ENTRACOMP®

28SA Plus

Securakey))

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SECTION I:
INTRODUCTION

The **ENTRACOMP® 28SA-Plus** is a stand alone card access control system that will control access to a passageway for 65,000 individuals in 15 weekly time schedules (Time Zones). 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.

Programming of cards and most other programming functions are easily accomplished from outside the unit, using a PD-26 Programming Deck. (A set of 15 programming cards). The **ENTRACOMP® 28SA-Plus** may also 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. 5000 transactions may be stored at one time.

The **ENTRACOMP® 28SA-Plus** has three inputs. Each input 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. Factory Defaults for these inputs are 1 - Door Monitor, 2 - Disabled, and 3 - Disabled.

A second "remote" reader (SK-029W) may be added to the **ENTRACOMP® 28SA-Plus** to control access through a single passageway in both directions.

The **ENTRACOMP® 28SA-Plus** utilizes state of the art electronics in providing a product that is highly sophisticated, yet inexpensive. Patented slotless **TOUCH CARD®** reader technology protects the unit from weather and vandalism. Simply place the card on the stainless steel **TOUCH CARD®** reader plate, and the card is read instantly and accurately -- in any weather. A green light indicates that access has been granted. Since the **ENTRACOMP® 28SA-Plus** has non-volatile memory, reprogramming after a power loss is unnecessary.

CARD ID NUMBERS AND FACILITY CODES

Access cards used with the 28SA-Plus 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 the same for all cards at a given site. (The programming cards should also have the same Facility Code.) 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

<div align="center">

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

</div>

When power is first applied, or when the reset button is pushed (see Figure 1) the LED will flash red and green alternately. While the LED is flashing, place either a Programming Card or an Access Card with the proper facility code onto the **TOUCH CARD**® reader plate and remove it (note LED turns solid green). The **ENTRACOMP**® **28SA-Plus** will "remember" the facility code and retain it until reprogrammed. After setting the facility code, wait for the LED to stop flashing before attempting to use the program deck to program cards into the unit.

When placing standard cards on the reader, make sure that **the arrow points up and the logo faces you**. The exception is Photo ID cards, where the **arrow points up, and the photo faces you**.

To change a facility code (or to set the facility code if the LED is not flashing red/green) remove the unit from the wall to gain access to the reset button (see Figure 1). With power still connected, momentarily depress the reset

button. The LED indicator will flash red and green alternately. If the reset button is pushed, but no card is placed on the **TOUCH CARD**® reader plate 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 a service technician needs to program a unit and the original program deck cannot be located, or when other devices such as bar-code scanners, transmitter-type gate openers or proximity readers are connected to the remote reader input (particularly if they are 26-bit devices).

FIGURE 1
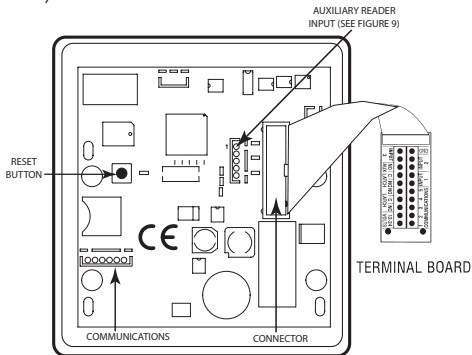
The **ENTRACOMP® 28SA-Plus** can be set to recognize up to three different facility codes. To program multiple facility codes, follow the procedure above for programming a single facility code, but place a card with the second facility code (and third facility code if necessary) on the **TOUCH CARD**® reader plate (or at the remote input device) before the red/green LED indicator times out.

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

ORDERING ADDITIONAL CARDS FOR YOUR SYSTEM

When you wish to add to an existing set of cards, always order additional cards with **the same facility code** as your existing cards, and with sequential (Card ID) numbering starting **one number higher** than the highest-numbered card currently in use. It is worth waiting a short time for these cards to be correctly encoded by the factory, as this will guarantee proper operation and the highest security for your system.

SPECIFICATIONS

PHYSICAL

	Surface Housing	Flush Housing	Metal Housing
Depth	2.25 in (5.72 cm)	1.50 in (3.8 cm)	1.75 in (4.45 cm)
Width	4.00 in (10.16 cm)	5.50 in (13.97 cm)	4.00 in (10.20 cm)
Height	4.60 in (11.70 cm)	7.63 in (19.38 cm)	5.62 in (14.30 cm)
Weight	20 oz (0.57 kg)	18 oz (0.51 kg)	45 oz (1.28 kg)
Material	Lexan® (Polycarbonate)		All Steel

*Meets UL standard 94 flame retardant rating

POWER REQUIREMENTS

Without Remote Reader	12 to 24 VAC or VDC; 125 mA at 12 VAC
With Remote Reader (SK-029W)	12 to 16 VAC or VDC; 250 mA at 12 VAC

OUTPUTS

Latch & Alarm Shunt	DPDT contacts, 115 VAC or 28 VDC, 3A maximum
Tamper (optional)	SPDT contact, 115 VAC, 2A maximum

INPUTS

Auxiliary 1, 2, & 3	All require SPST contact closure

COMMUNICATION

RS-232	Serial RS-232. Up to 38.4 kBaud, full duplex, 1 start bit, 8 data bits, 1 stop bit, no parity
RS-485	19.2K Baud
Remote Reader	31 bit or 26 bit Wiegand type input. 12 VDC @ 150 mA supplied to remote reader
Modem	Requires Hayes compatible - 1200 to 33.6 kBaud

ENVIRONMENT

Ambient Temperature	-40°F to 158°F (-40°C to 70°C)
Humidity	0% to 95% relative humidity (non-condensing)

OPERATIONAL

Memory	Non-volatile
Card Capacity	65,000
Limited Use Cards	4000
Transaction Storage	5000
Time Zones	15 for card access, 1 door unlock time zone, full week plus holiday in one-half hour segments; 32 holidays programmable; selectable automatic daylight savings time
Facility Code	Up to 3 different codes simultaneously
Latch/Alarm Shunt Timer	Programmable from 1 to 30 seconds (0 = 1/4 second)
Timed Antipassback	Programmable from 1 to 30 minutes (hard or soft)
Auxiliary Inputs (3)	Programmable for door monitor, tamper monitor, remote open, remote inactive, bell, arming circuit, or user defined.

SECTION II:
INSTALLATION

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

WARNING
AN EARTH GROUND IS REQUIRED. Connect the green screw on the mounting plate to a good earth ground (AC Power Ground or a 10 foot copper ground stake) using a 16AWG solid copper wire. Failure to do so may result in improper operation or damage to the unit. (See Figures 11 - 21). Flush Mount and Metal Housing models also have a green ground wire, which must be attached to the green screw on the mounting plate.

WARNING
DO NOT APPLY POWER TO UNIT UNTIL
ALL CONNECTIONS ARE MADE AND CHECKED

GENERAL WIRING INSTRUCTIONS

For ease of installation and servicing, the **ENTRACOMP® 28SA-Plus** is provided with a terminal board which is connected to the main unit via a ribbon cable and connector. The screw terminals on the circuit board will accept wire gauges #16 through #24, solid or stranded. Strip approximately 5/16" (8mm) of insulation, insert into the appropriate hole, and tighten with a small screwdriver. Tinning is strongly recommended for stranded wires (see Figure 2 for proper terminations). Arrange a cable drip loop on all exterior installations.
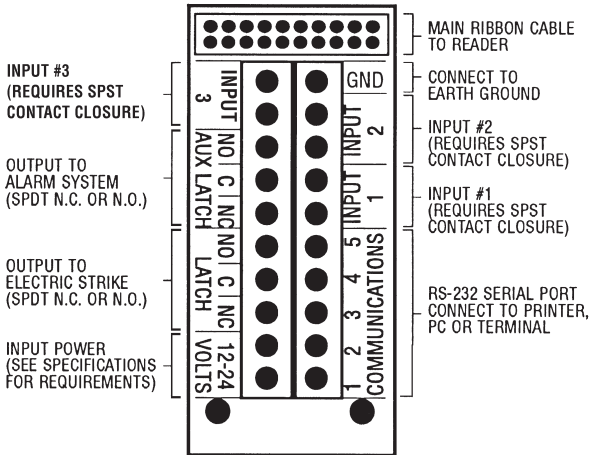
FIGURE 2

PASSAGEWAY CONTROL

The double-pole, double-throw relay is activated whenever a valid entry is generated. The latch output from the relay is on the terminal board (see Figure 2) and is used to operate the door operating device. The aux latch output may also be used to operate a device or to bypass an alarm sensor. Example below is for an electric strike; a magnetic lock would be connected to the **C** and **NC** terminals.

Figure 3 illustrates a typical installation.

TYPICAL WIRING DIAGRAM

FIGURE 3

COMMUNICATIONS WIRING FOR SINGLE-READER SYSTEMS

The **ENTRACOMP® 28SA-Plus** is designed to communicate with a printer, terminal, personal computer or a modem, using an RS-232 interface. **The wi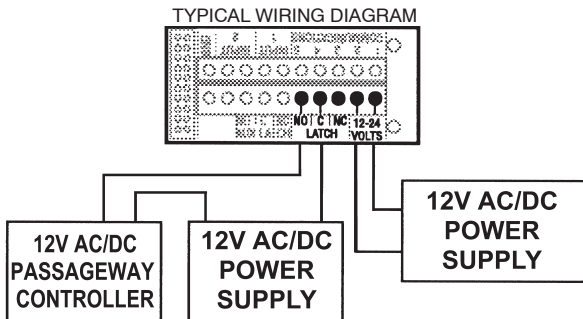ring for a printer cable is different from the wiring for a PC or Terminal.** (see Figures 2 through 9 for communications wiring instructions).

Cable distances of up to 100 feet (30.48 meters) are possible, using high-quality shielded cable, with the shield connected to Earth ground at the reader end. Use six-conductor, shielded cable, 18-24 AWG. Do not use twisted pairs. Recommended Cable is Alpha 1296C. **DO NOT USE un-shielded and/or twisted pair wire, such as "Category 5" for RS-232 communications.**

Route communications wiring away from equipment that generates RF interference, such as transmitters, fluorescent light ballasts, large motors, compressors, elevators, etc.

Whenever communications cable runs enter or exit a building, lightning transient suppressors are strongly recommended at both ends of those cables. Parking lot, pool gate, marina and tennis court applications with long buried cable runs are susceptible to nearby lightning strikes, and unprotected Readers, PC's, and Printers are frequently damaged. See Addendum D.

Wire runs of up to 4,000 feet are possible using "line drivers" (RS-232/422 converters). One converter is required **at each end** of a **two-twisted pair** overall-shielded cable. Each converter will require AC power. If you have already pulled wire for RS-232 and need to add RS422 converters, new twisted-pair cable must be pulled. Contact Secura Key for the correct converter model for your specific application.

MODEM COMMUNICATIONS. The **ENTRACOMP® 28SA-Plus** has been designed to communicate with a PC or terminal via modem in **auto answer mode** with any Hayes compatible modem (minimum 1200 baud). The modem must be

properly configured for operation with the **28SA-Plus**. This is done by connecting the modem to the serial port of a PC, running a terminal program (supplied with most modems), and by entering a setup string. Be sure that during modem setup, the terminal program is communicating with the modem at the same Baud rate that the **28SA- Plus** will be communicating. Note that some modems also require DIP Switch settings. Also note that if using SA-LINK™ or SA-NET™, you must install DOS modem driver software in your PC, even if your PC is running Windows.

Secura Key offers the SK-MDM modem which is set-up automatically when connected to the 28SA-Plus. SK-MDM comes completed with a cable for connection to the 28SA-Plus.

For example, to configure a US Robotics Sportster 14.4, 28.8, 33.6 or 56 kBaud modem, you would type in the following string of characters (note that 0 = zero):

AT&R1&D0&S0&H0S0=1&W0 [ENTER]

Then set DIP switches 1, 4, and 6 to ON and all others to OFF. Disconnect the modem and connect it to the reader.

Other modems may require a different setup string. Also refer to your modem manual.

RJ-11 JACK CONNECTION . For temporary connections, an RJ-11 (telephone type) jack is provided on the bottom of the unit housing to allow communications access without the necessity of opening the unit.

WARNING
DO NOT CONNECT THE 28SA-Plus' RJ-11 JACK TO A TELEPHONE LINE, PBX, OR THE PHONE OUTPUT OF A MODEM, OR SERIOUS DAMAGE MAY RESULT.

if you are not using the RJ-11 jack, you may disable this communication port by unplugging the jack input connector on the main circuit board (see Figure 1).

TERMINAL BOARD CONNECTION. For permanent (hard-wired) connection, communications wiring may be connected to the unit via the terminal board (see Figure 2 for wiring).

SERIAL PRINTER CONNECTION. Figures 4 and 7 show how to connect a serial printer to the system. Most serial printers have dip switch settings to select data protocols. Make sure the printer is configured for pin #20 to be "Ready Busy". See page 5 for proper settings. If a serial printer is not available, a serial-to-parallel converter may be used to connect a parallel printer. If you have difficulty printing, refer back to page 44.

TERMINAL/PC CONNECTION. Figures 4, 5, and 6 show wiring the **ENTRACOMP® 28SA-Plus** to a terminal or PC. Figure 6 shows wiring for a DB-9S female connector. Figure 5 shows wiring for a DB-25S female connector. Your PC may have either type of connector on its serial communications ports, COM 1, 2, 3 or 4.

REMOTE READER CONNECTION

<u>**WARNING**</u>
**ALWAYS REMOVE POWER FROM THE 28SA-Plus
BEFORE CONNECTING THE REMOTE READER**.

The **ENTRACOMP® 28SA-Plus** provides power for the remote reader (Figures 1 and 10). The SK-029W **TOUCH CARD®** Reader is used as the second (remote) reader to control access through a single passageway or a single parking lot lane in the opposite direction. The two readers are distinguished in the transaction log and printout. If timed antipassback is to be used, the waiting time will apply to both readers (the **ENTRACOMP® 28SA-Plus** and the SK-029W) no matter which reader is used. If real antipassback is used, the remote and main readers must be used alternately; neither reader can be used twice in a row by an individual card holder.

The remote reader does not have its own latch relay. Using a valid card in either reader will activate the latch relay on the **ENTRACOMP® 28SA-Plus**.

Other devices with either a Secura Key 31-bit or 26-bit Wiegand output may be also be connected to the Remote Reader Input. Various transmitter-type gate openers, bar code scanners, and proximity readers are available with a Secura Key 31-bit or standard 26-bit Wiegand output format.

When using any reader other than the SK-029W as a remote reader, be sure to order the Secura Key "Wiegand Cable', part number 7994995. This is required to allow connection to the **ENTRACOMP® 28SA-Plus**.

A popular remote reader choice is the Secura Key RK-WL long-range proximity reader. The RK-WL reads proximity cards up to three (3) feet away. Many drive-up applications need the convenience of long-range proximity. Connecting the RK-WL to the 28SA-Plus makes it possible to program the system with a PD-26 Program Deck.

Note that these other Wiegand-output devices may need their own power supplies, since the Remote Reader output voltage varies, depending on the input voltage as follows:

DC Voltage Out: = AC Voltage In x 1.3 **OR** DC Voltage In x 0.9

Recommended input voltage to the 28SA Plus with a Remote Reader is 12 - 16 Volts AC or DC. Lower voltages will be insufficient to operate the SK-029W reader; higher voltages will cause the reader's voltage regulator to run hot, which could cause early component failure.

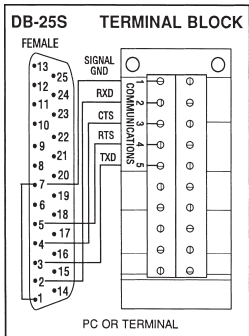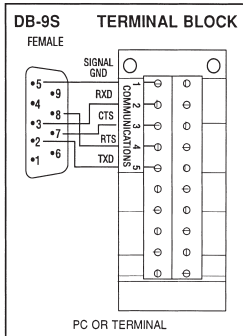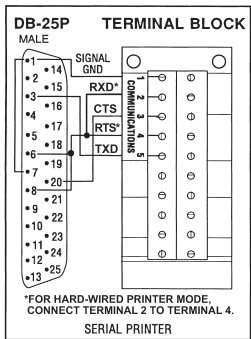| PIN NUMBER CONNECTIONS						
ENTRACOMP® 28SA PLUS		PC OR TERMINAL		PRINTER	MODEM	MODEM
SIGNAL DESCRIPTION	TERMINAL BLOCK	DB-25S (FEMALE) PIN #	DB-9S (FEMALE) PIN #	DB-25P (MALE) PIN #	DB-25P (MALE) PIN #	DB-9P (MALE) PIN#
SIGNAL GROUND	1	1 & 7	5	1 & 7	7	5
RECEIVE DATA (RXD)	2*	2	3	N/C *	3	2
CLEAR TO 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
EARTH GROUND	10	N/C	N/C	N/C	1	
* FOR HARD-WIRED PRINTER MODE, CONNECT TERMINAL 2 TO TERMINAL 4 . ** PIN 20 OR PRINTER "READY/BUSY" SIGNAL.						

FIGURE 4

FIGURE 5

FIGURE 6

FIGURE 7

FIGURE 8

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GROUND (1)
RXD (2)
CTS (3)
RTS (4)
TXD (5)
GROUND (1)

RJ-11 6-PIN CONNECTOR
(BOTTOM OF HOUSING)

FIGURE 9

DATA 1
DATA 0
GROUND
DC VOLTAGE OUT
LED

AUXILIARY READER CONNECTION (WIEGAND)
(REAR VIEW OF 28SA PLUS HOUSING - DETAIL)
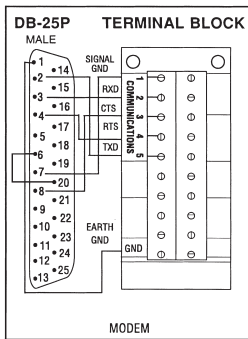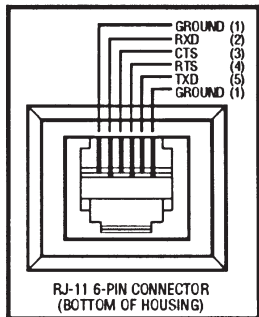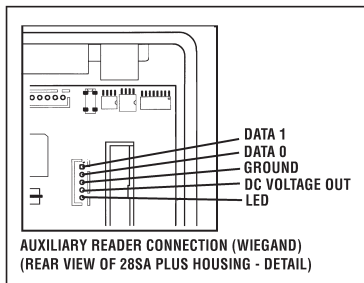
FIGURE 10

INSTALLATION INSTRUCTIONS

WARNING: A DRIP LOOP IS RECOMMENDED TO PREVENT WATER FROM ENTERING THE BACK OF ALL HOUSING TYPES.
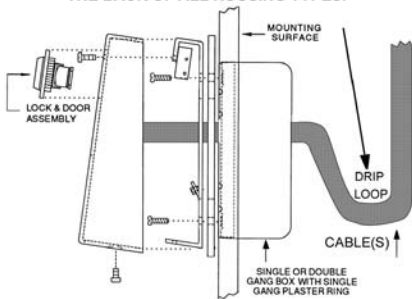
SURFACE MOUNT TO SINGLE GANG ELECTRICAL BOX (See Fig. 11)

1. For exterior walls, apply 1/4 inch bead of silicone sealant around rear perimeter surface of mounting bracket gasket. Be sure there is sufficient sealant to make a good seal between gasket and wall.

2. Use two 6-32 pan head screws (not supplied) to secure mounting plate to box.

3. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire.

4. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

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5. Place ENTRACOMP® 28SA-Plus housing against mounting plate, top edge first, centering housing on retaining tabs. Secure housing to plate at bottom using one 6-32 x 3/8 security screw (provided) or equivalent.

6. Lock cam lock.

SURFACE MOUNT WITHOUT ELECTRICAL BOX (See Fig. 12)

1. For exterior walls, apply 1/4 inch bead of silicone sealant around rear perimeter surface of mounting bracket gasket. Be sure there is sufficient sealant to make a good seal between gasket and wall.

2. Mount plate to wall using appropriate fasteners. Use at least four of six holes provided.

3. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire.

4. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

5. Place **ENTRACOMP® 28SA-Plus** housing against mounting plate, top edge first, centering housing on retaining tabs. Secure housing to plate at bottom using one 6-32 x 3/8 security screw (provided) or equivalent.

6. Lock cam lock.

SURFACE MOUNT TO POST (See Figure 13)

1. Mount post mount adapter (optional) to post (not supplied). Screw 1-1/2 inch pipe coupling on rear of post mount adapter plate to post until almost

tight, stopping when reader cover is at top (12 O'Clock). A small tack weld is strongly suggested to keep the housing from rotating on post.

2. Apply 1/8 inch bead of silicone sealant around rear perimeter surface of mounting bracket gasket.

3. Press plate against adapter and secure with four 10-32 x 5/16 pan head screws (provided).

4. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire.

5. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

6. Place **ENTRACOMP® 28SA-Plus** housing against mounting plate, top edge first, centering housing on retaining tabs. Secure housing to plate at bottom using one 6-32 x 3/8 security screw provided or equivalent.

7. Lock cam lock.

SURFACE MOUNT TO FLANGE (See Figure 14)

1. Position flange mount adapter (optional) against post flange (not supplied). Locate and mark four (untapped) holes. Then drill and tap four 10-32 holes in post flange.

2. Apply silicone bead around perimeter of <u>post</u> flange. Place flange mount adapter against post flange and secure with four 10-32 x 1/2 flat head <u>countersunk</u> screws provided.

3. Follow instructions 2 - 7 for post mount adapter.

SILICONE SEALANT

MOUNTING SURFACE

6-32 SCREWS USED WITH ELECTRICAL BOX ONLY

GROUNDING SCREW*

6-32 X 3/8" TAMPER-RESISTANT SCREW

HOUSING MOUNTING PLATE

EXTERNAL GASKET

SINGLE OR DOUBLE GANG BOX WITH SINGLE GANG PLASTER RING

FIGURE 11

MOUNTING SURFACE

10-32 SCREWS (4)

GROUNDING SCREW*

HOUSING MOUNTING PLATE

APPROPRIATE #10 FASTENERS (4 PLACES)

6-32 X 3/8" TAMPER-RESISTANT SCREW

EXTERNAL GASKET

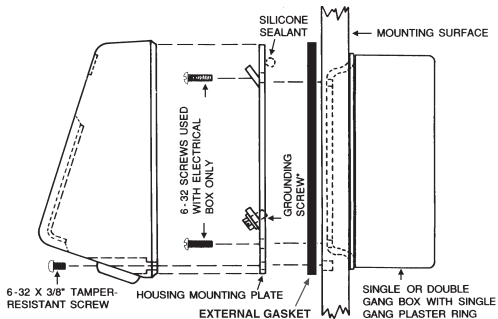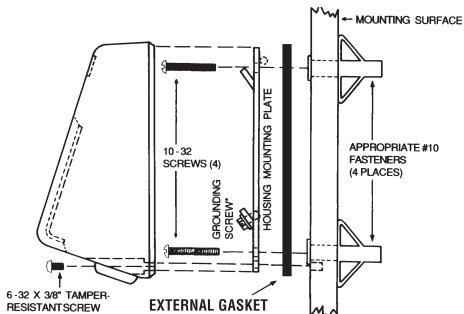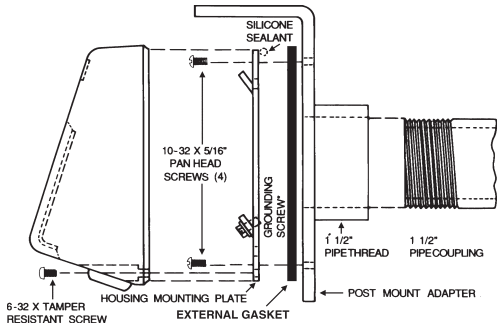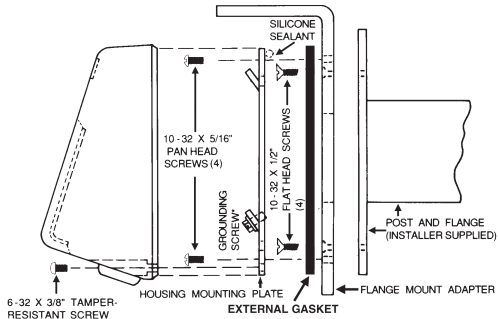FIGURE 12

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FIGURE 13

FIGURE 14

FLUSH MOUNT TO EXISTING 5S BOX (See Figure 15)

1. Use wall cutout template provided. Align template over 5S box. (When running wires to the 5S box, don't use center top hole as it will interfere with housing lock.) Transfer appropriate cutout corner locations of clearance hole for the housing lock to the wall with pointed instrument.

2. Draw lines from point to point, outlining cutout.

3. Cut out opening, being careful not to make opening larger than indicated on the template.

4. Mount mounting plate to 5S box using the four 8-32 flat head screws provided. For an outdoor installation, silicone sealant is recommended between the mounting plate and the wall.

5. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

6. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

7. Place reader and faceplate assembly against the mounting plate. Faceplate will hook onto mounting plate by pushing plate in and then sliding it down.

8. Secure faceplate to mounting plate using the two 4-40 screws provided.

9. Place faceplate door into door opening and rotate key 90° clockwise.

FLUSH MOUNT WITH 5S BOX (See Figure 16)

1. Use the wall cutout template provided. Locate template on the wall. Transfer appropriate cutout corner locations to the wall with a pointed instrument.

2. Draw lines from point to point, outlining cutout.

3. Cut out opening, being careful not to make opening larger than indicated on the template.

4. Place mounting plate against wall in its proper location. Using it as a template, mark four holes in corners. Remove faceplate, and using appropriate drill, drill four holes for appropriate fasteners (8-32 fasteners are recommended).

5. Fasten mounting plate to 5S box using the four 8-32 flat head screws provided. (When running wires to the 5S box, don't use the center top hole as it will interfere with the housing lock.)

6. Secure mounting plate and 5S box to wall. Screws must be <u>flat head</u> countersunk #6 or #8. Make sure any cables have been pulled into the box prior to securing assembly to wall. For an outdoor installation, silicone sealant is recommended between the mounting plate and the wall.

7. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

8. Be sure all appropriate wiring has been connected to the terminal board and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

9. Place reader and faceplate assembly against the mounting plate. Faceplate will hook onto mounting plate by pushing plate in and then sliding it down.

10. Secure faceplate to mounting plate using the two 4-40 screws.

11. Place faceplate door into door opening and rotate key 90° clockwise.

FLUSH MOUNT WITHOUT 5S BOX (See Figure 17)

1. Use the wall cutout template provided. Locate template on the wall. Transfer appropriate cutout corner locations to the wall with a pointed instrument.

2. Draw lines from point to point, outlining cutout.

3. Cut out opening, being careful not to make opening larger than indicated on the template.

4. Place mounting plate against wall in its proper location. Using it as a template, mark four holes in corners. Remove faceplate and using the appropriate drill, drill four holes for appropriate fasteners (8-32 fasteners are recommended).

5. Secure mounting plate to wall. Screws must be flat head countersunk #6 or #8. For an outdoor installation, silicone sealant is recommended between the mounting plate and the wall.

6. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

7. Be sure all appropriate wiring has been connected to the terminal board and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

8. Place reader and faceplate assembly against the mounting plate. Faceplate will hook onto mounting plate by pushing plate in and then sliding it down.

9. Secure faceplate to mounting plate using the two 4-40 screws.

10. Place faceplate door into door opening and rotate key 90° clockwise.

FIGURE 15
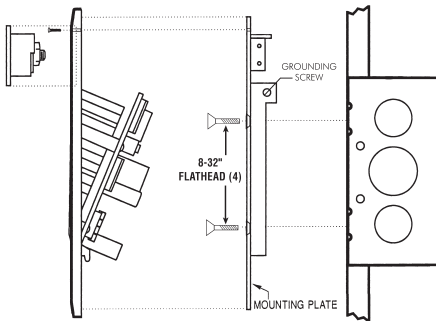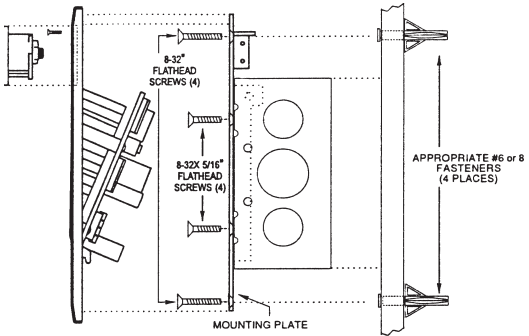
8-32"
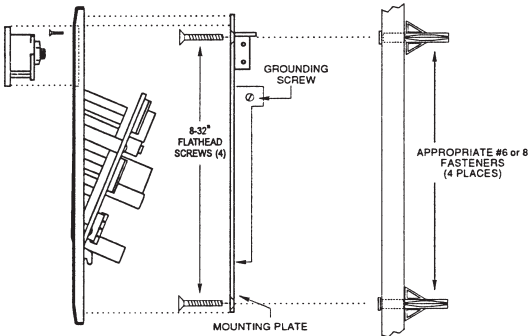FLATHEAD
SCREWS (4)

8-32X 5/16"
FLATHEAD
SCREWS (4)

APPROPRIATE #6 or 8
FASTENERS
(4 PLACES)

MOUNTING PLATE

FIGURE 16

8-32"
FLATHEAD
SCREWS (4)

GROUNDING
SCREW

APPROPRIATE #6 or 8
FASTENERS
(4 PLACES)

MOUNTING PLATE

FIGURE 17

METAL SURFACE HOUSING TO SINGLE GANG ELECTRICAL BOX (Figure 18)

1. For exterior walls, apply 1/4 inch bead of silicone sealant around rear perimeter surface of mounting bracket gasket. Be sure there is sufficient sealant to make a good seal between gasket and wall.

2. Use two 6-32 x 1 pan head screws provided to secure mounting bracket and gasket to box.

3   Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

4. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

5. Place **ENTRACOMP® 28SA-Plus** housing over mounting bracket. Push housing in against wall. Secure housing to mounting bracket in door opening using two 6-32 x 3/8 screws provided. Secure housing to bracket at bottom using one 6-32 x 1/4 security screw provided or equivalent.

6. Place housing door into door opening and rotate key 90 degrees clockwise.

METAL SURFACE HOUSING WITHOUT ELECTRICAL BOX (See Figure 19)

1. For exterior wall, apply sealant to rear perimeter of mounting bracket gasket.

2. Mount plate to wall using appropriate fasteners. Use at least four of six holes provided.

3. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

4. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

5. Place **ENTRACOMP® 28SA-Plus** housing over mounting bracket. Push housing in against wall. Secure housing to mounting bracket in door opening using two 6-32 x 3/8 screws provided. Secure housing to bracket at bottom using one 6-32 x 1/4 security screw provided or equivalent.

7. Place housing door into door opening and rotate key 90 degrees clockwise.

METAL SURFACE HOUSING WITH POST ADAPTER (See Figure 20)

1. Mount post mount adapter (optional) to post (not supplied). Screw 1 1/2 inch pipe coupling on rear of post mount adapter plate to post until almost tight, stopping when reader cover is at top (12 O'Clock). A small tack weld is strongly suggested to keep the housing from rotating on post.

2. Apply 1/8 inch bead of silicone sealant around rear perimeter surface of mounting bracket gasket.

3. Press bracket with gasket against adapter and secure with the four 10-32 x 5/16 pan head screws provided.

4. Connect green grounding screw on mounting plate to Earth ground using a 16AWG wire. Also connect green ground wire from faceplate assembly to green grounding screw.

5. Be sure all appropriate wiring has been connected to the terminal board, and then plug the terminal board cable into the socket on the circuit board (see wiring instructions). Do not apply power until all connections are made.

6. Place **ENTRACOMP® 28SA-Plus** housing over mounting bracket. Push housing in against wall. Secure housing to mounting bracket in door opening using two 6-32 x 3/8 screws provided. Secure housing to bracket at bottom using one 6-32 x 1/4 security screw provided or equivalent.

7. Place housing door into door opening and rotate key 90 degrees clockwise.

**METAL SURFACE HOUSING WITH FLANGE ADAPTER
(See Figure 21)**

1. Position flange mount adapter (optional) against post flange (not supplied). Locate and mark four (untapped) holes. Then drill and tap four 10-32 holes in post flange.

2. Apply silicone bead around perimeter of <u>post</u> flange. Place flange mount adapter against post flange and secure with four 10-32 x 1/2 flat head <u>countersunk</u> screws provided.

3. Follow instructions 2 - 7 for post mount adapter.

6 - 32 X 3/8"
PAN HEAD SCREWS (2)

SILICONE SEALANT

MOUNTING SURFACE

LOCK & DOOR
ASSEMBLY

6 - 32 X 1"
PAN HEAD
SCREWS (2)
WITH
ELECTRICAL
BOX ONLY

GROUNDING SCREW

6 - 32 X 1/4"
TAMPER-RESISTANT
SCREWS

HOUSING MOUNTING
BRACKET

GASKET

SINGLE OR DOUBLE GANG BOX
WTH SINGLE GANG PLASTER RING

FIGURE 18

6 - 32 X 3/8"
PAN HEAD SCREWS (2)

SILICONE SEALANT

MOUNTING SURFACE

LOCK & DOOR
ASSEMBLY

10- 32
PAN HEAD
SCREWS(4)

GROUNDING SCREW

APPROPRIATE #10
FASTENERS
(4 PLACES)

6 -32X 1/4"
TAMPER-RESISTANT
SCREWS

HOUSING
MOUNTING
BRACKET

GASKET

FIGURE 19

29

FIGURE 20

6 - 32 X 3/8" PAN HEAD SCREWS (2)

SILICONE SEALANT

LOCK & DOOR ASSEMBLY

10 - 32 X 5/16" PAN HEAD SCREWS (4)

GROUNDING SCREW

6 - 32 X 1/4" TAMPER-RESISTANT SCREWS

HOUSING MOUNTING BRACKET

GASKET

THREADED FOR 1 1/2" PIPE COUPLING

POST MOUNT ADAPTER

FIGURE 21

6 - 32 X 3/8" PAN HEAD SCREWS (2)

SILICONE SEALANT

LOCK & DOOR ASSEMBLY

10- 32 X 5/16" PAN HEAD SCREWS(4)

GROUNDING SCREW

10-32 X 1/2" FLAT HEAD SCREWS (4)

6 -32X 1/4" TAMPER-RESISTANT SCREWS

HOUSING MOUNTING BRACKET

GASKET

POST AND FLANGE (INSTALLER SUPPLIED)

FLANGE MOUNT ADAPTER
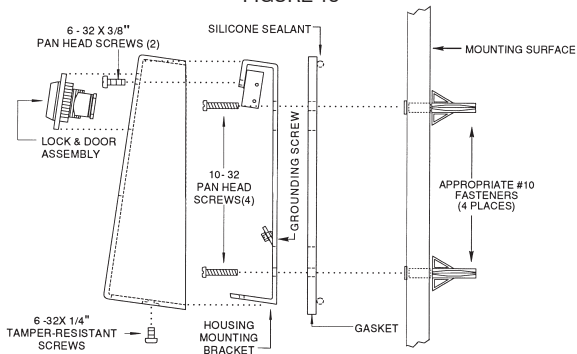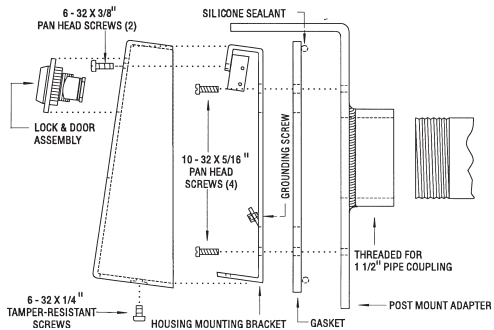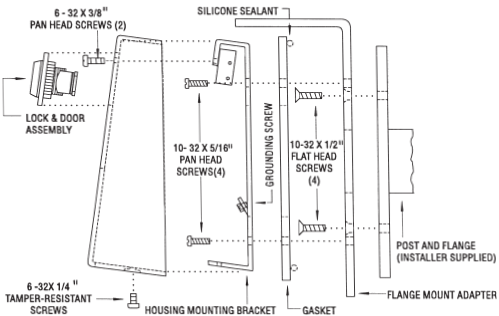
SECTION III: PROGRAMMING

FACTORY SETTINGS

When shipped from the factory, the **ENTRACOMP® 28SA-Plus** has the following settings:

Facility Code	None
Max Cards	65503
Max limited cards	4000
Time Zones	15
Transactions	5000
All Cards	Time Zone 0 (void)
	No Limited Use
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
	3=Disabled

Anti-Passback Parameters

| Primary Reader (In/Out)	None
Daily APB Forgive Hour	00

PROGRAMMING THE ENTRACOMP® 28SA-PLUS

The 28SA-PLUS can be programmed in either of three ways:1.) with a PD-26 **program card deck**, 2.) with a PC and **SK-NET™ software** or 3.) with a PC using a **terminal program** to access the reader menu system.

PROGRAMMING WITH A PROGRAM DECK

There are two kinds of cards used with the ENTRACOMP® 28SA-PLUS: Access Cards and Program Cards. Access cards are used by individuals to gain access to the passageway. Program cards are used to tell the ENTRACOMP® 28SA-PLUS what to do.

Program Cards are as follows:

"0"	ZERO
"1"	ONE
"2"	TWO
"3"	THREE
"4"	FOUR
"5"	FIVE
"6"	SIX
"7"	SEVEN
"8"	EIGHT
"9"	NINE
"★"	THRU
"VALID"	VALIDATE CARD
"VOID"	VOID OR CANCEL CARD
"SET TIMER"	SET LATCH TIMER, ANTI-PASSBACK TIMER, OR TIME/DATE
"ACTIVE/INACTIVE"	MAKE SYSTEM ACTIVE OR INACTIVE
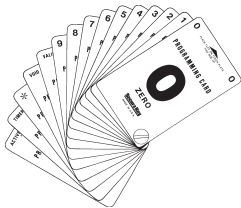
Most basic functions of the **ENTRACOMP® 28SA-Plus** may be programmed by placing the Program cards on the TOUCH CARD® reader plate in a proper sequence.

However, some things (such as configuring the inputs, configuring the Time Zones, Holidays, Limited Use, anti-passback or setting the password) may only be programmed using a personal computer or terminal.

The facility code of your Program Cards is normally the same as the facility code of your Access Cards. Your unique facility code is what prevents Program Cards from other systems from being used to reprogram your system.

It is helpful to think of placing a Program Cards on the TOUCH CARD® reader plate as depressing a key on a keyboard or keypad. You may begin programming at any time by placing the first Program Card of the sequence on the TOUCH CARD® reader plate. At this point the LED indicator will show an amber color. When you remove the Program Card from the TOUCH CARD® reader plate the LED indicator will flash the amber color awaiting the next Program Card. As you place subsequent Program Cards on the TOUCH CARD® reader plate, the amber LED to will stop flashing and become solid until the card is removed.

In this manner, the remainder of the Program Cards for the programming sequence are placed on the TOUCH CARD® reader plate. At the end of the programming sequence the LED indicator will flash green to indicate that the programming instruction has been accepted.

When programming, it is necessary to place the next card of the programming sequence on the TOUCH CARD® reader plate while the LED indicator is flashing amber (you have approximately 10 seconds between each card). If the amber LED times out (stops blinking) it will be necessary to restart the programming sequence. Should an error be made in the programming sequence, the LED indicator will flash red, instead of green.

PROGRAMMING ACCESS CARDS

The 28SA-PLUS permits cards to be programmed into 15 different Time Zones. Cards programmed into Time Zone 1 will work 24 hours-a-day, 7 days-a-week, as long as the ENTRACOMP® 28SA-PLUS is in an active mode. Cards programmed into Time Zones 2-15 may be limited as to the days and/or times of day when those cards may gain access. (See "Factory Settings, page 31 for Time Zone default settings.) Time Zones can be reconfigured with a PC. See Section II of the SK-NET™ manual or Application Bulletin #15 for Terminal mode programming instructions.

PROGRAM A SINGLE CARD INTO TIME ZONE 1 (24hour/7day). To program a single card into Time Zone 1, place the sequence of Program Cards representing the Access Card number on the TOUCH CARD® reader plate, followed by the "VALID" card.

Example: Program card number 16 into Time Zone 1.

$$\boxed{1} + \boxed{6} + \boxed{\text{VALID}}$$

PROGRAM A SINGLE CARD INTO TIME ZONES 2 THROUGH 15. To program a single card into a Time Zone, place the sequence of cards representing the Access Card number on the TOUCH CARD® reader plate. Then place the "*" (THRU) card on the reader plate. Next place the sequence of cards representing the Time Zone on the reader plate, followed by the "*" (THRU) card again. Finally, place the "VALID" card on the reader plate.

Example: Program card number 11 into Time Zone 12.

$$\boxed{1} + \boxed{1} + \boxed{*} + \boxed{1} + \boxed{2} + \boxed{*} + \boxed{\text{VALID}}$$

PROGRAM A BLOCK OF CARDS INTO TIME ZONE 1 (24 hour/7 day). Place the sequence of Program Cards representing the first Access Card number in the block on the TOUCH CARD® reader plate. Then, place the "*" (THRU) card

on the reader plate. Next, place the sequence of cards representing the last Access Card number in the block on the reader plate. Finally, place the "VALID" card on the reader plate.

Example: Program cards 25 through 37 into Time Zone 1.

$$\boxed{2} + \boxed{5} + \boxed{\star} + \boxed{3} + \boxed{7} + \boxed{\text{VALID}}$$

PROGRAM A BLOCK OF CARDS INTO TIME ZONES 2 THROUGH 15. Place the sequence of cards representing the first Access Card number in the block on the TOUCH CARD® reader plate. Then, place the "$\star$" (THRU) card on the reader plate. Next, place the sequence of cards representing the last Access Card number in the block on the reader plate. Then, place the "$\star$" (THRU) card on the reader plate again. Next, place the sequence of cards representing the Time Zone on the reader plate. Place the "$\star$" (THRU) card on the reader plate again. Finally, place the "VALID" card on the reader plate.

Example: Program cards 5 through 22 into Time Zone 6.

$$\boxed{5} + \boxed{\star} + \boxed{2} + \boxed{2} + \boxed{\star} + \boxed{6} + \boxed{\star} + \boxed{\text{VALID}}$$

VOID A SINGLE CARD. Place the sequence of cards representing the card number on the TOUCH CARD® reader plate, followed by the "VOID" card.

Example: Void card number 17.

$$\boxed{1} + \boxed{7} + \boxed{\text{VOID}}$$

VOID A BLOCK OF CARDS. Place the sequence of cards on the TOUCH CARD® reader plate representing the first Access Card in the block. Then, place the "$\star$" (THRU) card on the reader plate. Next, place the sequence of cards representing the last Access Card in the block. Finally, place the "VOID" card on the reader plate.

Example: Void cards 24 through 28.

$$\boxed{2} + \boxed{4} + \boxed{\star} + \boxed{2} + \boxed{8} + \boxed{\text{VOID}}$$
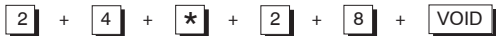
DOOR CONTROL

DOOR UNLOCK MODE

The relay may be set to remain latched (door unlocked) during periods when access control is unwanted. While in the "DOOR UNLOCK" mode, the relay stays activated and the LED indicator will flash green, approximately once every second. The unit cannot be programmed with the Programming Deck and it will not recognize Access Cards while it is in the "DOOR UNLOCK" mode.

To set the unit to the "DOOR UNLOCK" mode, place the "$\star$" (THRU) card on the TOUCH CARD® reader plate followed by the "ACTIVE/INACTIVE" card

Place unit in Door Unlock mode.

| $\star$ | + | ACTIVE/INACTIVE |

To return the **ENTRACOMP® 28SA-PLUS** to normal operation, place the "ACTIVE/INACTIVE" card on the TOUCH CARD® reader plate.

Return to Normal Mode.

| ACTIVE/INACTIVE |

INACTIVE MODE

The **ENTRACOMP® 28SA-PLUS** may be made inactive, locking out all cardholders. While the unit is in the "INACTIVE" mode the red LED indicator will flash approximately once every second. While in the "INACTIVE" mode the unit cannot be programmed with the Program Deck and it will not recognize any Access Cards.

To place the unit in the "INACTIVE" mode place the "ACTIVE/INACTIVE" card on the TOUCH CARD® reader plate. To restore the unit to normal operation,

place the "ACTIVE/INACTIVE" card on the reader plate again.

Place unit in Inactive Mode or return to Active Mode.

ACTIVE/INACTIVE

LATCH TIMER

The output from the relay may be set to any number of seconds from 1 to 30. Setting the latch timer to "0" produces a 0.25 second output (suitable for many gate operator systems). The latch timer begins when a valid card is placed on the TOUCH CARD® reader plate.

To set the latch timer, place the sequence of Program Cards representing the number of seconds, followed by the "SET TIMER" card.

Example: Set latch timer to 15 seconds.

1 + 5 + SET TIMER

PRINTER MODE

A serial printer may be connected to the **ENTRACOMP® 28SA-PLUS** in order to print transactions as they occur and to print transactions stored in the transaction buffer. The wiring for a printer is different than the wiring for a computer or terminal. Be sure to follow the wiring instructions carefully.

PLACE THE UNIT IN PRINTER MODE.

Place the "✶" (THRU) card on the TOUCH CARD® reader plate followed by the "VALID" card. Repeat the procedure to take the unit out of printer mode.

Put unit in Printer Mode.

$$\boxed{\bigstar} \; + \; \boxed{\text{VALID}}$$

PRINT TRANSACTIONS IN BUFFER

When the ENTRACOMP® 28SA-PLUS is in the printer mode it will send each transaction to the printer as it occurs. At times, you may need to print previous transactions from the transaction buffer (for example, if your printer ran out of paper and you missed printing some transactions as they occurred). To print from the buffer, place the "★" (THRU) card on the TOUCH CARD® reader plate twice in succession.

Print from Transaction Buffer

$$\boxed{\bigstar} \; + \; \boxed{\bigstar}$$

Once you instruct the unit to print events from the transaction buffer, it will begin printing in reverse chronological order (most recent event first). To terminate the printing job before the entire buffer is printed touch the "★" (THRU) card to the reader plate twice in succession. The unit will return to printing transactions as they occur.

If you would like to erase the unit's transaction buffer, place the "★" (THRU) card on the TOUCH CARD® reader plate followed by the "VOID" card.

Erase Buffer.

$$\boxed{\bigstar} \; + \; \boxed{\text{VOID}}$$
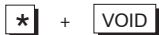
ANTI-PASSBACK

Anti-passback is a feature designed to prevent or discourage an authorized cardholder from passing their card back to an unauthorized person who intends to use the same card to gain access. Anti-passback is widely used in parking applications. When anti-passback is enabled the 28SA-PLUS will temporarily void a card after the first use, so that any person attempting to reuse the card will be denied access.

The 28SA-PLUS offers two types of anti-passback: Real and Timed.Real anti-passback requires one or more readers be designated as "IN" readers and one or more readers be designated as "OUT" readers. After a card has been used with an "IN" reader the next use must be with an "OUT" reader, and so forth.

Timed anti-passback limits the reuse of a card in a single reader. After the card is used it is placed in a temporary "VOID" status for a number of minutes. During the anti-passback time that card cannot gain access at that reader again. Once the time expires the card may be used another time.

Anti-passback is enabled in association with a Time Zone. Time Zones 2 through 15 can have anti-passback enabled. (Time Zone 6 is pre-configured for 24-hour, 7-day access with timed anti-passback enabled.) Configuring any Time Zones with real or timed anti-passback may be done with a computer or terminal.

The following functions related to anti-passback may be programmed with the Program Card deck.

SET ANTI-PASSBACK WAITING TIME

The anti-passback waiting time is related to cards programmed into a time zone with timed anti-passback enabled. The waiting time determines how many minutes (1 to 30) the reader will temporarily treat a card as void after it has been used.

To set the anti-passback waiting time place the sequence of cards representing the time period on the TOUCH CARD® reader plate. Then, place the "✷" (THRU) card on the reader plate. Finally, place the "SET TIMER" card on the reader plate.

Example: Set anti-passback waiting time to 3 minutes'

$$\boxed{3} \; + \; \boxed{\star} \; + \; \boxed{\text{SET TIMER}}$$

ANTI-PASSBACK FORGIVE

This selection allows you to immediately place any cards that are assigned to a Time Zone that has Real Anti-passback into a neutral anti-passback status. Anti-passback Forgive allows each card to use either an "IN" or and "OUT" reader for the next transaction. (NOTE: Anti-passback Forgive has no effect on cards that are assigned to a Time Zone with Timed Anti-passback.)To forgive real anti-passback for all cards, place the "✷" (THRU) card on the TOUCHCARD® reader plate followed by the "SET TIMER" card.

$$\boxed{\star} \; + \; \boxed{\text{SET TIMER}}$$

ANTI-PASSBACK DISABLE/ENABLE

Occasionally, due to a gate or door at an "IN" or "OUT" reader being temporarily inoperative, cardholder's real anti-passback status may become out of sync. To address this problem you may want to temporarily disable the real anti-passback at that reader. To disable anti-passback place the "VOID" card on the TOUCHCARD® reader plate followed by the "SET TIMER" card.

$$\boxed{\text{VOID}} \; + \; \boxed{\text{SET TIMER}}$$

To re-enable anti-passback, place the "VALID" card on the reader plate followed by the "SET TIMER" card.

$$\boxed{\text{VALID}} \; + \; \boxed{\text{SET TIMER}}$$

DATE AND TIME

The **ENTRACOMP® 28SA-PLUS** maintains the date and time in military format. Having an accurate time and date set in the reader is important for logging the transactions (audit trail) and for proper operation of Time Zones. The date and time may be set by using the Program Deck. To set the date place the sequence of cards on the TOUCHCARD® reader plate that represent the month (1-12) followed by the "★"(THRU) card. Then, place the sequence of cards representing the day of the month (1-31) followed by the "★" (THRU) card. Next, place the sequence of cards representing the last two digits of the year (e.g. 01). Finally, place the "SET TIMER" card on the reader plate.

Example: Set the date to 9/28/01.

$$9 + ★ + 2 + 8 + ★ + 0 + 1 + \text{SET TIMER}$$

To set the time, place the sequence of cards on the TOUCHCARD® reader plate that represent the hour (0 − 24), followed by the "★" (THRU) card. Next, place the sequence of cards on the reader plate that represent the minutes (0 − 60). Finally, place the "SET TIMER" card on the reader plate.

Example: Set the time to 13:27 (1:27 PM)

$$1 + 3 + ★ + 2 + 7 + \text{SET TIMER}$$

BAUD RATE

The baud rate is the speed at which the **ENTRACOMP® 28SA-PLUS** communicates with the outside world (PC, terminal or printer). The default baud rate is 9600. If you wish to change the baud rate and do not have a PC or terminal available the Programming Deck may be used. To set the baud rate, place the "★" (THRU) card on the TOUCHCARD® reader plate. Then place the sequence of cards representing the baud rate on the reader plate. Finally, place the "SET TIMER" card on the reader plate.

Example: Set the baud rate to 2400.

$$\boxed{*} \; + \; \boxed{2} \; + \; \boxed{4} \; + \; \boxed{0} \; + \; \boxed{0} \; + \; \boxed{\text{SET TIMER}}$$

Any additional programming must be done with a terminal or PC.

PROGRAMMING WITH SK-NET™ SOFTWARE

SK-NET™ is the software of choice when communicating with or programming ENTRACOMP® 28SA-PLUS units, either as stand alones or as complete systems.

If you are already familiar with other access control programs, you will find that SK-NET™ is different than what you are used to. The user interface follows Microsoft Windows® conventions rather than a traditional menu structure.

The basic version of SK-NET™ works with a single reader or a network of readers connected together via RS-485. The multiple location / dial-up version (SK-NET-MLD) allows modem communication, TCP/IP and unlimited remote locations.

Directions for the use of SK-NET™ are contained in the SK-NET™ manual. Section 2 of this manual is a Quick Start Guide, designed to help you bring a new system into operation speedily. You may download this manual from: www.securakey.com/docs/manuals.html.

PROGRAMMING IN TERMINAL MODE

The 28SA-Plus has an internal menu system that can be accessed using Windows® Hyperterminal or a similar program. For instruction on programming in terminal mode, see Application Bulletin #15. You may download this Bulletin from www.securakey.com.

USING A PRINTER WITH THE 28SA-PLUS

A serial printer may be connected to the **ENTRACOMP® 28SA-PLUS** in order to print transactions as they occur and print transactions stored in the transaction buffer. The wiring for a printer is different than the wiring for a computer or terminal. Be sure to follow the instructions carefully.

There are two ways to place the **ENTRACOMP® 28SA-PLUS** into the printer mode; hard wiring or using the Program Deck. For Program Deck instructions, see page 38.

To place the unit in Printer Mode by hardwiring, first, power down the unit. Connect a jumper between the RXD and RTS terminals (2 and 4) on the terminal block. Re-power the unit. To take the unit out of Printer Mode, power down, remove the jumper and power back up again.

APPENDIX A
WIRING AND SYSTEM CONFIGURATIONS

CONNECTING MULTIPLE UNITS ON AN RS-485 NETWORK

The 28SA-Plus features a built-in RS485 Network Interface. Multiple 28SA-Plus units can be interconnected by installing an SK-NC485 Network cable in each reader, and connecting the readers into a network, using twisted pair, cable, such as **It is strongly recommended that surge protectors be provided on all data, telephone and power cables in lightning prone areas. See our Appendix D.**

Install the SK-NC485 cable by plugging it into socket J4, located on the 28SA-Plus circuit board at the top-center (Figure A2). The cable has a 3-wire pigtail, which should be connected to the network cable as shown in Figure A1.

Up to 128 28SA-Plus Units can be connected on the reader network. Total combined cable distance for the entire network is 4000 feet.

While the best performance and longest total cable distance is achieved by connecting networked readers in series (daisy chained), other configurations such as "T", Star/Fanout, and Stubbed are possible (Figure A3).

Typically, an RS-485 Networked system will be used with SK-NET™ Software for WINDOWS® XP/VISTA/NT/2000.

When a PC running SA-NET™ or SA-LINK™ (or an ANSI-compatible terminal software program) is connected to the RS-232 port of any reader connected to the RS-485 network, some basic global functions can be programmed and broadcast to all readers.
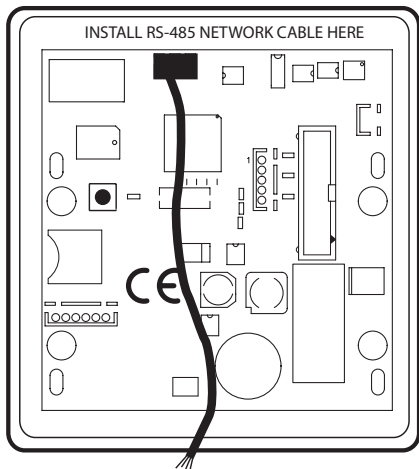
These basic functions allow the user to control or program multiple units from a single PC, to copy programming from one unit to the entire network, and to use global antipassback. This is ideal for small systems or parking applications where a PC or laptop computer with WINDOWS® is unavailable.

A Serial Printer can be connected to the RS-232 port of any reader to provide real time transaction printing for the entire network. Use the CBLSA Cable Kit for temporary connection via the RJ-11 data jack, or use the wiring diagrams for Printer and PC connection on page 13 of the 28SA-Plus Manual.

RS485 NETWORK CABLE

DC SIGNAL GROUND - BLACK

Line A BROWN
Line B RED

The DC Signal Ground (Black wire) is not normally connected, but if required, it can be connected using one conductor of another twisted pair. DC Signal Ground may be necessasry in networks with very long wire runs. DC Signal Ground wire is NOT to be connected to earth Ground.

Earth Grounded Shield is highly recommended in environments subject to high voltage electrical discharge (i.e. lightning). Shield should be connected to earth ground only at one end of the cable. Do NOT use CAT 5 cable, if shielding is required

Install Optional RS-485 Cable Assembly in each 28SA-Plus.

Figure A1 - Network Wiring Connections

Figure A2 - RS-485 Network Cable Installation

Figure A3 - System Configuration Options

STAR/FANOUT

DAISY CHAIN / MULTIDROP

"T"
CONFIG

① ①

②

SK-NET
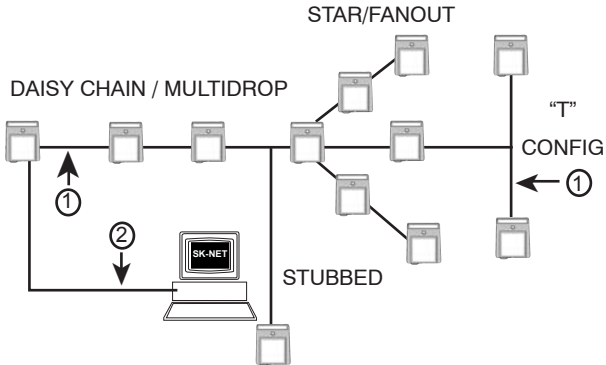
STUBBED

CONFIGURATION OPTIONS:
- DAISY CHAIN / MULTIDROP *
- "T"-CONFIGURATION
- STAR/FANOUT
- STUBBED
  * Best performance and longest total cable distance

① **NETWORK CABLE:**
RS-485, using CAT 5, such as Belden 1585A or Two Twisted Pair cable. Total system cable length: 4,000 ft.
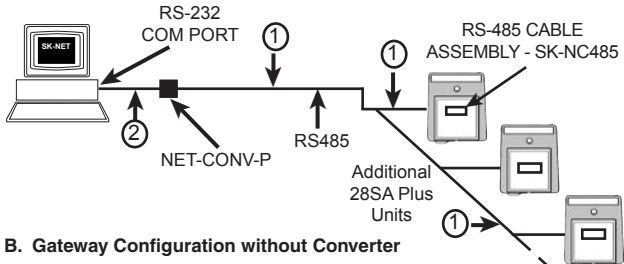
② **SERIAL CABLE:**
RS-232,PC or printer to 28SA-Plus,6-Conductor, Shielded, 18-24 AWG. Recommended cable: Alpha 1296C. Maximum length: 100 ft. (38400 baud)

OPTIONS FOR CONNECTION OF THE 28SA-PLUS NETWORK TO A PC

There are two options to connect a modem to a PC. Option A is recommended for large systems or systems with high traffic volume.

A. Standard Configuration with Converter

B. Gateway Configuration without Converter
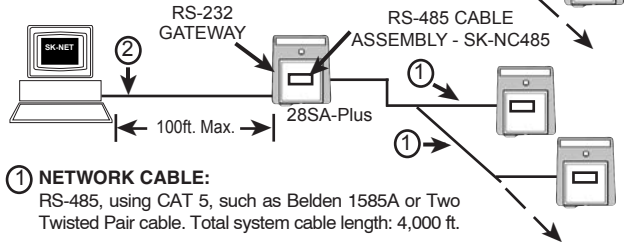
① **NETWORK CABLE:**
RS-485, using CAT 5, such as Belden 1585A or Two Twisted Pair cable. Total system cable length: 4,000 ft.

② **SERIAL CABLE:**
RS-232, PC or printer to 28SA-Plus, 5-Conductor, Shielded, 18-24 AWG. Recommended cable: Alpha 1296C. Maximum length: 100 ft. (38400 baud).

Figure A4 - Network to PC Connection Options

APPENDIX B:
CONNECTING A MODEM TO 28SA-PLUS

The SK-MDM (U.S. Robotics) has been preconfigured to work with Secura Key access control systems and SK-NET-MLD software. (NOTE: SK-NET-DM and the free download version of SK-NET™ do not support modem connections.) NOTE: This modem requires version 3.0 or later of SK-NET-MLD software.

1. Plug the telephone cable provided into the SK-MDM and into the jack for a dedicated phone line.
2. Plug the serial cable (provided) into the DB25 outlet on the SK-MDM.
3. Connect the serial cable wires to the Terminal Board on the 28SA-Plus (see Figure 4.)
4. Connect the modem power supply to the SK-MDM and plug into a 110VAC wall outlet.
5. For added protection, the modem power lines, the phone line connection and the serial connection may be connected to suitable surge suppressors.
6. Establish connection from the computer to the access control system using SK-NET-MLD software. (Follow instructions in the SK-NET™ manual.)

REMOTE SITE MODEM CONFIGURATION with 28SA-PLUS
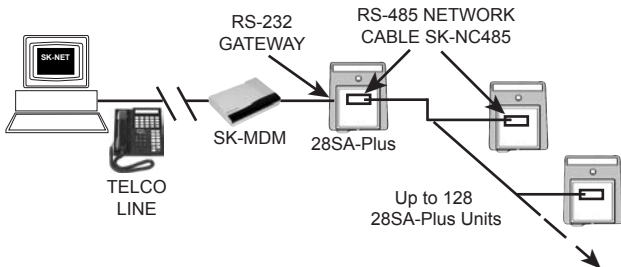
APPENDIX C:
CONNECTING A 28SA-PLUS TO A LOCAL AREA NETWORK

The SK-LAN External Device Server can be used with the Secura Key Entracomp® 28SA-PLUS to connect to a local area network.

Refer to the Install/Setup documentation provided with the SK-LAN, for details on connections, IP addressing, setup and testing your network connection.
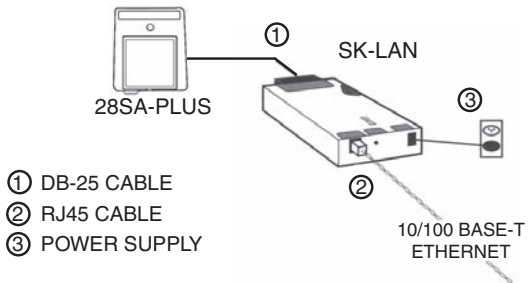
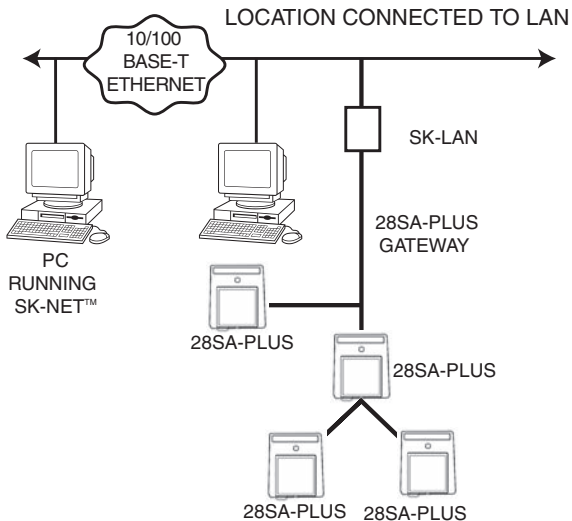To configure your system using SK-NET-MLD software, see SK-NET™ Manual Section 2 for instructions.

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.

READER	WIRE COLOR	DB 25
1	BLACK	7
2	WHITE	3
3	RED	8
4	GREEN	4
5	ORANGE	2

SK-LAN CONNECTION

SK-LAN

28SA-PLUS

10/100 BASE-T ETHERNET

① DB-25 CABLE
② RJ45 CABLE
③ POWER SUPPLY

LOCATION CONNECTED TO LAN

10/100
BASE-T
ETHERNET

SK-LAN

28SA-PLUS
GATEWAY

PC
RUNNING
SK-NET™

28SA-PLUS

28SA-PLUS

28SA-PLUS   28SA-PLUS

APPENDIX D:
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.

WARRANTY (U.S. and Canadian)

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 or 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.

NOTES:

ENTRACOMP® 28SA Plus
User/Installation Manual

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