume.

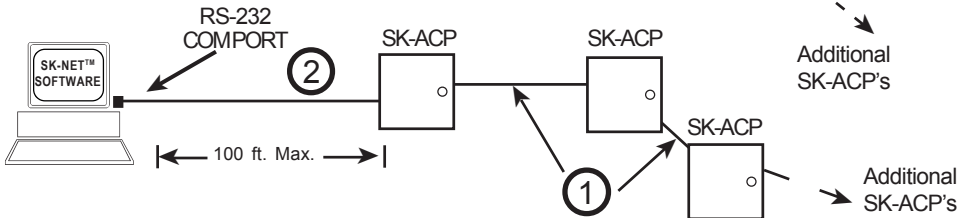
A. Standard Configuration with Converter



- ① **NETWORK CABLE:**
RS-485 -Two Twisted Pair, 18-24 AWG.
Total system cable length: 4,000 ft.
Suggested Cable: Belden 1585A.

- ② **SERIAL CABLE:**
RS-232 - PC or printer to 28SA Plus,
6-Conductor, Shielded, 18-24 AWG.
300 ft. (9600 baud); 100 ft.
(38.4 baud). Suggested Cable:
Belden 6304FE.

B. Gateway Configuration without Converter



A-2

APPENDIX B

SK-NET™ EQUIPMENT COMPONENTS & SPECIFICATIONS**SK-ACP:**

Two Door Access Control Unit

RK-WM: or RK-WS or RK-WL

Proximity Reader (2 per SK-ACP)

**RKCM-02 Molded Proximity Cards
Specify Quantity**

or RKKT-02 Key Tags

or RKCI-02 ISO Image-able cards

SOFTWARE

SK-NET™ — Basic Software

SK-NET™ -MLD — Multi-Location Dial-Up Software

SK-NET™ -MLD — C/S 2, 5, 10, 15 Client/Server
Software for Multiple Workstations

ACCESSORIES

NET-CONV-P — RS-232 to RS-485 Converter with Power
Supply - one required per system (unless using a
gateway connection)

CBLSA — Demo Cable & Connectors

For Bench Testing or field connection with a laptop

SK-MDM — Modem - 56K Baud External Modem for
dial-up connection to any SK-ACP with MLD software

SK-Plug 9 — Computer connector (DB9) with wire pigtail.

SK-ACP-PS — Transformer and stand by battery
for SK-ACP.

SK-LAN — External Device Server for TCP/IP connection
using SK-NET-MLD Software

SPECIFICATIONS

PHYSICAL		SK-ACP-LE	
	Depth	3.0"	(7.62 cm)
	Width	10.0"	(25.40 cm)
	Height	11.0"	(27.94 cm)
	Weight	68.8 oz	(1.95 kg)
Housing Material is All Steel; Color is Beige			
POWER REQUIREMENTS	Power Supply Sold Separately	16.5-24 VAC, 20 VA or 16-30 VDC, 100 mA plus reader current draw	
		* A 12 VDC Power Supply may be used if connected to Battery Back-Up Leads.	
BACK-UP BATTERY	12 V, 1.2 - 6 Ah (Optional, Sold Separately)		
CARD READERS	Connect two card readers with two-line Wiegand output, up to 40 bits. Provides 14 VDC, 150 mA max. power for each card reader.		
SOFTWARE	SK-NET™ Software Version 2.0 or greater		
OUTPUTS - 2 Per Door (Total of 4)	Latch & Alarm Shunt Auxiliary	DPDT contact, 2A, up to 220 VAC or 30 VDC	DPDT contact, 2A, up to 220 VAC or 30 VDC
INPUTS - 2 Per Door (Total of 4)	Auxiliary 1 Auxiliary 2	Requires SPST contact closure Requires SPST contact closure	
COMMUNICATION	RS-232 RS-485 Wiegand Input (2) Modem Printer	5-Wire Shielded Cable, up to 38.4K baud, full duplex, (8N1) Single Twisted Pair, shielded cable with a signal ground Programmable up to 40 bits 14 VDC @ 150 mA supplied to each reader, Requires Hayes compatible - 1.2 to 38.4k baud Serial Printer (or Parallel printer with serial converter)	
ENVIRONMENT	Ambient Temperature Humidity	-40° F to 158° F (-40° C to 70° C) 0% to 95% relative humidity (non-condensing)	
OPERATIONAL	Per Door {	Card Capacity	65,535/Door (Highest card number = 65,535)
		Time Zones	15 for card access, one door unlock; full week plus holiday in one-half hour segments; 32 programmable holidays; selectable automatic daylight saving time.
		Facility Code	Up to 16 different codes simultaneously (max. # of cards 65,535)
		Latch/Alarm Shunt Timer	Programmable from 1/4 to 30 seconds
		Antipassback	Real or Timed (1 to 30 minutes); hard or soft
		Auxiliary Inputs (2)	Programmable for door monitor, tamper monitor, remote open, remote inactive, bell, arming circuit or user defined
		Auxiliary Output (1)	Output is programmable to activate under one of many possible alarm conditions, time zone or card violations.
	Limited Use Cards	4,000 (in a block within 65,535) programmable from 1-500 uses, days, weeks or number of days after first use.	
	Transaction Storage Memory	4,864 events Non-volatile	

This product complies with UL 294 Standards, CE (European Standards), and with Part 15 of Class B FCC Rules.

APPENDIX C

CONNECTING A MODEM TO SK-ACP

Using the SK-MDM Modem with the Secura Key 28SA-Plus Access Control Unit and/or SK-ACP Advanced Control Panel

The SK-MDM Modem (Best Data Smart One 56SPX) has been selected by Secura Key for use with 28SA-Plus Access Control Unit and the SK-ACP at remote locations. The SK-MDM is connected directly to the RS232 port of a 28SA-Plus or an SK-ACP.

The 28SA-Plus and SK-ACP contain the configuration data or "setup string" for the SK-MDM, which allows the modem to be configured in the field by the reader without the use of a computer, and without setting DIP switches.

Note that the setup string stored in the 28SA-Plus and SK-ACP is only used for modems at remote locations. If you are using a SK-MDM at the PC location, use the setup information provided with the modem for installation with your PC.

MODEM REAR PANEL CONNECTIONS - REMOTE SITE

Line	Connect to the phone line at the remote site (not the RJ-11 Jack on the panel).
Phone	Not required.
Serial Port	Connect to 28SA-Plus or SK-ACP RS232 Port (see Manuals for wiring details).
Power	Connect the 9VAC plug-in transformer supplied with the unit.

SETTING UP THE BEST DATA 56SPX MODEM

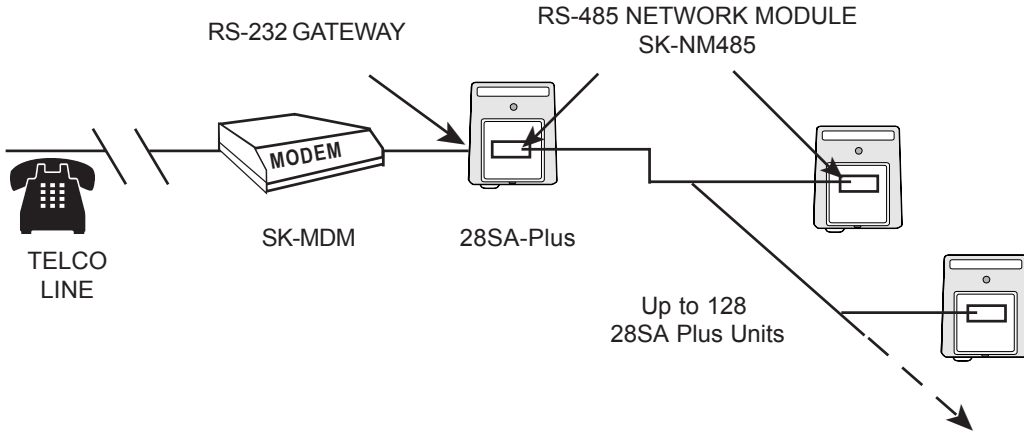
The order of these steps is critical, particularly when turning power on to the modem and reader or SK-ACP.

1. Remove power to the 28SA-Plus or SK-ACP
2. Connect cable from reader to modem
3. Turn power to the modem on
4. Turn on power to the 28SA-Plus or SK-ACP

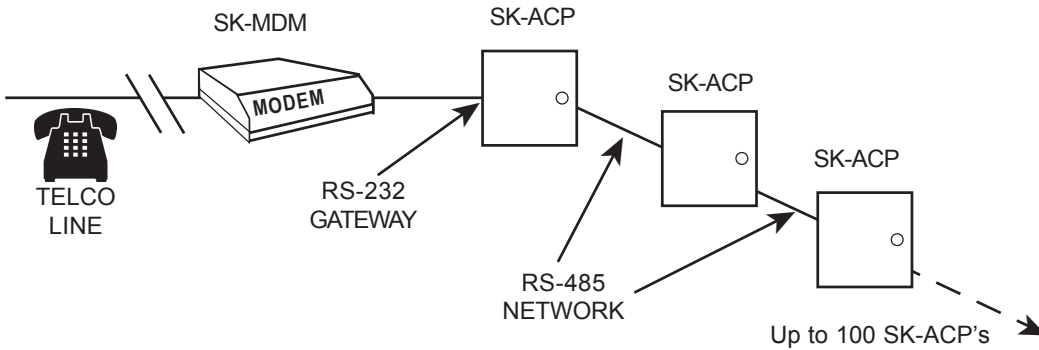
The modem is now set to "auto answer" and "dumb" mode. You can now connect to reader from the PC location. Verify that the TR, CD and AA lights are lighted (on) on the modem display.

NOTE: The default baud rate is 9600 baud. A 38,400 baud rate is recommended. You can change the baud rate of a 28SA-Plus using the PD-26 program deck, and the SK-ACP using SK-NET™ or a terminal program.

REMOTE SITE MODEM CONFIGURATION with 28SA-PLUS



REMOTE SITE MODEM CONFIGURATION WITH SK-ACP



APPENDIX D

CONNECTING AN SK-ACP OR 28SA-PLUS TO A LOCAL AREA NETWORK

Using the SK-LAN External Device Server with the Secura Key SK-ACP and/or 28SA-PLUS.

The SK-LAN External Device Server (Lantronix UDS-10-01) has been selected by Secura Key for use with our networkable access control system to permit connection over a 10BASE-T Local Area Network. The SK-LAN is connected directly to the RS-232 port of the gateway panel or reader.

Before installation, the LAN Network Administrator needs to assign an address to the SK-LAN. ***To avoid duplicate IP address conflicts, be sure to reserve this address in your DHCP server.***

1. Connect a PC to the SK-LAN with a serial cable. Do not power up the SK-LAN yet.
2. Run Hyper Terminal (Start/Programs/Accessories/Communication/Hyper Terminal)
3. Select the appropriate COM port.
4. Set Baud rate (Bits per second) to 9600; Data Bits to 8; Parity to 0; Stop bits to 1 and Flow Control to None. Click OK and OK.
5. Holding down the "X" key, power up the SK-LAN. Release "X" key when prompted to hit the "enter" key.
6. Hit "Enter" twice to go to setup mode.
7. Select "0" for server configuration.
8. Enter the IP address assigned to the SK-LAN by the Network Administrator.
9. Enter the Gateway address provided by the Network Administrator.
10. Enter the SubNet Mask, provided by the Network Administrator.
11. Accept the remaining default settings.
12. Enter "1" to go to Channel 1 configuration.
13. Change the baud rate to match the SK-ACP or 28SA-PLUS. The default baud rate for these products with firmware version 2.40 or later is 38,400. (Older products had a default of 9600.)
14. Accept the other default settings.
15. Enter "9" to save the settings and exit.

Install the SK-LAN in the field. Connect the Gateway panel or reader to the DB25 serial output using the provided cable. Connect the 10BASE-T port to a network jack with an Ethernet cable. Connect the included power supply to 110VAC.

DONOT:

- **Plug the Ethernet cable into a telephone jack.**
- **Substitute another power supply.**
- **Mount the unit in a wet location or a location where temperatures may exceed 120 degrees F.**

Test the unit.

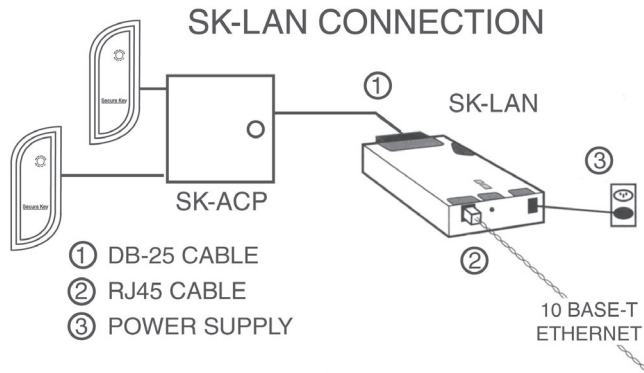
1. Ping.
Go to "Start" / "Run".
Type "command". Click OK. (This brings up a command prompt.)
Type "ping <IP address>". Press "Enter".
If the reply indicates "Request Timeouts" there is an error in the setup or connections.
If the reply shows "Packets sent" and "0% Loss". The setup and connections are good.
2. Communicate with SK-LAN.
Go to "Start" / "Run".
Type "telnet <IP address> 9999". Click OK.
The setup menu of the SK-LAN should appear. Exit
3. Find the Gateway reader/panel.
Go to "Start" / "Run".
Type "telnet <IP address> 10001". Click OK. Enter.
The internal menu of the reader or panel should appear. Exit.

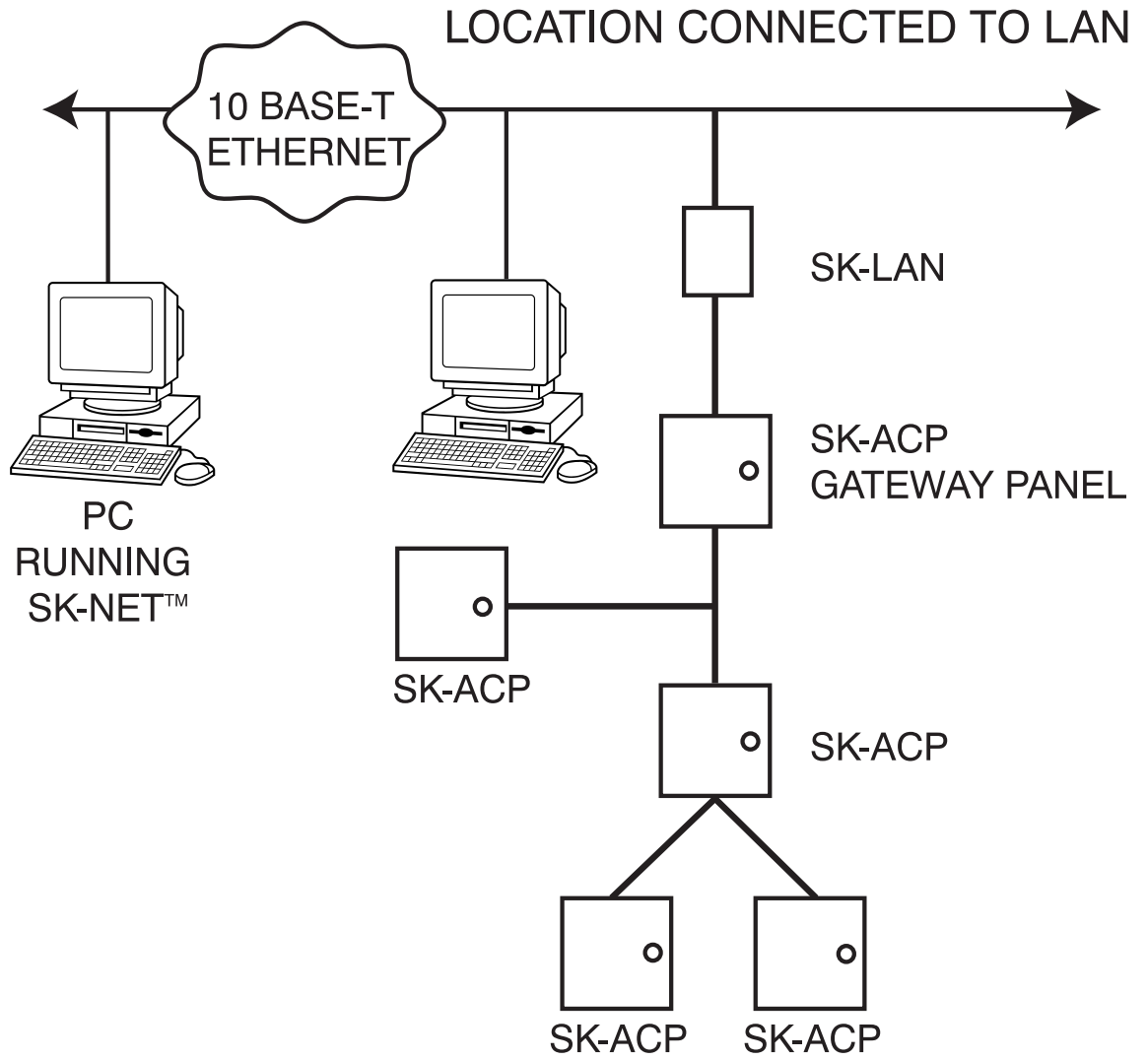
You are now ready to configure your system using SK-NET-MLD software. See SK-NET™ Manual Section 2 for instructions.

NOTES:

- 1) Always close SK-NET™ before closing WINDOWS to avoid LAN communications failures.
- 2) The manufacturer's instruction manual is included with the SK-LAN. Keep this document for additional troubleshooting and setup information.

PANEL / READER	WIRE COLOR	DB25
1	BLACK	7
2	WHITE	3
3	RED	8
4	GREEN	4
5	ORANGE	2





APPENDIX E

SK-ACP OR 28SA-PLUS TROUBLE SHOOTING GUIDE

1.0 Erratic or No Communication Between Readers and PC

One of the most common problems with on-line systems is communications between reader stations and the PC. There are two different configurations for connecting the PC to the network, through the RS-232 Gateway, or with a Converter. Select the configuration of your system from the list below and follow all the troubleshooting steps listed in the appropriate section.

1. System Using the NET-CONV-P (RS 485 to RS232 converter).
 - a) See section 2.0
2. System Using the Reader Gateway (RS232 com port).
 - a) See section 3.0

2.0 System Using NET-CONV-P (RS232 to RS485 Converter)

2.1 Recommended Wiring

Check the following connections to the NET-CONV-P:

1. Cable Type: Belden 1585A or equivalent (2 **twisted pair**).
2. The **SK-NM 485 module** must be installed into each reader. (For 28SA-Plus only, SK-ACP has a built-in 485 module).
3. Verify that both the brown and red wires from the SK-NM 485 module (s) are connected as a **twisted pair**.
4. Verify that the brown wire is connected to TD (A), and that TD (A) and RD (A) are jumpered together.
5. Verify that the red wire is connected to RD (B), and that RD (B) and TD (B) are jumpered together.
6. Verify that the black wire is connected using one conductor of the second pair, and then to the converters GND or (-) side of the power supply.
7. Verify the converters power supply is connected to the 485 power input.
8. Verify JP1 is open (not jumpered), and JP2 is jumpered.

2.2 Setup Location Properties

1. Select SK-NET™'s Explorer (Globe Icon).
2. Right click on the location name, and select Properties from the pull down menu. Click on the "Connection" tab.
 - a) Uncheck "Gateway (RS232)". Baud rate should automatically change to 38,400.
 - b) In the box labeled "Connect Using" select the PC serial COM port to which the converter is connected.
 - c) Be sure the "Local Connect" box is checked.
 - d) Click on "Connect".

2.3 Voltage Measurements

1. Voltages: Measure voltages at the converter.
 - a) Measure input voltage from the converter power supply. Should read from 9vDC to 16vDC.
 - b) Measure the voltage from the GND or (- side of the power supply) to TD (A), should read 0 v DC, from GND to TD (B), should read from 2.5 to 5v DC.

2.4 Power Reset (*for initial setup only!*)

1. Power Reset: This will change the node address, set password to 12345 (default), and set the baud rate to 38,400 (default).
 - a) Turn off the power to the reader, push the reset button, turn on the power with reset button pushed for approximately 3 seconds after turning on power. Repeat for all readers.

2.5 Steps to find new readers

1. Right click on location name.
2. Select Connect. Message on Screen: "Connecting to location (Name), continue." Click OK.
3. Message on Screen: "There are no readers in Location (Name), to be logged in. Scan for new readers now?" Click YES. Message on screen: "Are there more than 20 readers in this location? Select "YES" or "NO".
4. Message on Screen: "New Readers Found!", select OK. Now the software will make backup files for all the settings in all of the readers except for the card status.

3.0 System Using A Reader Gateway (*PC to Unit RS232 port*)

3.1 Recommended Wiring

1. Cable Type: Belden 6304FE, or equivalent (5 conductor shield, not twisted).
2. If you are using the a 28SA-Plus unit, the **SK-NM 485 module** must be installed into the reader. This is not necessary for the SK-ACP.
3. DB9 Connector: verify wiring using a DB9 connector to the terminal block of the reader per figure 3.
4. DB25 Connector: verify wiring using a DB25 connector to the terminal block of the reader per figure 3.

3.2 Setup Location Properties

1. Select SK-NET™'s Explorer (Globe Icon).
2. Right click on the location name, and select Properties from the pull down menu.

Click on the "Connection" tab.

- a) Be sure "Gateway(RS232)" and "Local Connect" are checked.
- b) Click on the Connection Wizard icon.
- c) Click on "YES". Connection Wizard will try every COM port at every baud rate until the system is located.
- d) When asked to accept the settings, click on "YES".
- e) Click on "Connect"

3.3 Voltage Measurements

If you cannot connect, it will be necessary to take voltage measurements to identify whether the problem is with the SK-ACP or with the computer.

1. From the Explorer screen, right-click on the Location.
2. Select Properties.
3. Click on the Connection tab.
4. Uncheck the box next to "Gateway (RS-232)"
5. Click on the Connect button.

The system will fail to connect, but in the process it will open the computer COM port, making a voltage test possible.

1. Voltages: Measure voltages at the gateway reader's terminal block, communications pins 1 to 5. Connect the ground lead to pin 1 (logic ground) for all measurements.
 - a) Pin 2 (Receive Data, RXD). The voltage should read between -5 VDC to -12 VDC. This voltage comes from the PC. If the voltage is wrong or missing, disconnect the reader from the PC, and measure the voltages at the reader (should be 0.0 VDC) and at the PC (should be between -5 VDC to -12 VDC).

- b) Pin 3 (Clear to Send, CTS). The voltage should read between +5 VDC to +12 VDC. This voltage comes from the PC. If the voltage is wrong or missing, disconnect the reader from the PC, and measure the voltages at the reader (should be 0.0 VDC) and at the PC (should be between +5 VDC to +12 VDC).
- c) Pin 4 (Request to Send, RTS). The voltage should read between -5 VDC to -12 VDC. This voltage comes from the Card Reader. If the voltage is wrong or missing, disconnect the reader from the PC, and measure the voltages at the reader (should be -9.5 VDC) and at the PC (should be 0.0 VDC).
- d) Pin 5 (Transmit Data, TXD). The voltage should read between -5 VDC to -12 VDC. This voltage comes from the Card Reader. If the voltage is wrong or missing, disconnect the reader from the PC, and measure the voltages at the reader (should be -9.5 VDC) and at the PC (should be 0.0 VDC).

After testing voltages, return to the Location/Properties/Connection box and re-check the box next to "Gateway (RS-232)".

3.4 Power Reset (*for initial setup only!*)

1. Power Reset: This will change the node address, set password to 12345 (default), and set the baud rate to 38,400 (default).
 - a) Turn off the power to the reader, push the reset button, turn on the power with reset button pushed for approximately 3 seconds after turning on power. Do not have any cards near the reader while this process is being done. Repeat for all readers.

3.5 Steps to find new readers

1. Right click on location name.
2. Select Connect. Message on Screen: "Connecting to location (Name), continue." Click OK.
3. Message on Screen: "There are no readers in Location (Name). To be logged in, scan for new readers now?" Click YES. Message on screen: "Are there more than 20 readers in this location? Select "YES" or "NO".
4. Message on Screen: "New Readers Found!", select OK. Now the software will make backup files for all the settings in all of the readers except for the card status.

Recommended Tools & Supplies

- 1) Laptop PC
- 2) CBLSA Cable Kit
- 3) Multimeter to measure DC volts and resistance
- 4) Hand tools required for the reader installation, and connection.

Tech Support Options

Web Page: www.securakey.com • *E-Mail:* techsupport@securakey.com

Fax: 818-882-7052 • *Toll-Free Telephone:* 800-891-0020

Tech Support Hours: 7:30 am to 5:00 pm P.S.T. • Best Time to call: Afternoons P.S.T.

Windows® 95/98 Hyper Terminal Setup

In order to connect to a ENTRACOMP® 28SA-Plus OR SK-ACP access control unit using only Windows, follow these steps:

1. Click on the start button on the lower left corner of the screen.
2. Select Programs.
3. Select Accessories.
4. Select Hyper Terminal.
5. Double click on Hypertrm.
6. Type Secura Key in the name field.
7. Click OK.
8. The next window will have a selection at the bottom of "Connect Using". Be sure it is set to "Direct to Com1", or whatever com port is available.
9. Click the settings tab at the top of the box.
10. Under Emulation, select VT100.
11. Click OK.
12. Verify the following setting in the next properties box:
 - (a) Bits per second: 38,400
 - (b) Data bits: 8
 - (c) Stop bits: 1
 - (d) Flow control: None
13. Click OK.
14. The next box should display the greeting and the "Enter Password" prompt. Enter 12345, or the appropriate password.
15. If this greeting does not appear, press the Enter or Return key once.
16. If the greeting still does not appear, check the wiring between the unit and the PC and test the com port.
17. To exit, click the (X) box on the upper right. Be sure to answer Yes to save the session.

Obtain the technical bulletin "Programming an SK-ACP Using a Terminal Program" from www.securakey.com

System Architecture:

MULTI-READER SYSTEMS:

- Network is twisted-pair, shielded cable
- Total system cable length, 4000 feet (1219.2 m)
- PC connects to Network using RS-232/485 converter, Model NET-CONV-P, or it can connect to the network without the converter using the RS-232 port on any reader or panel
- PC also can connect to remote locations with multiple reader, via modem
- See Diagram for System Configurations

Software upgrades can be downloaded from www.securakey.com

SINGLE READER SYSTEM:

- PC connects directly to reader or panel or via modem

SK-NET™ REQUIREMENTS

- CD-ROM Drive
- High-speed serial COM Port (38.4 K or better)
- VGA monitor or better
- IBM Compatible parallel printer for reports

RECOMMENDED FOR LARGER SYSTEMS*

- ZIP™ Drive or equivalent for system backup

MINIMUM REQUIREMENTS			
OPERATING SYSTEM	PROCESSOR SPEED	RAM	AVAILABLE DISK SPACE
WINDOWS® 95/98 WINDOWS® ME	200 MHz	64 MB	100 MB
WINDOWS® NT 4.0 OR GREATER	200 MHz	96 MB	100 MB
WINDOWS® 2000	700 MHz	96 MB	100 MB
WINDOWS® XP	1 GHz	256 MB	1 GB
RECOMMENDED SYSTEM*			
WINDOWS® XP	1.4 GHz	256 MB	1 GB
16 BIT Color Video Card			
* Larger systems may not run properly at the minimum requirements.			

APPENDIX F

PREVENTING LIGHTNING DAMAGE

SURGE PROTECTION FOR ACCESS CONTROL SYSTEMS

Access Control equipment is susceptible to damage from lightning, especially when installed outdoors. Voltage spikes which travel through buried data cables, telephone lines or AC power lines can damage Access Control equipment indoors, as well.

While nothing can protect equipment from a direct lightning hit, surge protectors can help to minimize the damage caused by nearby lightning strikes. Surge protectors operate by connecting Transorbs or Varistors from data lines to ground. Surge protectors have no effect on normal circuit voltages, but can act quickly to divert large voltage spikes to ground and away from sensitive components.

Secura Key SA-Series Access Control Units are equipped with surge protection on all inputs and outputs. PC's, Printers, and Modems are designed for an indoor, office environment and do not have surge protection. However, by properly installing aftermarket surge protection devices on all inputs and outputs, these devices can also be protected from lightning damage.

Where to Install Surge Protection

- On the AC line voltage input to the PC.
- On the AC line voltage input to any transformer or DC Power Supply connected to a 28SA-Plus or Modem.
- On RS-485 data lines connecting a 28SA-Plus Units or to a PC, Printer or Modem, using a NET-CONV-P converter.
- On RS-232 data lines from SA Units (Readers) to PC's, Printers or Modems.
- On Telephone lines connected to Modems.

Protect Both Ends of Data Lines

Surge Protectors should be installed at both ends of all Data Lines.

Wire Distance from the Surge Protector

You must **locate the protector at least three wire feet away from the device being protected**. The additional wire resistance will dissipate the energy from leading edge of the spike. The wire can be coiled; a three-foot physical distance is not required.

Grounding the Surge Protector

Surge protectors **must be connected to a verified good, nearby earth ground**. This can be AC Power Ground, a 10' Copper Ground Stake, or Building Ground. Run 16 AWG or heavier wire as short a distance as possible, and avoid any bends in the wire.

Self-grounding Surge Protectors

Do not use surge protectors unless they are equipped with a separate ground wire or ground screw. Self-grounding Surge Protectors use the connector shell or Pin 1 as a ground path; however, the shell and Pin 1 are not always grounded.

AC Power Surge Protectors

AC Power Surge Protectors must be plugged into a properly grounded 3-wire socket. If a 3-wire socket is not available, have one installed by an electrician; do not use a 2-prong socket by cutting off the 3rd prong on the plug, or by using a 3/2 converter, or the surge protector will be rendered useless.

Terminating Cable Shields

Connect cable shields on data cables at one end only. You may terminate the cable shield to the same ground as the surge protector. Leave the cable shield unconnected at the opposite end.

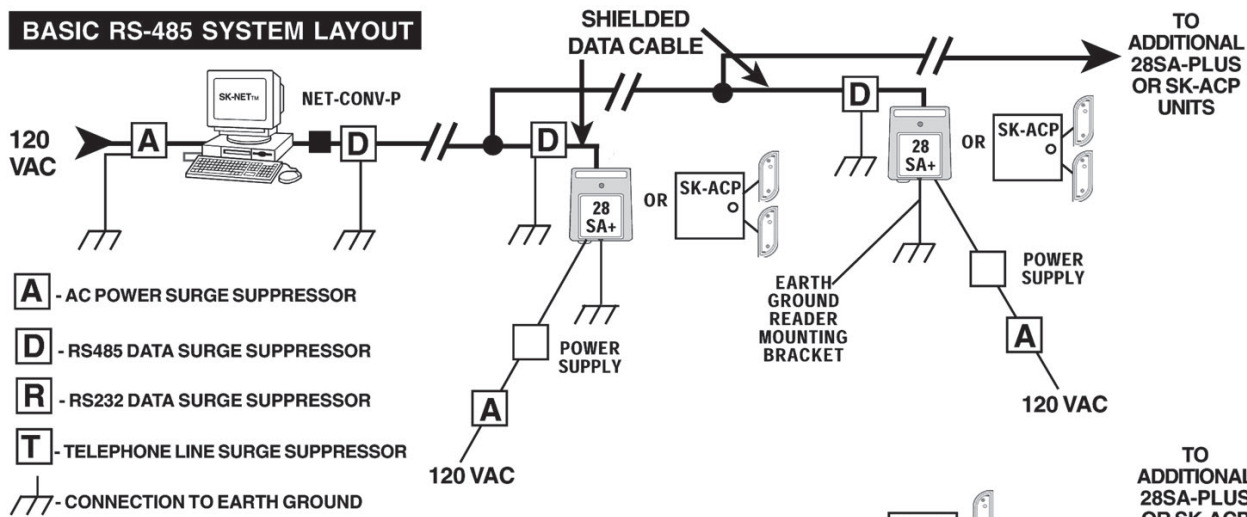
Grounding the Access Control Unit

At the Access Control Unit, connect the Green Ground Screw on the mounting plate to a good earth ground, to allow the built-in surge protection to work properly.

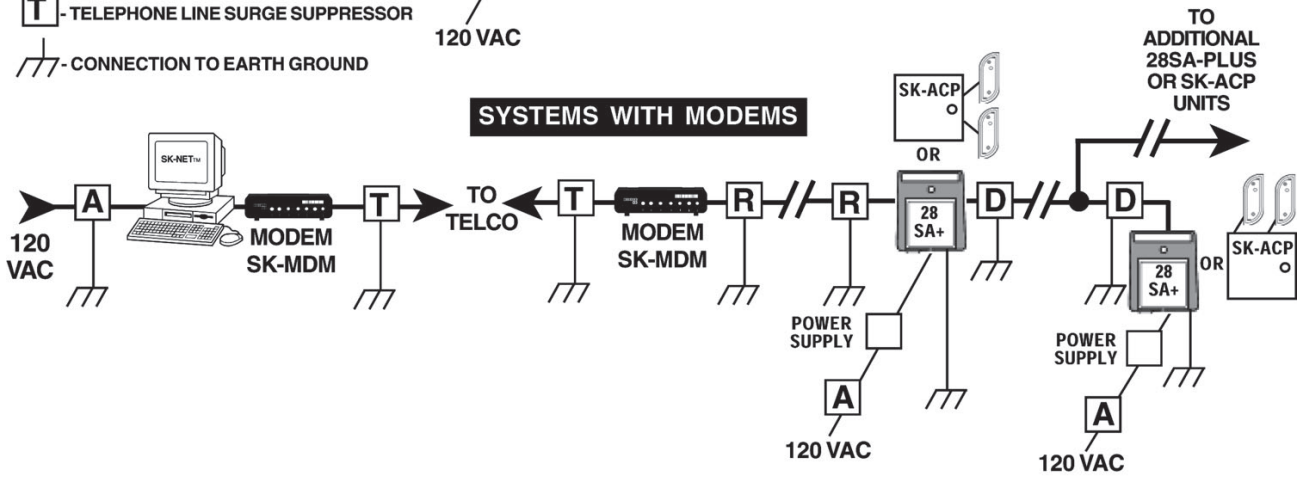
Surge Protectors

There are many manufacturers of surge protectors. Some are designed to protect a single type of circuit such as high voltage AC, low voltage DC or telephone lines. Secura Key offers two multi-function surge suppressors that are well-suited to protecting access control equipment. The **DTK-XR** is a good choice for protecting an SK-ACP panel from power, data and telephone line surges. If the card readers or keypads attached to the SK-ACP are located outdoors you may also wish to install **DTK-CR** protectors on each reader circuit.

BASIC RS-485 SYSTEM LAYOUT



SYSTEMS WITH MODEMS



WARRANTY (U.S. and Canadian)

“This product is warranted against defects in materials and workmanship for a period of 2 years from the date of purchase. Secura Key shall, at its option, either replace or repair this product, if returned to us freight prepaid within the warranty period. This warranty does not include freight, taxes, duties, or installation expenses. THE WARRANTY SET FORTH ABOVE IS EXCLUSIVE AND NO OTHER WARRANTY, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED. SECURA KEY SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. The remedies provided herein are the buyers’ sole and exclusive remedies. In no event shall Secura Key be liable for direct, indirect, special, incidental or consequential damages (including loss of profits), whether based on contract, tort or any other legal theory.” Contact Secura Key for Card/Tag and Export Warranty Policies.

WARNING:**INSTRUCTION TO THE USER**

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet of a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user’s authority to operate this equipment.

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