Ensec

DC500/AC INSTALLATION GUIDE

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The information in this manual is revised periodically. Revisions will be provided in the form of addenda used as replacement pages for the revised pages in your manual.

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The customer accepts full maintenance responsibility. Hardware and software maintenance are available to the customer.

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Chapter 1

Overview

1.0 INTRODUCTION

The scope of the data contained in this handbook is limited to the installation of the DC500; further details may be obtained by reading other DC500 manuals:

DC500/AC OPERATION GUIDE

DC500/DC OPERATION GUIDE

DC500/SA OPERATION GUIDE

SCAPE ADMINISTRATION GUIDE

The installation shall conform to local electric standards. Only approved electrical materials shall be used.

Other Chapters

Chapter 2 - Communication illustrates host-DC500 communication connections, showing RS232, RS485 and modem communication.

Chapter 3 - Connections shows the connection of external devices with the DC500.

Chapter 4 - Initial Setup shows how to install a wall-mounted DC500 in seventeen steps from gangbox wiring to the first communication test, and provides wiring illustrations (and gauges) for doorstrikes, door contacts, readers, exit buttons, DOs/DIs, power and communication.

Appendix A - Internal Modem shows how to make the required connections for modem communication.

1.1 DESCRIPTION

The DC500 is an intelligent data collector with a hardware and software architecture that allows operation as a stand alone unit or as an element of a communication network (RS485).

Applications

The DC500 can be used for access control, time and attendance, and job costing (labor assignment, production line control).

The DC500 has battery backup RAM that enables data storage in its memory to last for the period of one year.

Each DC500 unit can control up to two (2) card readers that can support Wiegand (26, 36, 37 bits), proximity, barcode or magstripe technology.

Technology	Distance from DC500	
Wiegand	820 feet	250 meters
Barcode	6.5	2.0
Magstripe	6.5	2.0 meters

Options

A backup battery permits continuous operation for 20 hours of data collection or 15 hours of access control operation, in the event of power failure.

An internal modem supports dial-up communciation.

Chapter 2

Communication

2.0 COMMUNICATION

One communciation channel can support 32 DC500s. The maximum number of channels is eight (channels 0-7). The maximum number of DC500s system-wide is 128. Therefore, if your system has a maximum of 128 DC500s, you might decide to use 4 communication lines (channels) with 32 DC500s on each channel, or you might decide to use all 8 channels and have 16 DC500s (or between 1-16) on each channel. The number of DC500s that you put on each channel is an administrative decision.

Channel Switcher

If the installation requires more than 32 DC500s a communication channel switcher is required. The switch is manual. See FIGURE 2-K for an illustration that pictures a 1/6 switch used to connect one communication port to 6 communication lines (Channels 0-5).

See the section *Communicating with DC500s on Multiple Channels* in this chapter. But first read the next section, *DC500 Address Worksheet* for an understanding of the DC500's physical address on a communication channel and the DC500's logical address within the system.

DC500 Address Worksheet

Use the communciation worksheet (FIGURE 2-C) to define the physical and logical address of each DC500. The physical address is the physical location (1-32) of a DC500 on its communication channel. The first column shows physical addresses 1-32 for a maximum of 32 DC500s on each channel.

The next eight columns show channels 0-7. Each column has 32 blanks for recording logical addresses for 1 to 32 DC500s on that channel. The logical address is the logical number (1-128) of the DC500 in the system. There are 128 logical addresses possible, since the maximum number of DC500s system-wide is 128.

For example, if you have 128 DC500s on 4 channels (32 DC500s per channel) the physical addresses for DC500s on each channel are 1 to 32. The logical addresses for the first channel of DC500s matches the physical addresses: 1 to 32. The logical addresses for the second channel are 33 to 64; the third channel, 65 to 96; the fourth channel, 97 to 128. If you only use 4 channels for 128 DC500s, each channel must have 32 DC500s.

DC500 PHYSICAL ADDRESSES CHANNELS 0 - 7	LOGICAL ADDRESSES FOR DC500S ON CHANNELS 0-7							
	CHAN 0	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7
1	1	33	65	97				
32	32	64	96	128				

FIGURE 2-A: DC500 ADDRESS WORKSHEET WITH 128 DC500S ON 4 CHANNELS

Another example: if you have 128 DC500s on 8 channels (16 DC500s per channel) the possible physical addresses for DC500s on each channel are 1 to 32, but you use only the first 16 physical addresses. The logical addresses for the first channel of DC500s matches the physical addresses: 1 to 16. The logical addresses for the second channel are 17to 32; the third channel, 33 to 48; and so on.

DC500 PHYSICAL ADDRESSES CHANNELS 0 - 7	LOGICAL ADDRESSES FOR DC500S ON CHANNELS 0-7							
	CHAN 0	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7
1	1	17	33	49	65	81	97	113
16	16	32	48	64	80	96	112	128

FIGURE 2-B: DC500 ADDRESS WORKSHEET WITH 128 DC500S ON 8 CHANNELS

Use the DC500 Address Worksheet (next page) to define logical and physical DC500 addresses (FIGURE 2-C).

DC500 PHYSICAL ADDRESSES CHANNELS 0 - 7	LOGICAL ADDRESSES FOR DC500S ON CHANNELS 0-7							
	CHAN 0	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7
1	1							
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								

FIGURE 2-C: DC500 ADDRESS WORKSHEET

Communication with DC500s on Multiple Channels

Each DC500 has a physical address on a specific communication channel. If there is more than one channel, you have a manual channel switcher.

> **Note. . .**
> **When you need to communicate with a specific DC500, use the manual switch to select the appropriate communication channel.**

When you issue a command that effects a range of terminals, make sure that the range specified does not cross over communciation lines. For example, if there are 40 terminals configured (on 2 channels, with 32 on the first channel and 8 on the second channel) and you want to run the Communciation Test function on all 40 terminals:

First, set the switch set to Communication Channel 0 and run the communication test on Terminals 1-32.

Then set the switch set to Communciation Channel 1 to test Terminals 33-40.

DC500 PHYSICAL ADDRESSES CHANNELS 0 - 7	LOGICAL ADDRESSES FOR DC500S ON CHANNELS 0-7							
	CHAN 0	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7
1	1	33						
2	2	34						
2	3	35						
4	4	36						
5	5	37						
6	6	38						
7	7	39						
8	8	40						
32	32							

FIGURE 2-D: EXAMPLE - COMMUNICATING WITH DC500S ON 2 CHANNELS

2.1 DC500 AND PC COMMUNICATION

There are a number of possible configurations pictured in Figures E- K: a single DC500 connected up to 4000 feet (2-E) or beyond 4000 feet (2-F); multiple DC500s connected up to 4000 feet (2-G) or beyond 4000 feet (2-H), multiple DC500 at various distances (2-I), and multiple DC500s on channels using a manual channel switcher (2-K).

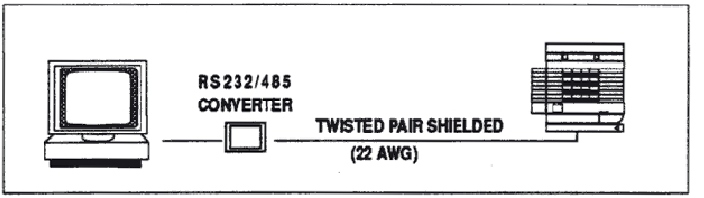

FIGURE 2-E: ONE DC500 UP TO 4000 FEET (1200 METERS)

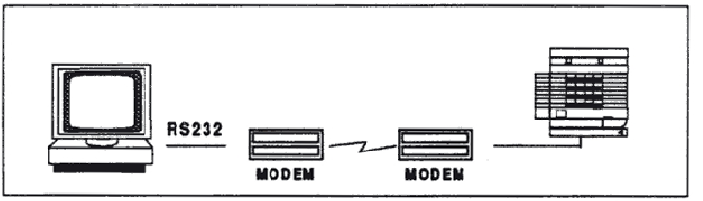

FIGURE 2-F: ONE DC500 BEYOND 4000 FEET (1200 METERS)

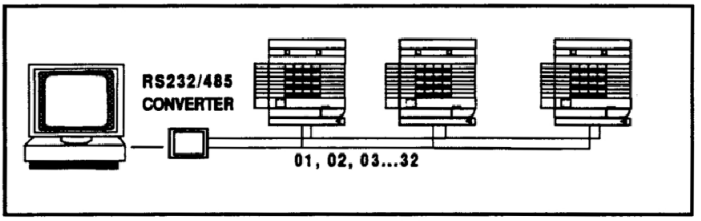

FIGURE 2-G: MULTIPLE DC500s UP TO 4000 FEET (1200 METERS)

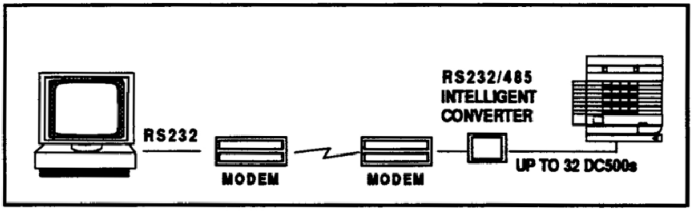

FIGURE 2-H: MULTIPLE DC500s BEYOND 4000 FEET (1200 METERS)

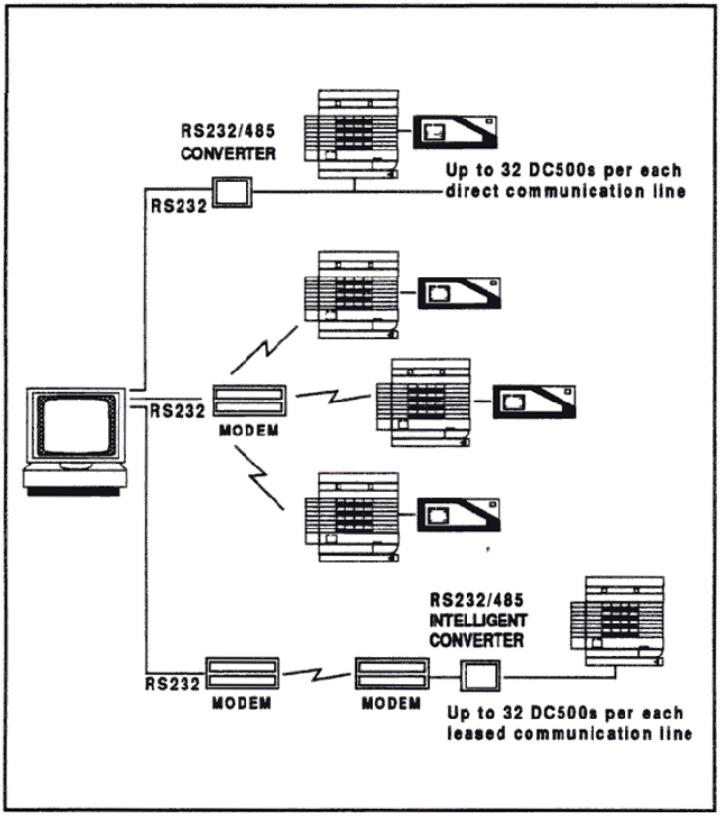

FIGURE 2-1:MULTIPLE DC500s AT VARIOUS DISTANCES

2.2 RS 232/485 CONVERTER

The RS232/485 is the interface at a serial output that converts RS232 to RS485 protocol.

2.3 TERMINATORS

When using RS485 communication, you must place a 120 Ohm terminator (resistor) at the last DC500 (between TxRx+ and TxRx-) and at the RS232/485 converter.

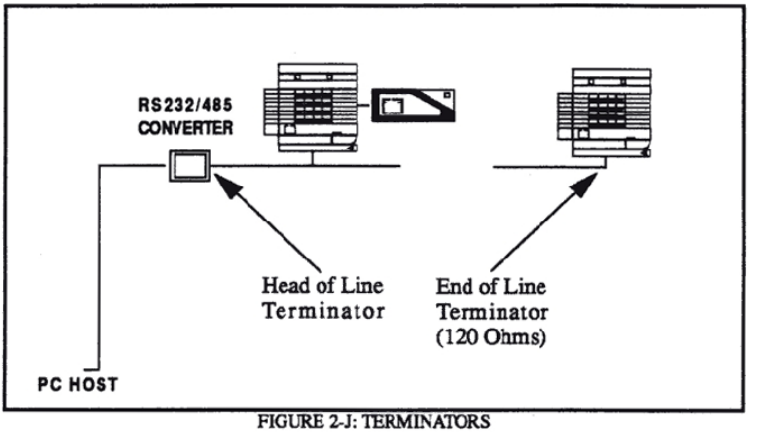

FIGURE 2-J: TERMINATORS

2.4 SWITCHER

A manual switch is required when more than 32 terminals are installed in a system and therefore there is more than one channel. The switch selects the channel for PC host communication. Figure 2-K shows six channels (0-5) using a 1/6 channel switcher.

Note: See *SCAPE ADMINISTRATION GUIDE*, Configuration/Communication Setup/Switch Channel in *Chapter 8 - Configuration.*

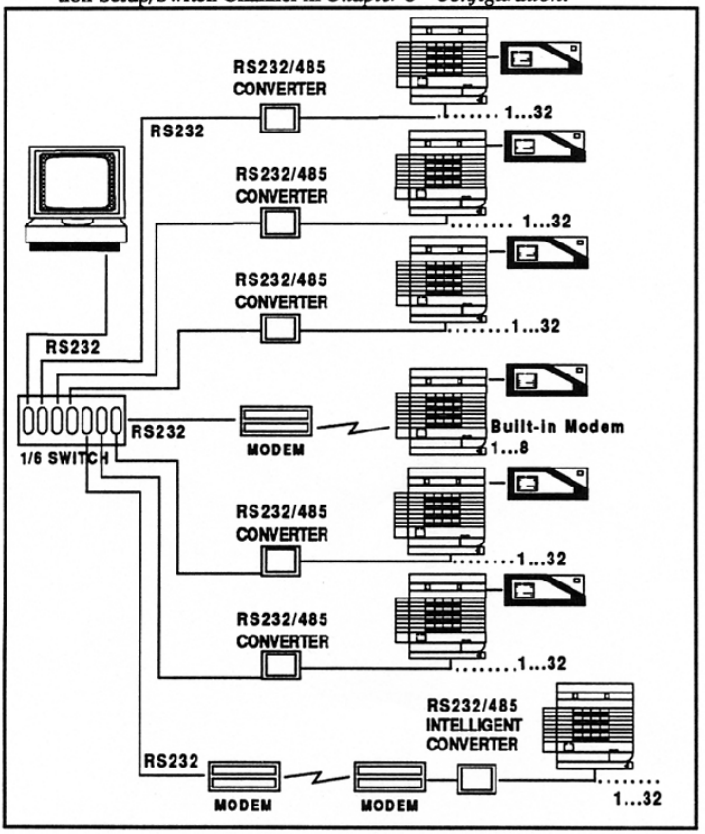

FIGURE 2-K: 1/6 CHANNEL SWITCHER USED FOR 6 LINES OF DC500s

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Chapter

3 Connections

3.0 DC500 EXTERNAL CONNECTIONS

STANDARD

Power Cord (12 VDC)

Communication cable

OPTIONAL

Doorstrikes

Exit pushbutton or second reader

Door sensor

The DC500 Connector Board links power, communication, and external devices to the terminal.

This chapter illustrates the Connector Board and provides tables that show how to use each connector block CN10, CN11, and CN12 for connecting sensor or output devices.

CN3 is the single connector block used to connect all the other connections from the Connector Board (pictured in FIGURE 3-A) to the CPU and power supply (CN13). To locate CN3 and CN13, see FIGURE 3-A.

See *Chapter 4 - Initial Setup* for step-by-step installation instructions illustrated by diagrams that show the required device wiring and connections.

Use JP1on the connector board to set the type of serial communciation (RS232 or RS485), CN2 or CN1 for an optional DB9/RS232 or DB9/RS485 connection, respectively (e.g. for PC laptop connection), CN4 for the internal violation switch connection.

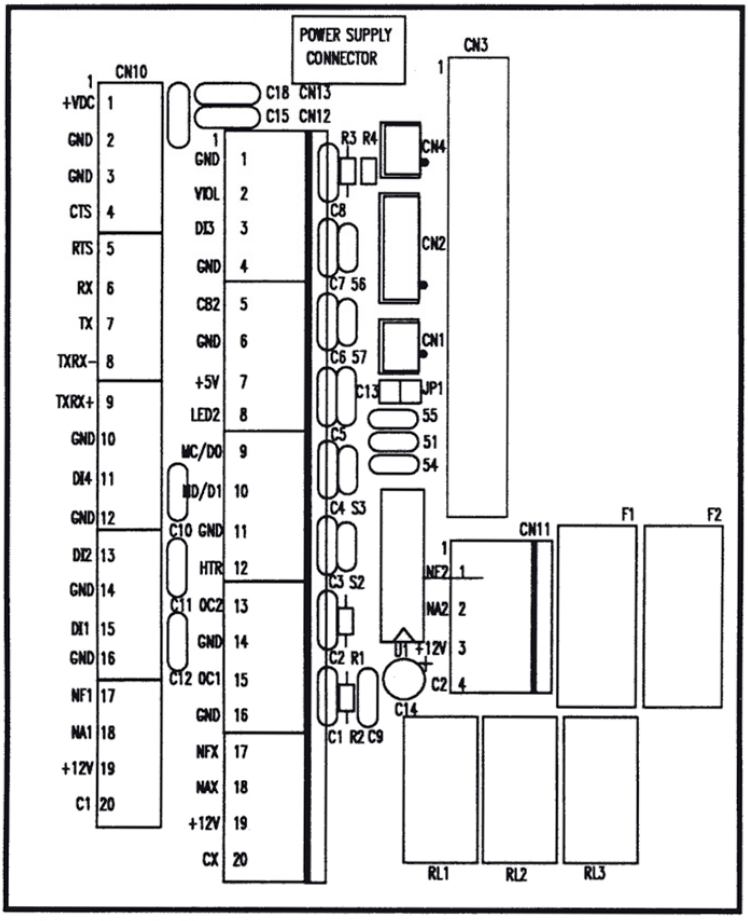


FIGURE 3-A: DC500 CONNECTOR BOARD*

*This drawing shows the board rotated 90° clockwise from the typical orientation.

CONNECTOR 10 (CN10)

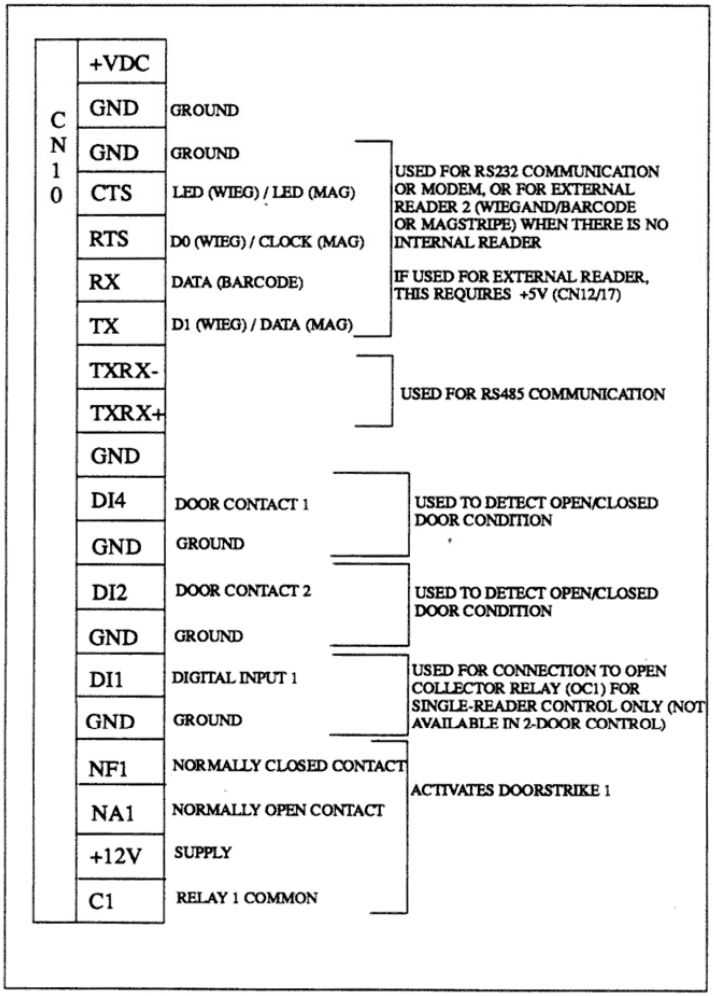


FIGURE 3-C: CONNECTOR 10 (CN10)

CONNECTOR 11 (CN11)

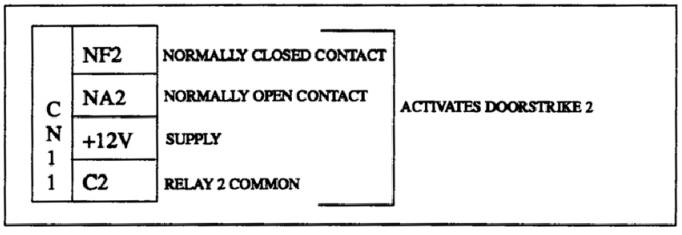


FIGURE 3-D: CONNECTOR 11 (CN11)

CONNECTOR 12 (CN12)

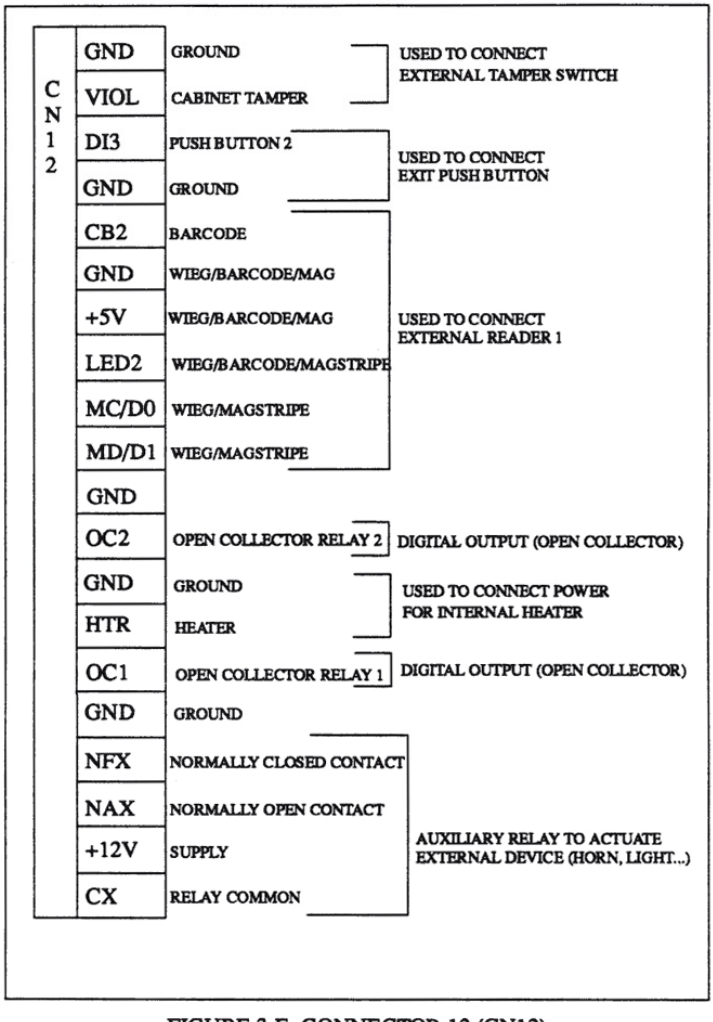


FIGURE 3-E: CONNECTOR 12 (CN12)

DO CONNECTIONS		
DO	DESCRIPTION	CONNECTOR/ TERMINAL
❒	C1, NA1 AND NF1 - RELAY 1, DRY CONTACT	CN10/20, 18, 17
❒	OC2 - OPEN COLLECTOR	CN12/12
❒	OC1 - OPEN COLLECTOR	CN12/15
❒	C2, NA2 AND NF2 - RELAY 2, DRY CONTACT	CN11/4, 2, 1
❒	CX, NAX AND NFX - AUX RELAY	CN12/20, 18, 17

FIGURE 3-F: DOs AND CONNECTORS

DI CONNECTIONS		
DI	DESCRIPTION	CONNECTOR/ TERMINAL
❒	DI1 - DIGITAL INPUT	CN10/15
❒	DI2 - DOOR CONTACT 2	CN10/13
❒	DI3 - EXIT PUSH BUTTON	CN12/3
❒	VIOL - CABINET TAMPER SIGNAL	CN12/2*
* To configure an external violation, use TERMINAL 1 and 2 on CN12		

FIGURE 3-G: DIs CONNECTIONS

Chapter 4

Initial Setup

4.0 INTRODUCTION

■ Check for the following items when you receive the DC500 package:

- ❒ DC500/AC
- ❒ Wall-mounted AC/DC power supply
- ❒ 2 module connection keys
- ❒ 2 user manuals in one 3-ring Ensec binder: DC500/AC Installation Guide, DC500/AC Operation Guide
- ❒ Product registration card and hardware warranty card (last page of user manual)

■ If this is a DC500 with an internal modem, check for:

- ❒ RS232 driver chip (MAX233) to replace the jumper block on the CPU board (U25).

■ If this is a DC500 with an RS485 communication option, check for:

- ❒ Jumper block to replace the RS232 chip on the CPU board (U25)
- ❒ RS485 converter
- ❒ Wall-mounted AC/DC power supply

■ To install the DC500 terminal, you need the following items:

- ❒ Gangbox - either 4"x4" or 4"x2", and any items that the gangbox manufacturer requires
- ❒ Phillips screwdriver
- ❒ Back panel screws: 2 Phillips screws for the 4"x2" gangbox or 4 Phillips screws for the 4"x4" gangbox

Steps 1 through 17 (4.1 - 4.17) show you how to install the DC500, starting with the door, communication, output device, and power wiring which is pulled into the gangbox and connected to the DC500 connector board and ending with power-on, setup and database transmission.

Step 1 has three diagrams (4-D, 4-E, and 4-F) that show you how to connect wiring for the door (doorstrike, door contact, reader, exit button), host communication (RS232, RS485, modem), input devices (door sensor, P.I.R.) output devices (lights, sirens) and power adaptor.

The following diagrams (4-A, 4-B and 4-C) picture the DC500 from the front and from the side (both wall mount and desk mount).

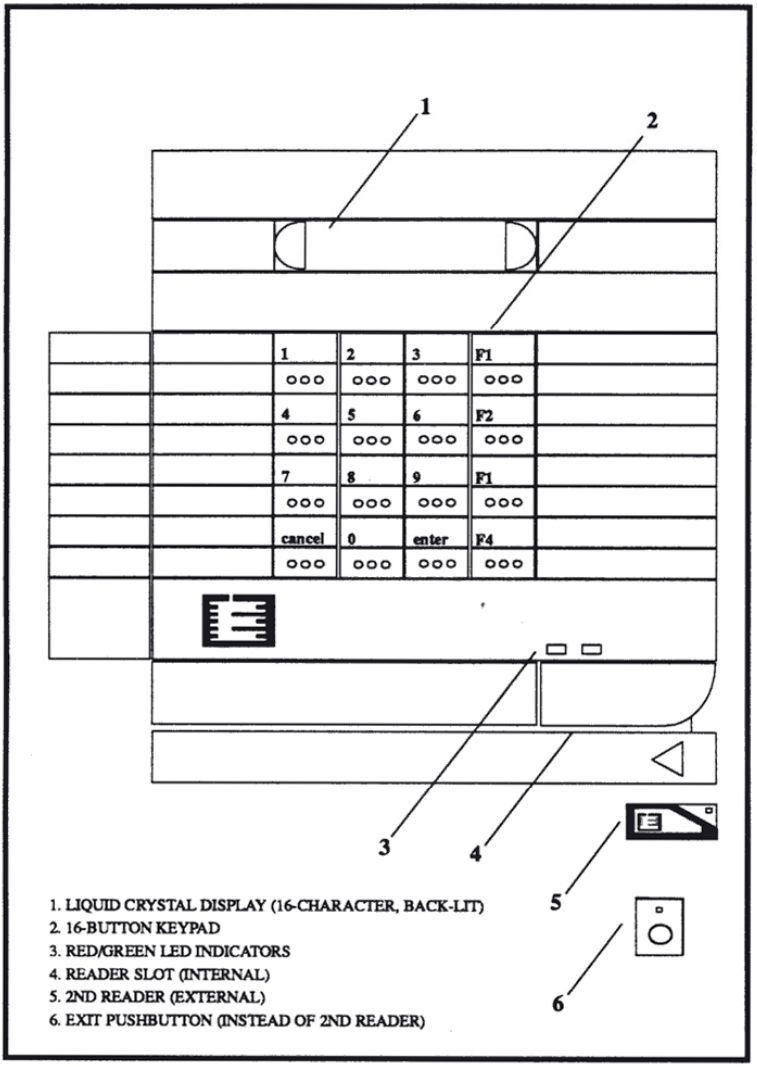
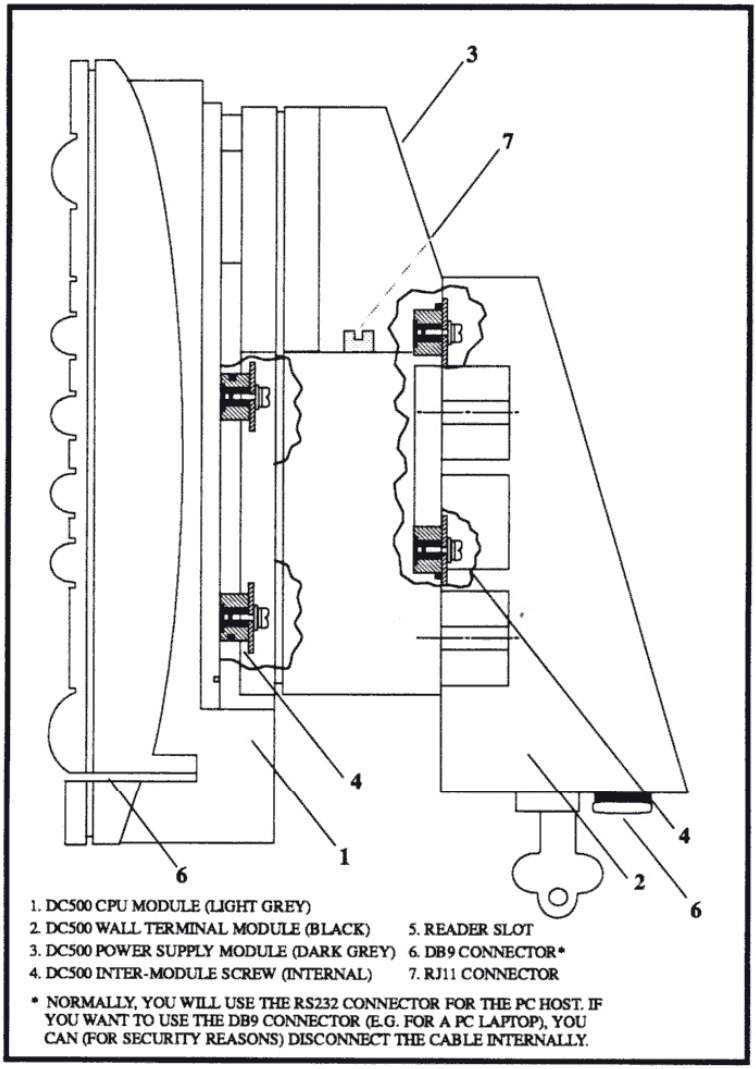


FIGURE 4-A: DC500 FRONT VIEW



1. DC500 CPU MODULE (LIGHT GREY)
2. DC500 WALL TERMINAL MODULE (BLACK)
3. DC500 POWER SUPPLY MODULE (DARK GREY)
4. DC500 INTER-MODULE SCREW (INTERNAL)
5. READER SLOT
6. DB9 CONNECTOR*
7. RJ11 CONNECTOR

* NORMALLY, YOU WILL USE THE RS232 CONNECTOR FOR THE PC HOST. IF YOU WANT TO USE THE DB9 CONNECTOR (E.G. FOR A PC LAPTOP), YOU CAN (FOR SECURITY REASONS) DISCONNECT THE CABLE INTERNALLY.

FIGURE 4-B: WALL MOUNT DC500 - SIDE VIEW

4.1 STEP 1 - DC500 DIPSWITCH SETTINGS FOR ADDRESSES

Set the dip switches on Dipswitch Block 31 (back side of CPU board) according to the following tables:

DIPSWITCH 31					
KEY 1	**KEY 2**	**KEY 3**	**KEY 4**	**KEY 5**	**ADDRESSES**
ON	ON	ON	ON	ON	01
OFF	ON	ON	ON	ON	02
ON	OFF	ON	ON	ON	03
OFF	OFF	ON	ON	ON	04
ON	ON	OFF	ON	ON	05
OFF	ON	OFF	ON	ON	06
ON	OFF	OFF	ON	ON	07
OFF	OFF	OFF	ON	ON	08
ON	ON	ON	OFF	ON	09
OFF	ON	ON	OFF	ON	10
ON	OFF	ON	OFF	ON	11
OFF	OFF	ON	OFF	ON	12
ON	ON	OFF	OFF	ON	13
OFF	ON	OFF	OFF	ON	14
ON	OFF	OFF	OFF	ON	15
OFF	OFF	OFF	OFF	ON	16

DIPSWITCH 31					
KEY 1	**KEY 2**	**KEY 3**	**KEY 4**	**KEY 5**	**ADDRESSES**
ON	ON	ON	ON	OFF	17
OFF	ON	ON	ON	OFF	18
ON	OFF	ON	ON	OFF	19
OFF	OFF	ON	ON	OFF	20
ON	ON	OFF	ON	OFF	21
OFF	ON	OFF	ON	OFF	22
ON	OFF	OFF	ON	OFF	23
OFF	OFF	OFF	ON	OFF	24
ON	ON	ON	OFF	OFF	25
OFF	ON	ON	OFF	OFF	26
ON	OFF	ON	OFF	OFF	27
OFF	OFF	ON	OFF	OFF	28
ON	ON	OFF	OFF	OFF	29
OFF	ON	OFF	OFF	OFF	30
ON	OFF	OFF	OFF	OFF	31
OFF	OFF	OFF	OFF	OFF	32

FIGURE 4-C: DC500 ADDRESSES 1-32 ON DS 31, KEYS 1 - 5

	DIP SWITCH 31 - KEYS 6, 7 & 8		
KEY 6	**KEY 7**	**KEY 8**	**FREE**
	OFF	OFF	RESERVED*
	OFF	OFF	RESERVED*
	OFF	OFF	RESERVED*
	OFF	OFF	RESERVED*
	*These switches are reserved for Ensec		

FIGURE 4-D: RESERVED SWITCHES - DS31, KEYS 6 - 8

4.2 STEP 2 - GANGBOX WIRING

Mount a 4"x2" or 4"x4" gangbox in the wall (per the manufacturer's directions) and pull all the wiring through the gangbox knockouts.

Use Figures 4-D and 4-E and 4-F as a guide to connect the devices you require:

for the door...

- Door contact sensor
- Doorstrike
- Second reader head or exit pushbutton/LED2

See FIGURE 4-F: DEVICE WIRING - DOOR/READER.

for digital inputs and outputs (DOs and DIs)...

- Three (3) inputs for local alarm, dry contacts (single-reader configuration).
- Three (3) auxiliary outputs with their own power source. For example, an LED, a light, a siren.
- One (1) auxiliary output triggered by VIOL (CN12/2) if you require a two-door configuration.

See FIGURE 4-G: DEVICE WIRING - OUTPUT DEVICES/POWER.

for power...

- Wall transformer - 12 VDC 1.2 Amps

See FIGURE 4-G: DEVICE WIRING - OUTPUT DEVICES/POWER.

for communication...

- RS232
- or RS485
- or Telephone line (modem)

See FIGURE 4-H: DEVICE WIRING - RS232/RS485/MODEM COMMUNICATION.

Use FIGURE 4-E to determine the DC500 wire gauges and lengths that you require:

WIRING CHART

PURPOSE	AWG SIZE	NUMBER OF WIRES	TWISTED PAIR (SHIELDED)	BELDEN TYPE
DOOR CONTACT	20	2	-	8649
PUSHBUTTON	20	2	-	8649
2ND LED	20	2	-	8649
DI RELAY *	20	2	-	8649
DO RELAY*	20	2	-	8649
DOORSTRIKE	18	2	-	9708
POWER CABLE*	18	2	-	8770
RS485	22	2	T and S	9841
RS232	22	5	S	9841

*** USE STRANDED WIRE ONLY** *** DO=DIGITAL OUTPUT**

*** 12 FT. MAXIMUM FOR POWER CABLE** *** DI=DIGITAL INPUT**

*** EACH DC500 NODE CONNECTION ON AN RS485 NETWORK LINE CAN NOT EXCEED 1% OF THE TOTAL LENGTH OF THE RS485 NETWORK.**

FIGURE 4-E: DC500 WIRE GAUGES

Note: For wire gauge and length, refer to Figure 4-E

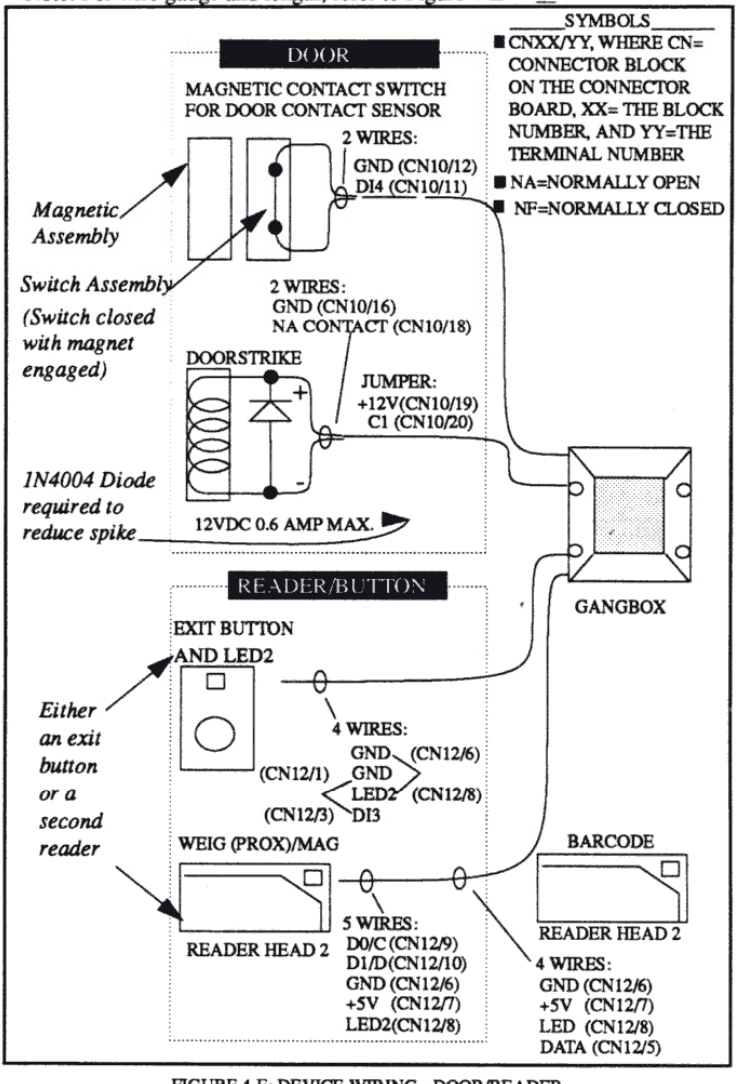


FIGURE 4-F: DEVICE WIRING - DOOR/READER

Note: For wire gauge and length, refer to Figure 4-E

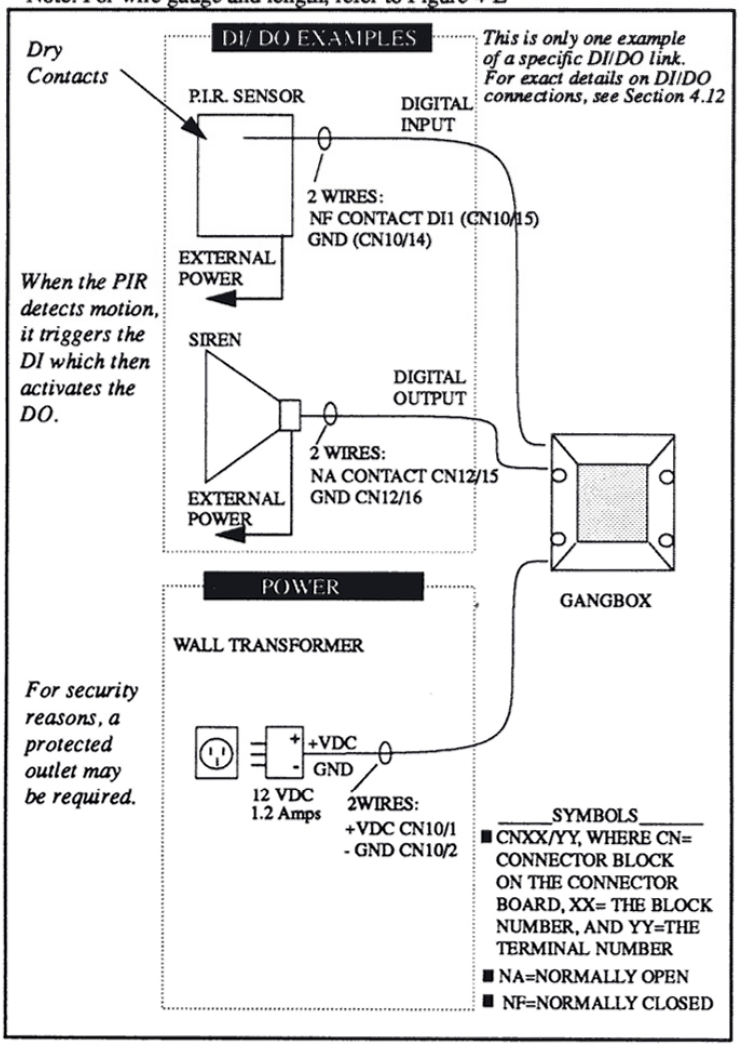


FIGURE 4-G: DEVICE WIRING - OUTPUT DEVICES/POWER

Note: For wire gauge and length, refer to Figure 4-E

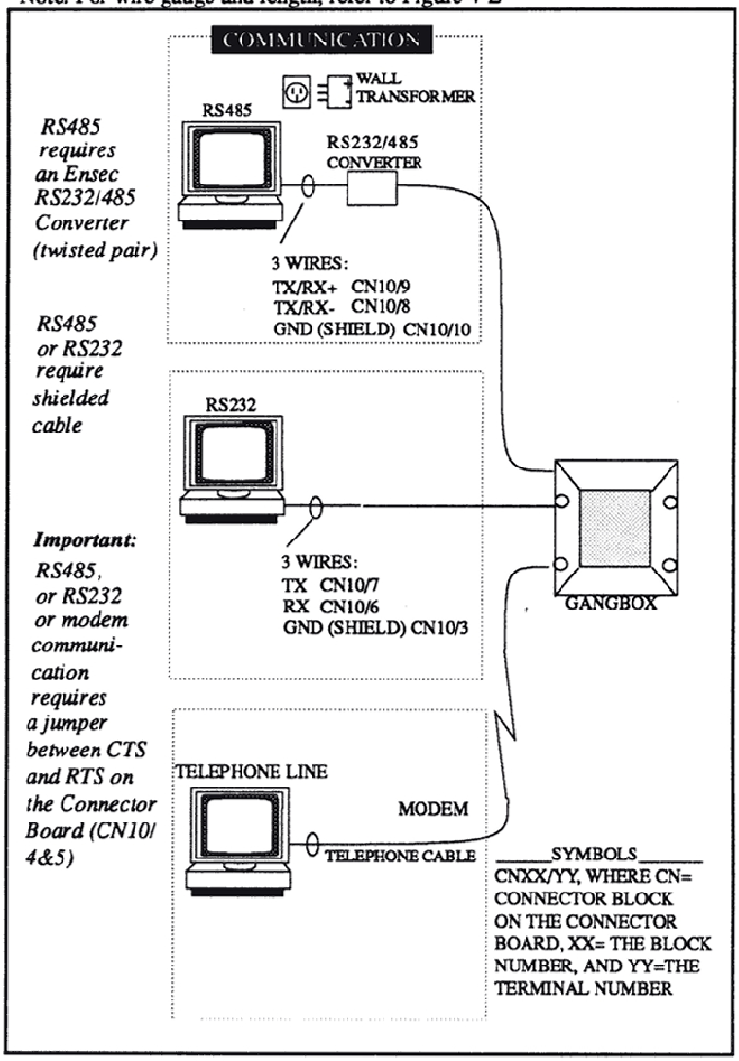


FIGURE 4-H: DEVICE WIRING - RS232/RS485/MODEM COMMUNICATION

4.3 STEP 3 - REMOVE THE CONNECTION MODULE PANEL

WARNING...

IF YOU ARE NOT INSTALLING FOR THE FIRST TIME, FIRST DISABLE THE DOs* SO THAT THE DIs DO NOT DETECT ALARM CONDITIONS AND ACTIVATE THE DOs.

*If you have to connect the auxiliary relay to an external device (single-reader configuration), first mask the auxiliary relay DO to avoid activating the tamper alarm.

Use the Auxiliary Output Disable setting in SCAPE (Path: Configuration/Terminals/Terminals Features).

- Unlock the connection panel. Insert the key and turn it clockwise.
- Open the back panel of the connection module. (Just pull the bottom edge out and the top edge will drop down.)
- Unplug the DC500 ribbon connector from the connector block on the connector board CN3.
- Remove the back panel from the connection module.

4.4 STEP 4 - REMOVE THE CONNECTOR BOARD

- Remove the four Phillips screws (and washers) that hold the connector board on the connection module back panel.

  Note: Use the same screws and washers again in Step 6 to reattach the connector board to the back panel.

- Remove the connector board from the connection module panel.

4.5 STEP 5 - INSTALL CONNECTION MODULE BACK PANEL

Install the connection module panel onto the gang box. Use 2 Phillips screws for the 4"x2" gangbox or 4 screws for the 4"x4" gangbox.

4.6 STEP 6 - INSTALL CONNECTOR BOARD

Install the connector board onto the connection module panel. Use the same screws and washers you removed in Step 4.

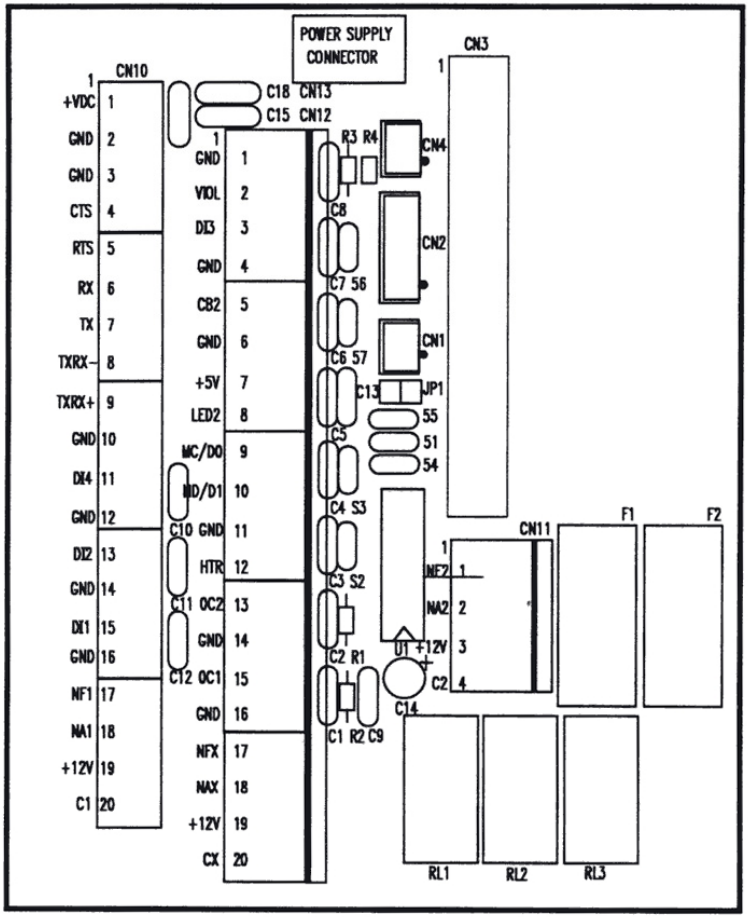


FIGURE 4-I: DC500 CONNECTOR BOARD*

*This drawing shows the board rotated 90° clockwise from the typical orientation.

4.7 STEP 7 - DOOR STRIKE

Connect...

- Jumper from C1 to +12V (CN10/20 AND 19)
- Positive wire to NA1 (Normally Open Contact) (CN10/18)*
- Negative wire to GND (CN10/16)

*CNxx/yy = Connector Number, where xx - connector block and yy=terminal number on the block. (See numbers on Figre 3-A: Connector Board.)

4.8 STEP 8 - DOOR CONTACT

Connect...

- One wire to DI4 (CN10/11)
- One wire to GND (CN10/12)

Note: If you are not using a door contact (for example, if this is a T&A-only application) use a jumper between DI4 and GND.

4.9 STEP 9 - EXIT PUSHBUTTON (OPTIONAL)

Connect...

- One wire to DI3 CN12/3
- Other wire to GND (CN12/1)

Note: If there is an external LED, then there is a polarity, so install as shown in FIGURE 4-J. Wire the anode to +5 and the cathode to GND.

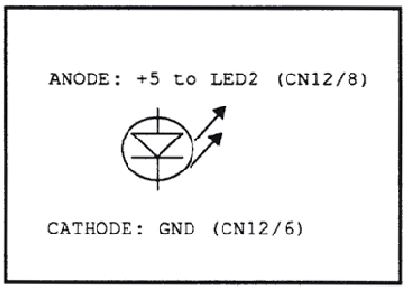


FIGURE 4-J: EXTERNAL LED INSTALLATION

4.10 STEP 10 - EXTERNAL READER HEAD 1 (OPTIONAL)

for a Wiegand reader, connect...

- Red wire to +5V (CN12/7)
- Black wire to GND (CN12/6)
- Green to D0 (CN12/9)
- White to D1 (CN12/10
- Brown to LED2 (CN12/8)

Maximum distance from DC500 to reader=500 Feet (153 Meters)

for a magstripe reader, connect...

- Red wire to +5V (CN12/7)
- Black wire to GND (CN12/6)
- Clock wire to MC (CN12/9)
- Data wire to MD (CN12/10)
- LED wire to LED2 (CN12/8)

Maximum distance from DC500 to reader=6feet (2 meters)

for a barcode reader, connect...

- Red wire to +5V (CN12/7)
- Black wire to GND (CN12/6)
- Data wire to CB2 (Bar Code Signal) (CN12/5)
- LED wire to LED2 (CN12/8)

Maximum distance from DC500 to reader=6 feet (2 meters)

for a proximity reader (with Wiegand-standard output), connect...

- Red wire to +5V (CN12/7)
- Black wire to GND (CN12/6)
- Green to D0 (CN12/9)
- White to D1 (CN12/10)
- Brown to LED2 (CN12/8)

Maximum distance from DC500 to reader=500 Feet (153 Meters)

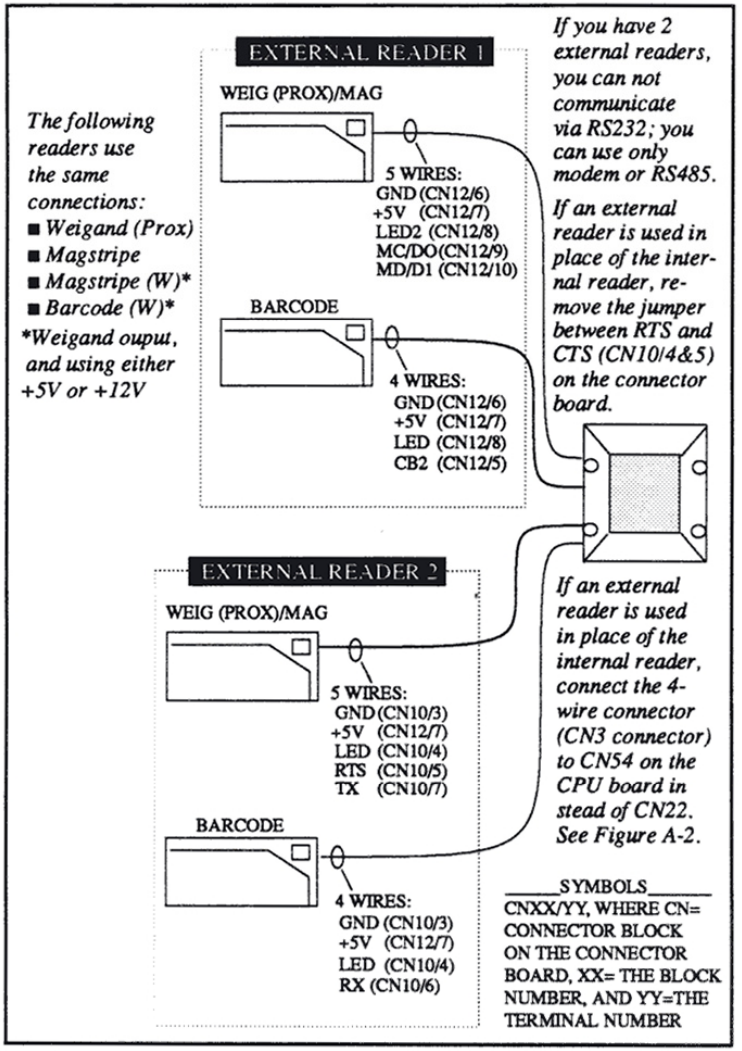


FIGURE 4-K: EXTERNAL READER CONNECTIONS

4.11 STEP 11 - COMMUNICATION CONNECTIONS

For RS232 or RS485, set JP1 on connector board...

CONNECTOR BOARD JP1	
JUMPER	**COMMUNICATION**
INSERTED	RS 232 or MODEM
NOT INSERTED	RS 485

FIGURE 4-L: COMMUNICATION SETTING

for RS232 from PC to Connector Board, connect...

- TX wire (PC) to RX (CN10/6)
- RX wire (PC) to TX (CN10/7)
- GND (PC) to GND (CN10/3)

Note: Jumper RTS to CTS on Connector Board (FIGURE 4-I)

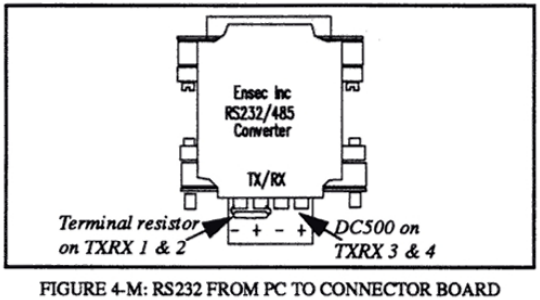


FIGURE 4-M: RS232 FROM PC TO CONNECTOR BOARD

for RS485 from PC* to Connector Board, connect...

- TXRX+ (Converter) to TXRX+ (CN10/9)
- TXRX- (Converter) to TXRX- (CN10/8)
- GND (PC) to GND (CN10/10)
- Terminal resistor (120 Ohm) between TXRX+ and TXRX-

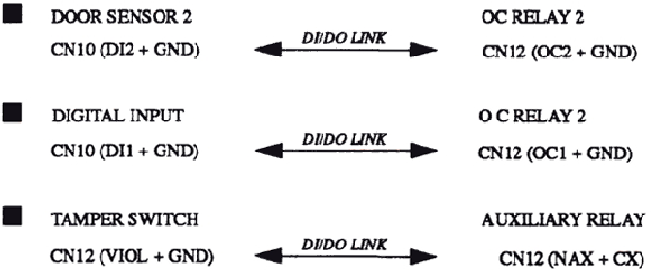
*Ensec RS232/485 converter required

4.12 STEP 12 - DIGITAL INPUTS AND DIGITAL OUTPUTS

THESE DIs/DOs ARE AVAILABLE FOR SINGLE READER CONTROL ONLY

DI/DO Links for Single-reader Control

When only one reader is configured, the following DI/DO links are available for alarm monitoring. *These settings are not user-configurable.*



* The cabinet tamper terminal (CN12/1+2) is connected to the tamper switch connector (CN4).

Door open-too-long, forced door and tamper conditions will activate the same dry contact auxiliary relay DO.

For example, when the door open time elapses, the terminal beeps for a number of seconds (equal to door open time) and then activates the auxiliary DO.

Warning . . .

When you disable this DO (CN12/2) in order to open the DC500 housing, the DO does not activate when a forced door or open door condition occurs. .

Tamper Switch Output

The tamper switch activates the auxiliary relay DO:

Warning . . .

When you open the unit, the tamper switch opens and activates the associated DO. Therefore when you need to perform maintenance, first disable the DO* so that the tamper signal does not occur.

Use the Auxiliary Output Disable setting in SCAPE (Path: Configuration/Terminals/ Terminal Features).

Dry Contact Switch

There are three (3) digital inputs (DIs). Each must be connected to an external dry contact switch (Normally Closed).

Note. . .

If youare not using the available DIs, insert a jumper from DI2 to GND and from DI1 to GND.

*A jumper between VIOL to GND disables the tamper alarm.

Connect...

- One wire of the dry contact switch to GND and the other to one of

the following DIs:

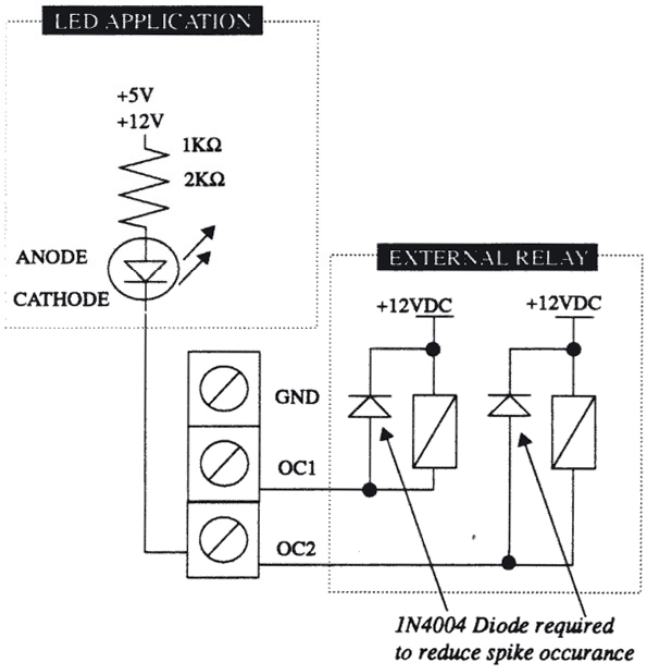
- DI1 CN10/15 activates an open collector: OC1 at CN12/15
- DI2 CN10/13 activates an open collector: OC2 at CN12/13
- VIOL CN12/3 activates an auxiliary relay at CN12/17-20:

The auxiliary relay DO is a dry contact output with NAX (Normally Open), NF (Normally Closed) and CX (Common) contacts for making the connections you require.

Maximum amperage for an auxiliary relay is 0.5 A @ 100 VAC. Maximum amperage for an open collector DO is 0.1A @ 12 VDC.

See *FIGURE 4-N: OPEN COLLECTOR OUTPUT.*

Note: For wire gauge and length, refer to Figure 4-E



NOTE1: THE OPEN COLLECTOR (OC) REQUIRES A 12 VDC RELAY WITH MAXIMUM 100 mA

NOTE2: USING AN EXTERNAL RELAY WITHOUT AC REDUCES THE BATTERY DURATION.

NOTE3: USE EITHER A RELAY CONNECTION OR AN LED CONNECTION (ONE CONFIGURATION PER OC OUTPUT).

FIGURE 4-N: OPEN COLLECTOR OUTPUT

4.13 STEP 13 - POWER CONNECTOR FROM TRANSFORMER

Connect the power connector from the transformer to CN13 on the connector board.

4.14 STEP 14 - DC500 CABLE TO CONNECTOR BLOCK

Connect the ribbon cable from the DC500 to CN3 on the connector board.

4.15 STEP 15 - CLOSE AND LOCK

Close the unit and turn the key counter-clockwise to lock the unit.

4.16 STEP 16 - POWER ON AND RUN SETUP

When you power on the DC500, setup and test procedures run automatically. Messages display on the LCD while setup runs. When setup is comple, the READY FOR OPERATION message displays.

After a successful setup, the DC500 will operate in default mode:

- Clock : date: DD/MM/YY and time: HH:MM (AM or PM).
- Operation mode: Installation Mode
- Unlock Time: 5 seconds
- Open Door Time: 12 seconds

See *Chapter 7 - Operation (7.2)* in the *ENSEC DC500 OPERATION GUIDE* for details about the setup sequence and possible error messages.

4.17 STEP 17 - COMMUNICATION TEST

When the READY FOR OPERATION message appears, use the SCAPE communication test function (Configuration/System/Communciation Test) to test the communication between the host and DC500 terminals. First make sure that Step 1 - 8 of Initial Setup (software) have been done (*Chapter 4 - Initial Setup* in *SCAPE ADMINISTRATION GUIDE*. Then set the date/time (Configuration/Set Clock) and download it (Communication/Send Date and Time).

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Appendix

A Internal Modem

Introduction

The internal modem is an option. If your DC500 is shipped with the modem installed, the U25 connector on the CPU board has a jumper block, JP1 on the connector board is inserted (for RS232 or modem), and J1 (power supply board) is connected to CN22 (CPU board).

> **Warning...**
>
> **If the DC500 is configured for an internal modem, do not communicate with the DC500 via RS232; this damages the DC500 CPU board.** Disconnect the DB9 cable (CN2* on the DC500 connector board) when using the internal modem.

The diagram in FIGURE A-1: INTERNAL MODEM CONNECTION shows how to make the connections between the DC500 CPU board and connector board to configure the DC500 for an internal modem.

Converting to Modem Communication - 3 Steps

If your DC500 is not currently configured for an internal modem perform the following three steps to convert the DC500 for modem communication:

1. Replace the RS232 chip (at U25 on the CPU board) with a jumper block. For step-by-step instructions on how to remove the RS232 chip and install the jumper block, see the next heading, *Installing the Jumper Block for Modem Communication.*
2. Insert a jumper (at JP1 on the connector board).
3. Remove the 4-wire connector at CN22 (CPU board) and use an interconnect harness to connect J1 (power supply board) to CN22 (back of CPU board).

See FIGURE A-2: INTERNAL MODEM CONNECTIONS.

Installing the Jumper Block for Modem Communication

The figure on the opposite page shows the U25 connector on the CPU board which requires an RS232 driver chip for RS232 communication and a jumper block for modem communication. To replace the RS232 driver chip with a jumper block:

- Power off the DC500.
- Remove the DC500 face plate.
- Use an IC tool to remove the RS232 driver chip (MAX233) from the U25 on the CPU board.
- Replace the RS232 chip with the jumper block (shipped with the modem). Before you insert the chip, make sure of the correct orientation: Terminal 1 is on the left, matching the notch on the left side of the chip.

  Be careful not to damage any of the legs on the chip.
- Replace the face plate.

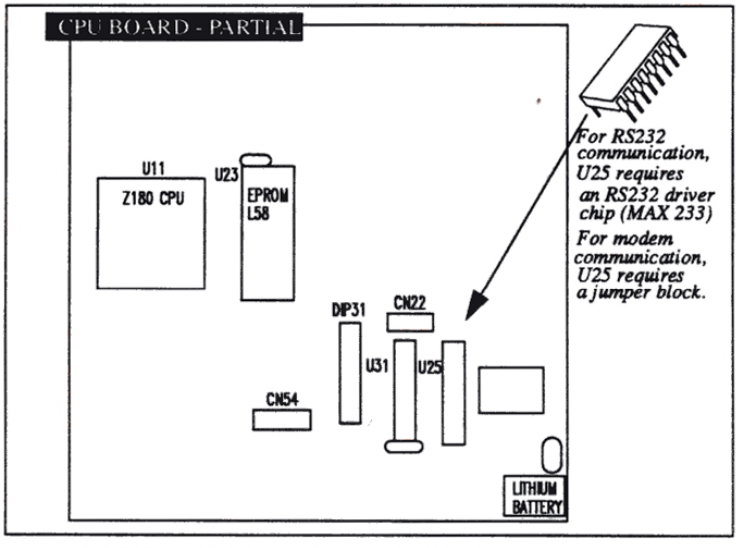

FIGURE A-1: U25 JUMPER BLOCK FOR MODEM COMMUNICATION