SELECT CARD

v 6.0 26 & S36 Bits Installer Guide

Select Entry Systems

TABLE OF CONTENTS

TABLE OF CONTENTS (CONT)

1.0 INTRODUCTION

The SELECT ENGINEERED SYSTEMS "SelectCard" card access control system is a microprocessor based one reader card access system. It can add a second optional card reader for controlling access into restricted areas.

CARD TECHNOLOGIES:

- **!** WIEGAND 26 or 36 bits.
- **!** CARD CAPACITY: 10,000 Card number storage.

1.1 STANDARD FEATURES:

- **!** NON-VOLATILE EEprom Memory for card numbers.
- **!** Simple programming with built-in LED display.
- **!** Individual card or group programming or deleting. **(BULK LOADING)**
- **!** Adjustable output relay time from 1 to 30 seconds.
- **!** Relay type form "A" or form "B" rated for 2 amps at 24 volts ac or dc.
- **!** Request to exit switch input (REX or FREE OUT).
- **!** Automatic relock input.
- **!** Printer output for documentation with time and date.
- **!** Time of day clock (with internal battery backup).

1.2 EASE OF PROGRAMMING

VALIDATING OR DELETING A SINGLE CARD:

1. Press the **RST** button.
2. Use the **INC** button until desired card number is in the LED display.
   If the card number is in memory the "VALID LED" will illuminate.
3. Press the **INS** button to validate the card number or press the **DEL** button to delete the card number.
4. If there are more cards to program, go to step 2.
5. Press the **RST** button when all complete.

ALTERNATE METHOD IF CARD IS AVAILABLE:
(FOR BULK LOADING SEE PAGE 10)

1. Pass the card through card reader.
2. To validate the card, press the **INS** button and wait for the card number to show in the display then press the **INS** a second time. To delete the card, Press the **DEL** button and wait for the card number to show in the display then press the **DEL** a second time.
3. If there are more cards to do, go to step 1.
4. Press the **RST** button when all cards done.

OPTIONAL FEATURES:

- **!** Second reader input with second output relay with its own timer.
- **!** Printer interface to connect to RS-232 DEVICE.

1.3 ENVIRONMENTAL CONSIDERATIONS:

Distance? Wiegand readers can be up to 500 feet length of wire away from the controller. The optional printer interface can go up to 1000 feet length of wire using Belden # 8760 cable.

Housing? The basic SelectCard ONE PLUS 1 system comes with a surface mount box for the controller PC board and wiring connections, and a separate card reader element for mounting as the application requires. Optional housings for outdoor installations that incorporate reader element and controller PC board for post mounting with swipe or insert readers, is available from SES.

1.4 ELECTRICAL REQUIREMENTS:

Power? The SelectCard ONE PLUS 1 uses 12 volt ac 50/60 Hz. @ 300 ma. A 12 vac transformer is supplied with each SelectCard, or the installer may elect to provide his own 12 volt 300 ma. DC supply. HOWEVER, AC TRANSFORMER AND DC SUPPLY CAN **NOT** BE USED AT THE SAME TIME.

Ground? Control unit must be connected to a good earth ground with at least # 16 ga. stranded wire. **A GOOD EARTH GROUND MUST** be connected from the units' metal enclosure (using the ground stud), Pin 1 on the power connector, and any shields from the readers and printer cables. This wire **MUST** be a minimum of 16 ga. connected to a ground rod or cold water pipe.

Cable? Cable for Wiegand is West Penn #3280 or equivalent. Printer cable is Belden #8760 or equivalent. Power is 2 conductor 18 ga. twisted up to 500 feet. Ground is # 16 ga or larger gauge. Cable for REX and door sense may be Belden # 8442 (#22 AWG, non-shielded) or Belden # 8761 (#22 AWG, shielded).

Relay capabilities? 24 volts AC or DC at 2 amps. Unit is shipped with N.O. contacts selected, but can be jumper selected to N.C..

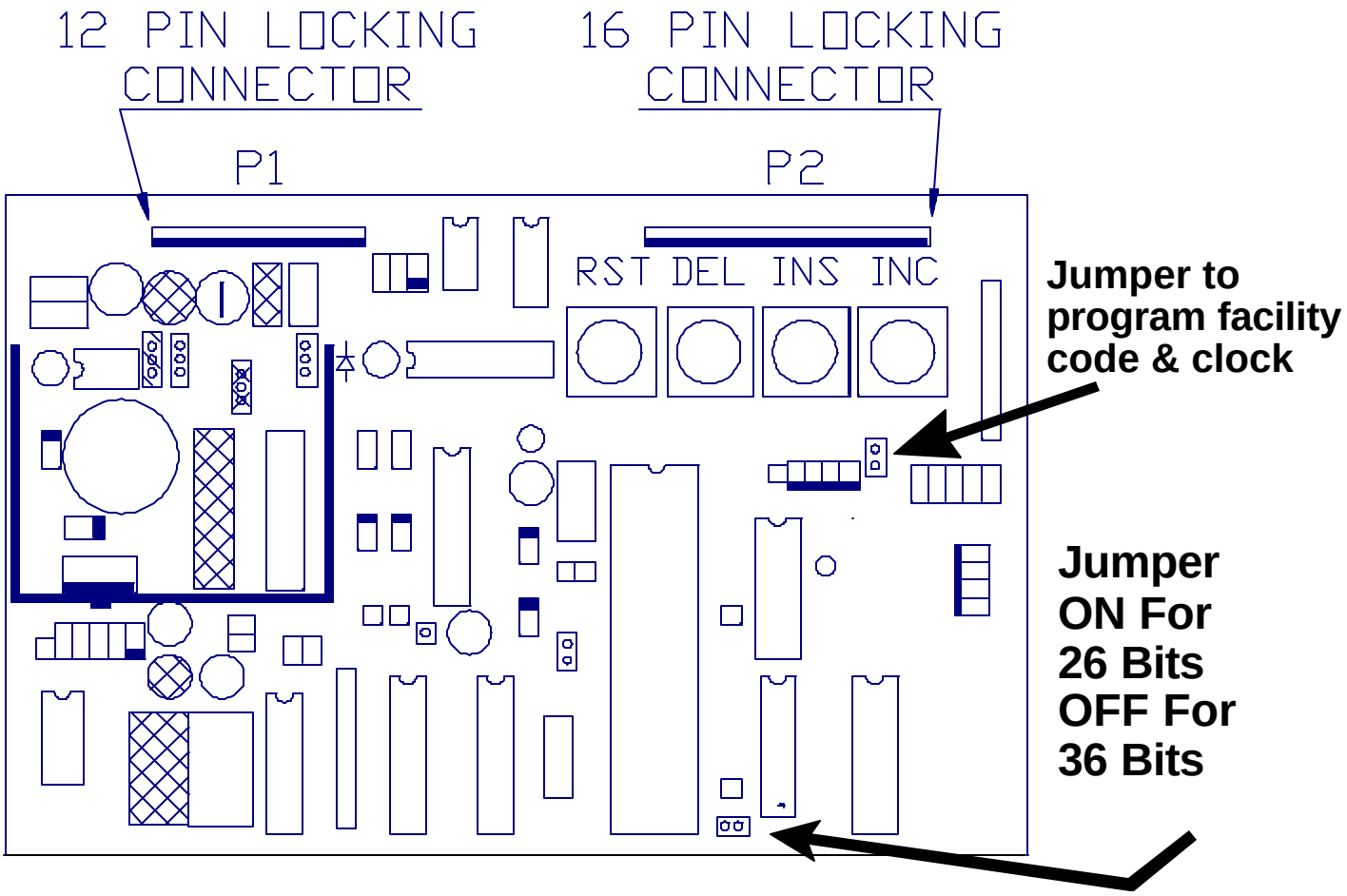
REX? Request to exit can be connected to any dry contact normally open circuit to allow operation of the control relay without a card.

Door Sense? This signal will terminate the remainder of the door open time left when this normally open signal is closed.

Printer? An optional serial interface which converts from 20 ma. current loop to RS-232 signal levels may be attached to serial printers capable of operation at 1200 Baud, 8 data bits, no parity and 1 stop bit. Printer Baud rate is fixed in firmware and is not adjustable.

2.0 UNPACKING THE SELECTCARD ONE PLUS 1

The system requires 12 vac 50/60 Hz. used to power only the SelectCard. It comes with this manual, and the PC board mounted in the controller box, and a 12 volt 20 va transformer. The PC board looks like this:

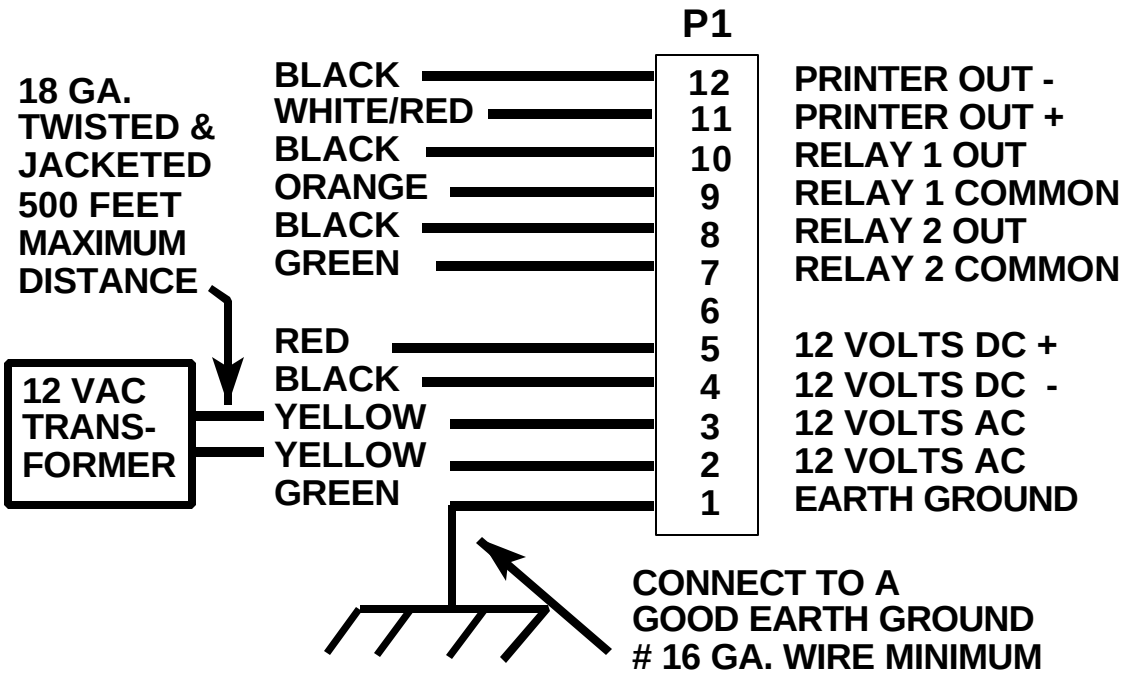


1 READER SELECTCARD PC BOARD

2.1 TESTING AND VERIFYING SYSTEM

The power connector is located near the upper left corner of the PC board. Attach AC power only to the two yellow wires on the power connector P1 position 2 and 3. Or connect DC power only to P1 position 5 (+ DC) and position 4 (-DC). See the power connections diagram on the next page.

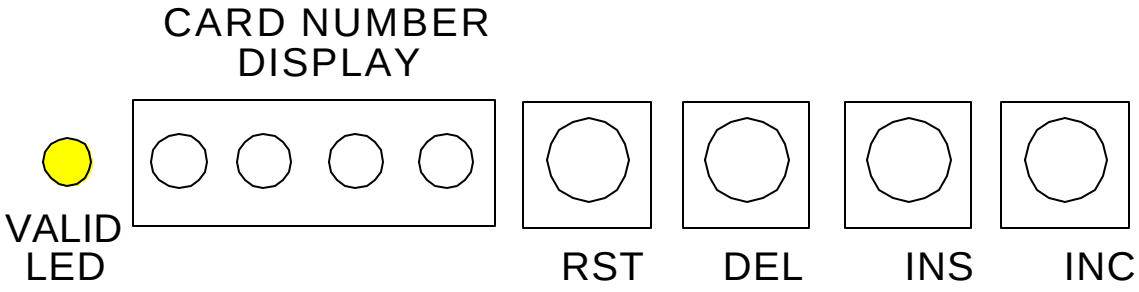
2.2 POWER CONNECTIONS



POWER CONNECTIONS

After attaching AC power, plug the transformer into an AC power outlet. The red valid led should light then go out, and the control relay will click on and turn off within 30 seconds.

Press the reset button marked **RST**. The red valid led should light again and go out. The relay will not be affected. See the following diagram:



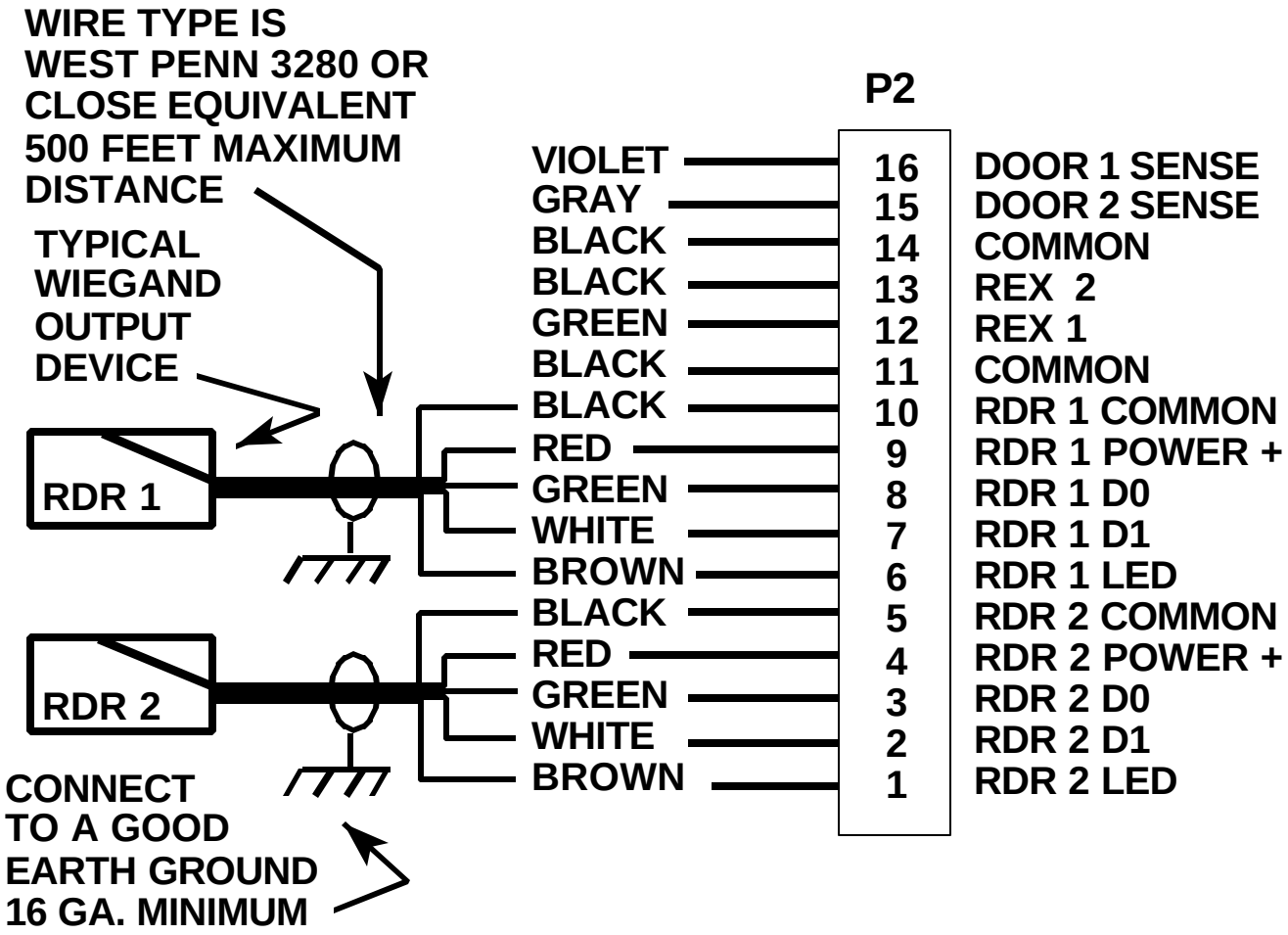
VALID LED AND RESET BUTTON

If you do not get this result, go to page 18 (In case of trouble . . .).

2.3 CARD READER CONNECTIONS

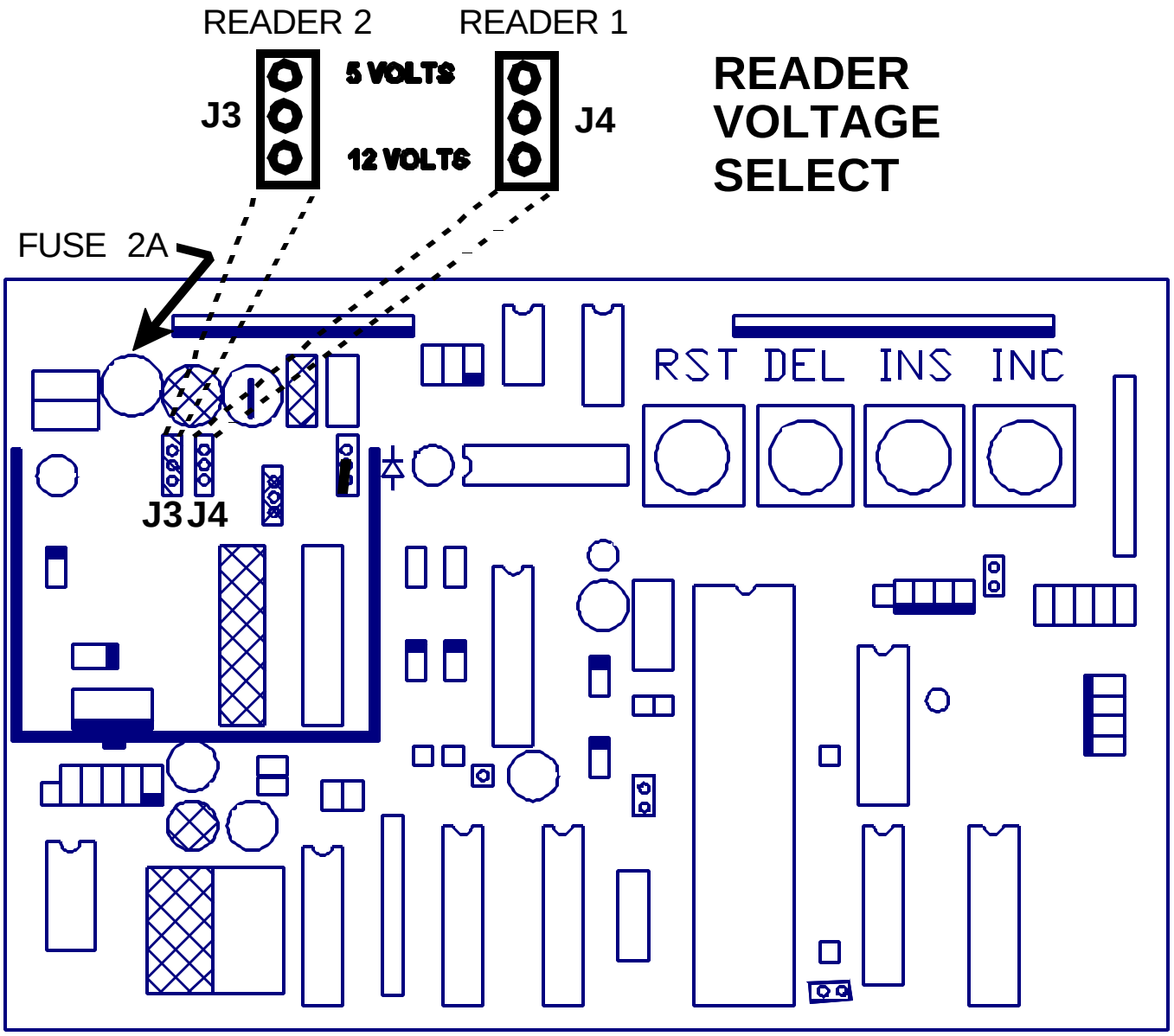
Next, unplug the transformer and wire the reader to the READER 1 (or 2) wires on connector P2. Use the color code that matches the card reader.

See this diagram for card reader connections:



Wire the Wiegand reader directly to P2. (See above diagram).
Plug the power transformer in and run a card through the reader (insert or swipe as required). The code number of that card will appear for 1 second in the 4 digit display next to the red valid led and the red valid led may light as well.

2.4 SELECTING CARD READER VOLTAGE



Jumpers J3 and J4 on the SelectCard select 5 or 12 volts for various reader types. Many WIEGAND swipe, insert or key readers are 5 volts. Many BARIUM FERRITE, PROXIMITY and INFRARED readers are 12 volts. If the readers and the card option were purchased together, this has already been configured. If not, see the diagram above to select the appropriate card reader voltage setting. Check with the manufacturer of your card reader for correct voltage selection.

The maximum distance for WIEGAND readers is 500 feet. West Penn #3280 or close equivalent must be used for card reader signals.

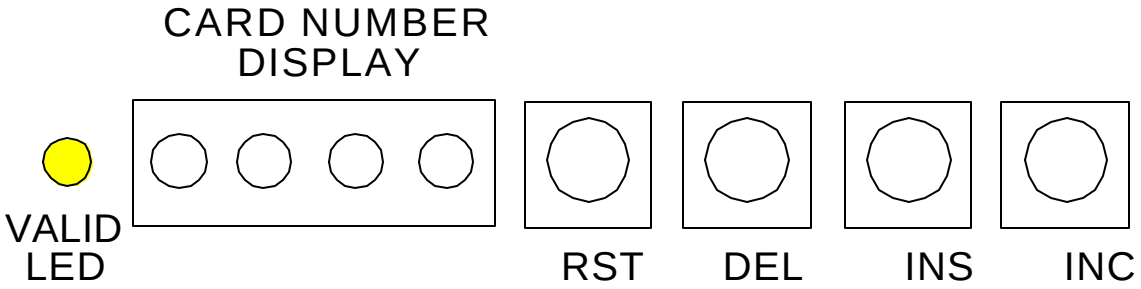
The maximum distance for BARIUM FERRITE, PROXIMITY, or INFRARED readers is 100 feet, using West Penn #3280. For lengths to 500 feet use Belden # 83656, or close equivalent.

2.5 CARD VALIDATION

To validate the card, run it through the reader and press the **INS** button. Wait for the card number to show in the display, then press the **INS** button a second time. The red valid led will light when the card number is in the display and the number is valid. Now press **RST**. The red valid led will light and then go out. The card number is now valid.

NOTE: If the INC button is pressed for longer than 1 second, the display will automatically increment at a rate of 20 numbers per second. This is useful for block programming in either insertion or deletion of card codes.

To delete a card, run it through the reader and press the **DEL** button until the card number shows in the display, then press **DEL** a second time. Notice that the red valid led does **NOT** light when the number is in the display and the card number is not valid. Now press **RST**. The red valid led will light and then go out. The card number is now invalid.



CARD VALIDATION

An alternative method of programming if the card number is known, is to press the reset (**RST**) button. The red valid led will light and then go out. Next press the increment (**INC**) button and the display will begin counting up by one number each time the button is pressed. When the desired number is reached, press and hold the insert (**INS**) button until the red valid led lights. The number is now valid. Press **RST**. The red valid led will light and go out.

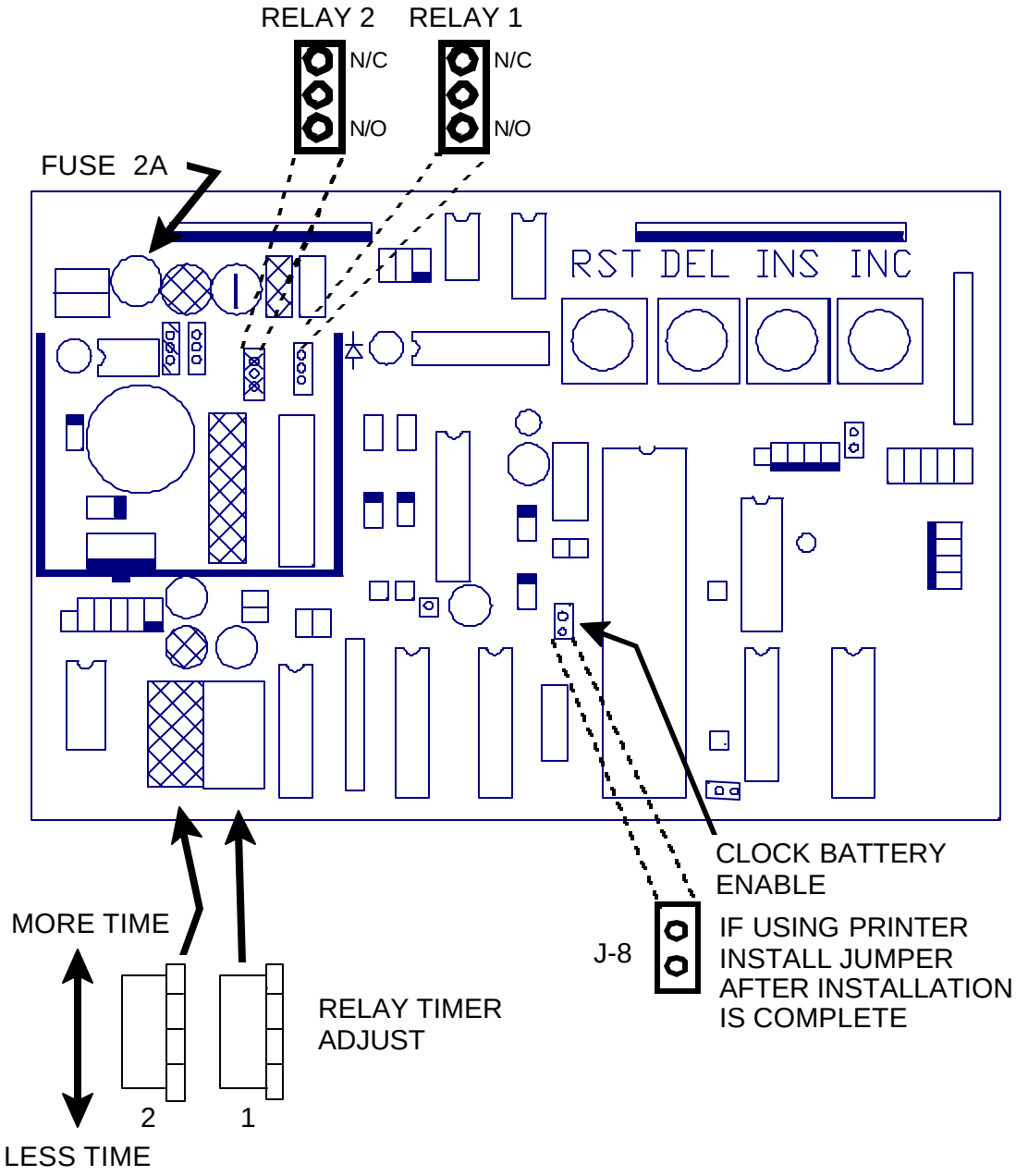
To delete a card number, press the reset (**RST**) button. The red valid led will light and go out. Next press the increment (**INC**) button and the display will begin counting up by one number each time the button is pressed. When the desired number is reached, press and hold the delete (**DEL**) button until the red valid led goes out. The number is now invalid. Press **RST**. The red valid led will light and go out.

NOTE: CARD NUMBERS GREATER THAN 9,999 WILL PROGRAM AND READ AS THE LAST 4 DIGITS OF THE CARD'S DECIMAL CODE. EXAMPLE: 23,599, 43,599 & 63,599 WILL ALL PROGRAM AND READ AS 3,599.

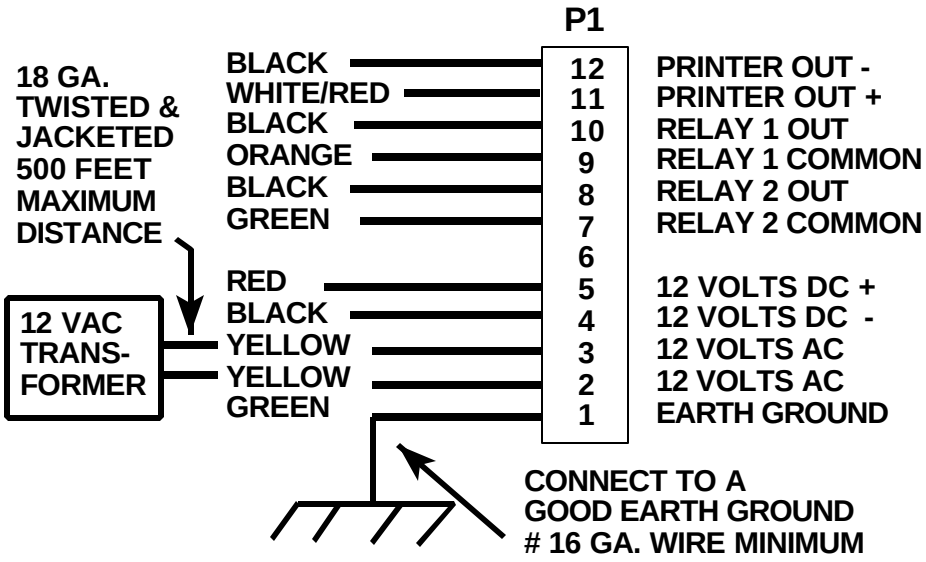
2.6 SET RELAY AND ADJUST TIMER

See diagram below to select jumper for normally open or normally closed. It is shipped from the factory as normally open. For form "C" operation order OPTKFRMC for a form "C" relay adapter.

Run a validated card through the reader and adjust the white nylon wheel to the desired time. The range is 1 to 30 seconds.



2.7 RELAY CONNECTIONS



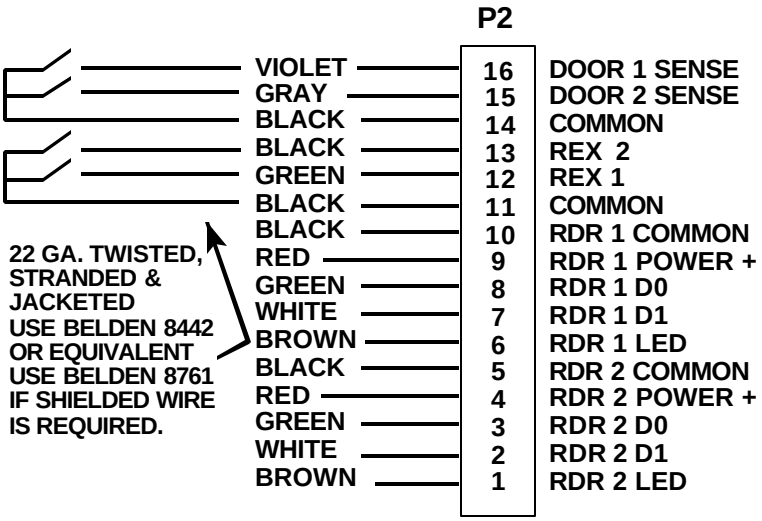
RELAY CONNECTION

2.8 REQUEST EXIT AND DOOR SENSE CONNECTIONS

On connector P2, the REX (request to exit) P2-11 and P2-12 (green and black), when closed will energize the relay just like a valid card would. The relay will stay energized as long as the REX input contacts are held closed.

NOTE: The timeout will start **AFTER** the contacts are opened.

On connector P2, the Door 1 sense P2-14 and P2-16 (black and violet) will immediately stop the remainder of the relay time out when closed. See diagram below:



REX , DOOR SENSE

3.0 PROGRAMMING THE SYSTEM

3.1 VALIDATING OR DELETING A SINGLE CARD:

1. Press the **RST** button. (Red led will light and go out).

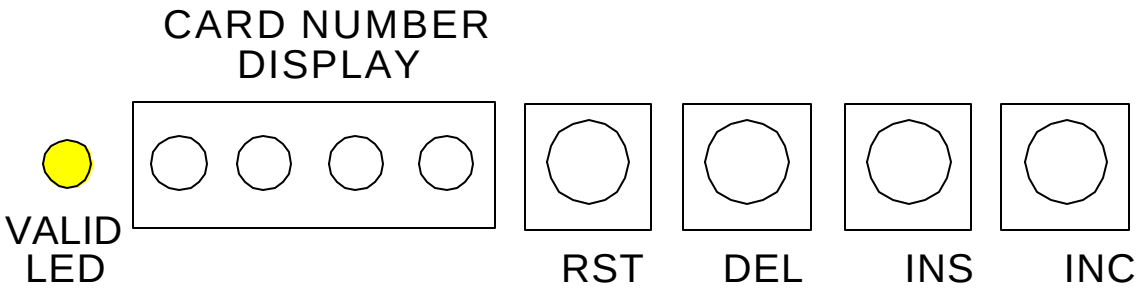
2. Use the **INC** button until desired card number is in the LED display. If the card numbers in memory the "VALID LED" will illuminate.

NOTE: If the **INC** button is pressed for longer than 1 second, the display will auto increment at a rate of 20 numbers per second.

3. Press the **INS** button to validate the card number or press the **DEL** button to delete the card number.

4. If there are more cards to program, go to step 2.

5. Press the **RST** button when all complete.



VALIDATING OR DELETING CARD

3.2 ALTERNATE METHOD IF CARD IS AVAILABLE

1. Pass the card through either card reader.

2. To validate the card, Press the **INS** button and wait for the card number to show in the display then press the **INS** a second time. To delete the card, Press the **DEL** button and wait for the card number to show in the display then press the **DEL** a second time.

3. If there are more cards to program, go to step 1.

4. Press the **RST** button when all done.

NOTE: CARD NUMBERS GREATER THAN 9,999 WILL PROGRAM AND READ AS THE LAST 4 DIGITS OF THE CARD'S DECIMAL CODE. EXAMPLE: 23,599, 43,599 & 63,599 WILL ALL PROGRAM AND READ AS 3,599.

3.3 GROUP VALIDATING OR DELETING CARDS (BULK LOADING)

1. Press the **RST** button. (Red led will light and go out).

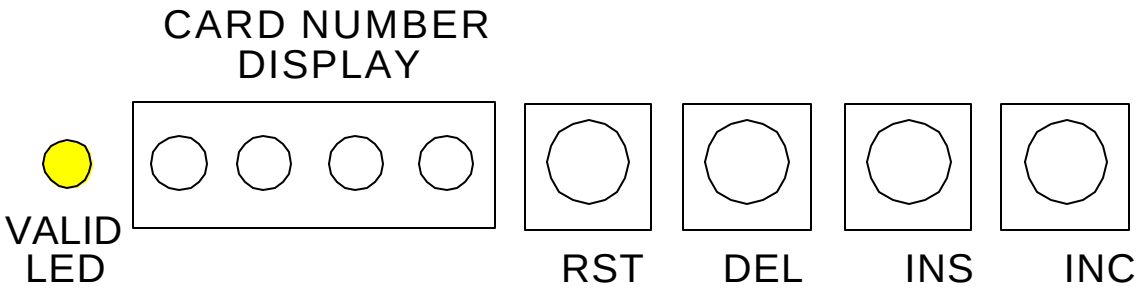
2. Use the **INC** button until LOWEST card number is in the LED display. If the card number is in memory the "VALID LED" will illuminate.

3. Press AND HOLD the **INS** button to validate the card numbers or press AND HOLD the **DEL** button to delete the card numbers.

4. WHILE HOLDING THE RESPECTIVE button, press the **INC** button until the highest card number is in the display.

5. Release the **INS** or **DEL** button.

6. Press the **RST** button when all done.



GROUP PROGRAMMING

3.4 ALTERNATE METHOD IF YOU HAVE THE LOWEST NUMBER CARD.

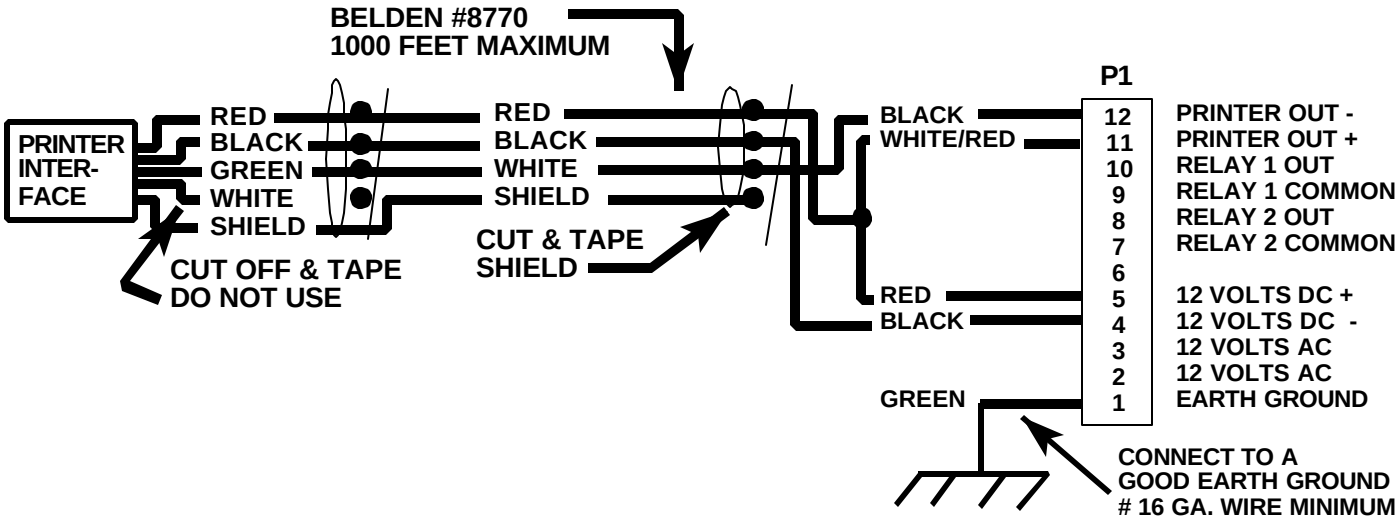
1. Pass the card through either card reader.
2. Press AND HOLD the **INS** button to validate the card numbers, or press AND HOLD the **DEL** button to delete the card numbers.
3. WHILE HOLDING THE RESPECTIVE button, press the **INC** button until the highest card number is in the display.
4. Release the **INS** or **DEL** button.
5. Press the **RST** button when all done.

4.0 OPTIONAL PRINTER HOOK UP

A serial printer may be connected to SelectCard using the optional current loop to RS-232 interface.

4.1 OPTIONAL PRINTER COMMUNICATIONS

The printer communications link is 8 bit ASCII, no parity 1200 baud current loop. If a serial printer is to be connected to the system, the optional printer interface MUST be used between the SelectCard and the printer. See drawing below for printer connections.

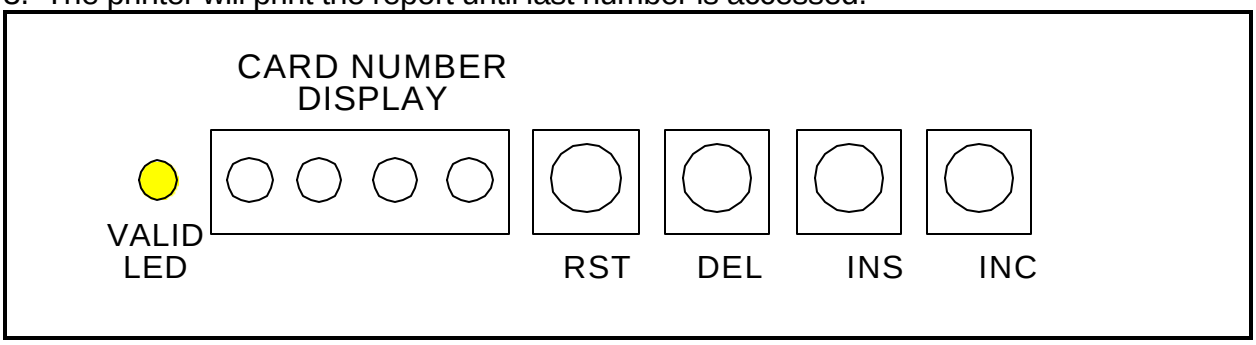


PRINTER CONNECTIONS

Connect the optional printer interface to connector P1 as shown above.
Plug the printer interface into the printer and plug in the printer. Load paper in the printer.
Install jumper J8 after installation is complete.

4.2 PRINTING A REPORT ON THE PRINTER:

1. Press **RST** and **INS** buttons together.
2. Release **RST** button then release **INS** button.
3. The printer will print the report until last number is accessed.



4.3 MESSAGES FOR OPTIONAL PRINTER

NOTE: If the clock has been set (see page 15 for setting clock), the printer will print:
mm/dd hh:mm MONTH/DAY HOUR:MIN

If the clock has NOT been set, the printer will print:
* no clock *

4.4 POWER-UP MESSAGES:

SELECTCARD v. 6.0 S XX BITdate & time (Where XX is 26 or 36 bits)

4.5 RUN TIME MESSAGES:

xxxx = card number, n = reader number

CARD # xxxx RDR n date & time If valid card used

INVALID CARD # xxxx RDR n date & time If invalid card used

4.6 REPORT:

SELECTCARD date & time

VALID CARDS:

xxxx Valid card numbers
xxxx
xxxx
xxxx
xxxx

END REPORT

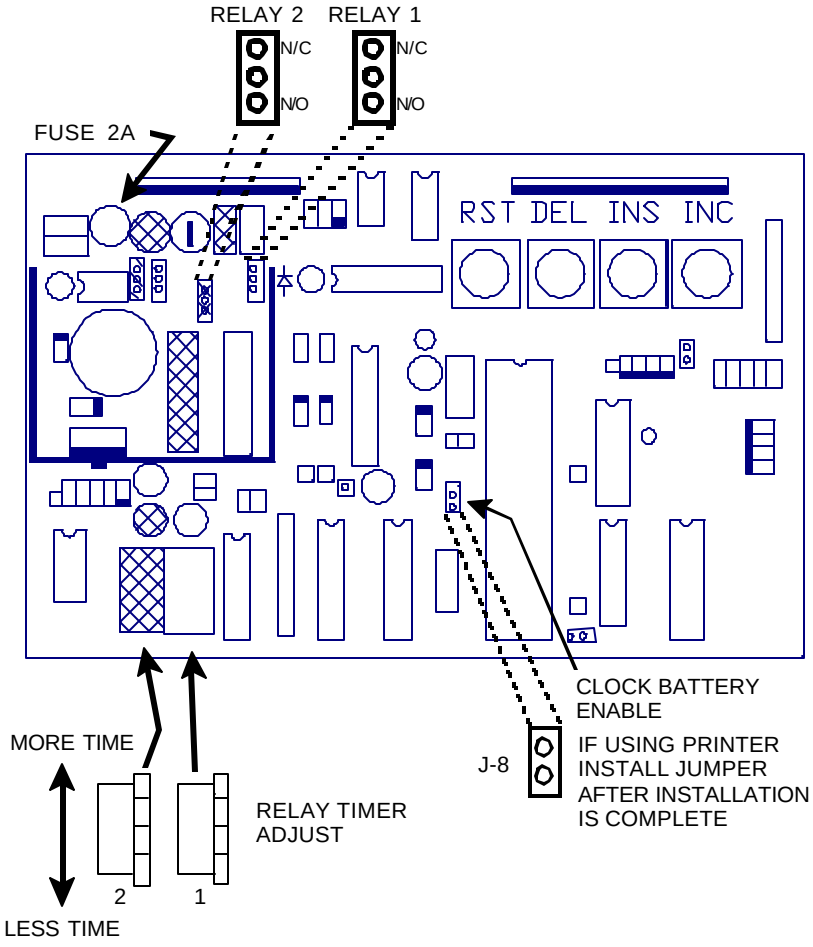
4.7 PROGRAMMING MESSAGES:

CARD # xxxx valid date & time If validating 1 card.

CARD # xxxx deleted date & time If deleting 1 card.

5.0 ENABLING THE CLOCK BATTERY

The clock battery keeps the time and date current, and does not have to be reset after every momentary lapse of power.
It is only required if used with the optional printer.
See this diagram for jumper location:



BATTERY JUMPER LOCATION

See section 5.1 for setting the time and date.

5.1 SETTING THE INTERNAL CLOCK:

(only used if a printer is connected).

NOTE: The hours of the clock is set in 24 hour (military) format.

1. Press the **RST** and **DEL** buttons together.	
2. Release **RST** button then release **DEL** button.	**DISPLAY SHOWS:**
3. Display will show.	0000
4. Use **INC** button until month is in the display.	0011 = NOVEMBER
5. Press **INS** key.	
6. Display will show.	1000
7. Use **INC** button until day is in the display.	1015 = 15th day
8. Press **INS** key.	
9. Display will show.	2000
10. Use **INC** button until hour is in the display.	2008 = 8 am
11. Press **INS** key.	
12. Display will show.	3000
13. Use **INC** button until minute is in the display.	3047 = 47 minutes

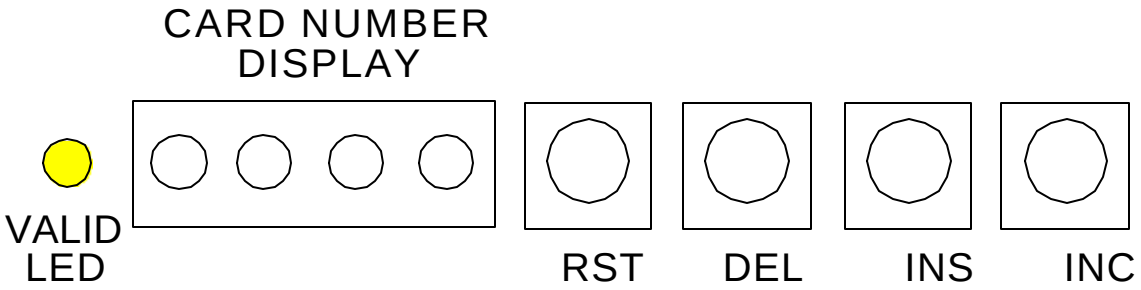
14. Setting the clock is done.

15. If a mistake is made you **MUST** go back to step 1.

6.0 DISPLAYING A CARD NUMBER IN THE LED DISPLAY

1. If you wish to read a card's number, pass the card through the card reader. The number of the card will be displayed on the LED display for ½ second.

2. If the card is valid in memory, the "VALID LED" will light.



PRINTING REPORT ON DISPLAY

6.1 PRINTING A REPORT ON THE DISPLAY

(To review valid cards on the display).

1. Press **RST** and **INS** buttons together (See above diagram).

2. Release **RST** button then release **INS** button.

3. If the printer is connected it will print a report.

4. The display will start counting up from 0 at a fast rate and if a valid card is in memory the display will stop for ½ second displaying the valid number, then continue. The display will continue until card number 9999 is reached and will then go blank.

5. Report is done.

NOTE: CARD NUMBERS GREATER THAN 9,999 WILL PRINT AS A 4 DIGIT CARD.
EXAMPLE: 23,599, 43,599 & 63,599 WILL ALL PRINT AS 3,599.

7.0 INSTALLATION OF THE SYSTEM

1. Install the control electronics in a convenient location.

2. Install the card readers using the wire specified.

3. CONNECT A GOOD EARTH GROUND TO THE UNIT.

4. If a printer is to be used with the unit, install the wiring as shown in drawing in section 4.0 on page 12.

5. Install and connect the 12 Volts AC required by the unit.

6. Change the output relay's configuration, if required.

7. Select the correct card reader voltage, if required.

8. Power up the system and press the **INC** button. The LED display will show 0000, and if the printer is connected the HEADER or POWER-UP MESSAGE will be printed. (See page 13 section 4.4).

7.1 ADJUSTMENTS

1. Using the REX input or after programming a card, activate the output relay and adjust it's on time as needed.

2. If the optional PRINTER is connected to the system INSTALL the battery jumper on J8 (See Section 5.0).

3. Set the clock as instructed on page 15 (Section 5.1).

7.2 PROGRAM FACILITY CODE (26 Bit Only)

1. Jump J-5 (borrow J-8 temporarily, if necessary)

2. Press INC until desired facility code reached.

3. Press INS. Remove J-5.

4. Press RST to reset.

Facility code range is from 0 to 255. 0-254 are facility codes; Facility Code 255 is actually an instruction to the Select Card, to ignore facility codes.

7.3 FINAL SYSTEM CHECK OUT

1. Following the instructions (page 10), program cards into the system.

2. Run the cards through the reader to check the cards and reader.

3. If the REX and DOOR sense inputs are used, activate them for correct operation.

4. If the optional printer is connected to the system, inspect the printout for proper documentation.

8.0 IN CASE OF TROUBLE . . .

1. CHECK ALL CONNECTIONS.

2. CHECK FOR CORRECT VOLTAGE AT TRANSFORMER (SHOULD BE 12 VOLTS AC).

3. VERIFY POWER IS LIVE.

4. CHECK UNIT IS CORRECTLY GROUNDED.

5. CHECK AC INPUT FUSE (SHOULD BE 2 AMP FUSE).

6. CHECK RELAY OUTPUT FOR DESIRED CONTINUITY.

7. CHECK RELAY SELECT JUMPERS.

8. CHECK READERS FOR CLEAR PATH FOR CARDS.

9.CHECK THAT ALL PLUG IN COMPONENTS ARE SECURELY SEATED.
(See diagram in section 5.0).

10. CHECK THAT READER VOLTAGE JUMPERS ARE CORRECT FOR READER TYPE.

ERROR CODE ON DISPLAY	ERROR TYPE
ccc1	EVEN PARITY
ccc2	36 BIT HEADER
ccc3	26 BIT FACILITY CODE
ccc4	ODD PARITY

BETTER TECHNOLOGY MAKES BETTER SYSTEMS

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