46210

ALARM BLOCK

46220

ALARM AND CONTROL BLOCK
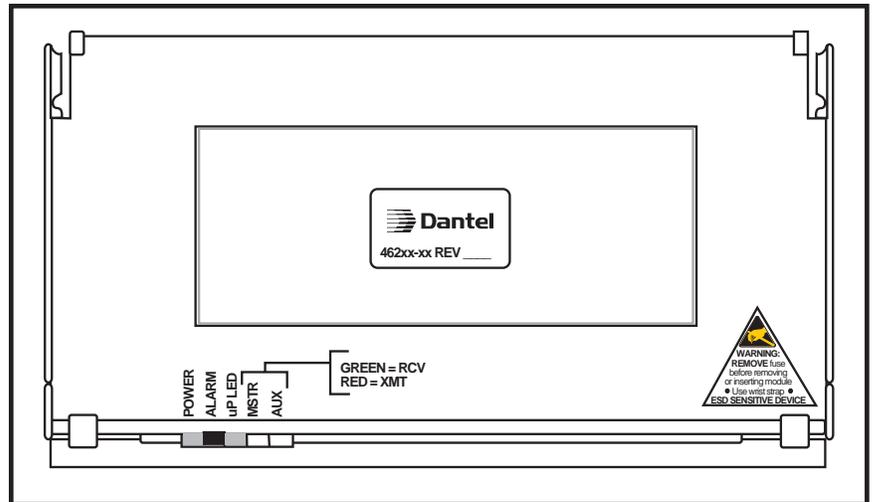
Table of Contents

About this Practice:

This practice has been reissued to:

- Correct the table on page 17.
- Update the Power Supply/CPU Board Subassembly instructions in the *Subassembly Replacement* section.
- Update Fig. 26.

Reissued Practices: Updated and new content can be identified by a banner in the right margin.

Issue date: September 1998

UPDATED

CAUTION

- Install or remove modules from the shelf only when the power is off. If you install a module in the shelf with the power on, the internal circuitry may suffer damage and the product warranty will be void.

- Remove and install circuit boards only in a static-safe environment (use antistatic wrist straps, smocks, footwear, etc.).

- Keep circuit boards in their antistatic bags when they are not in use.

- Do not ship or store circuit boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

- For more complete information on electrostatic discharge safety precautions, refer to Bellcore™ Technical Reference # TR-NWT-000870.

ORDERING INFORMATION

NOTE: This section lists the different options available for this product. To order any of the available options, contact Dantel Inside Sales through our toll-free number, **1-800-432-6835.**

OPTION NUMBER	FEATURES
B15-46210-00	Alarm Block; 256 discrete alarm inputs
B15-46220-00	Alarm and Control Block; 128 discrete alarm inputs and 32 control outputs
B15-46220-01	Alarm and Control Block; 192 discrete alarm inputs and 16 control outputs
A25-00508-00	Mounting Bar; 19-inch
A25-00508-01	Mounting Bar; 23-inch

GENERAL DESCRIPTION

The 46210-00 Alarm Block and 46220 Alarm and Control Block are available in three options. Refer to the ***Ordering Information*** section above.

Ground signals activate the alarm inputs. The units convert alarm information into TBOS, DCP, DCPF, or DCM protocol and send it to alarm reporting equipment. Printer Syntax is also available for maintenance purposes.

CIRCUIT DESCRIPTION

The 46210/46220 Alarm and Control Block functional schematic is shown in Fig. 1.

The microprocessor converts alarm and control information to TBOS, DCP, DCPF, DCM, or Printer Syntax protocol. The information is sent and received through the UART (Universal Asynchronous Receiver/Transmitter) and the master and auxiliary ports.

A watchdog circuit resets the microprocessor if it malfunctions temporarily.

WARNING:

When connecting or removing the quick-disconnect power plug to any Smart Block, it is necessary to ensure that there is no power present at the plug itself.

Remove power at either the circuit/bay fuse or remove the fuse from the Smart Block itself before connecting the power plug.

Failure to do so will cause damage to the Smart Block and may void any Dantel warranty.

Switches on the unit select the following:

♦ Data rate (baud)

♦ Method of alarm reporting

♦ Protocol

♦ TBOS display size

♦ Beginning TBOS display

♦ DCP, DCPF, or DCM address

♦ Length of time for operating relays
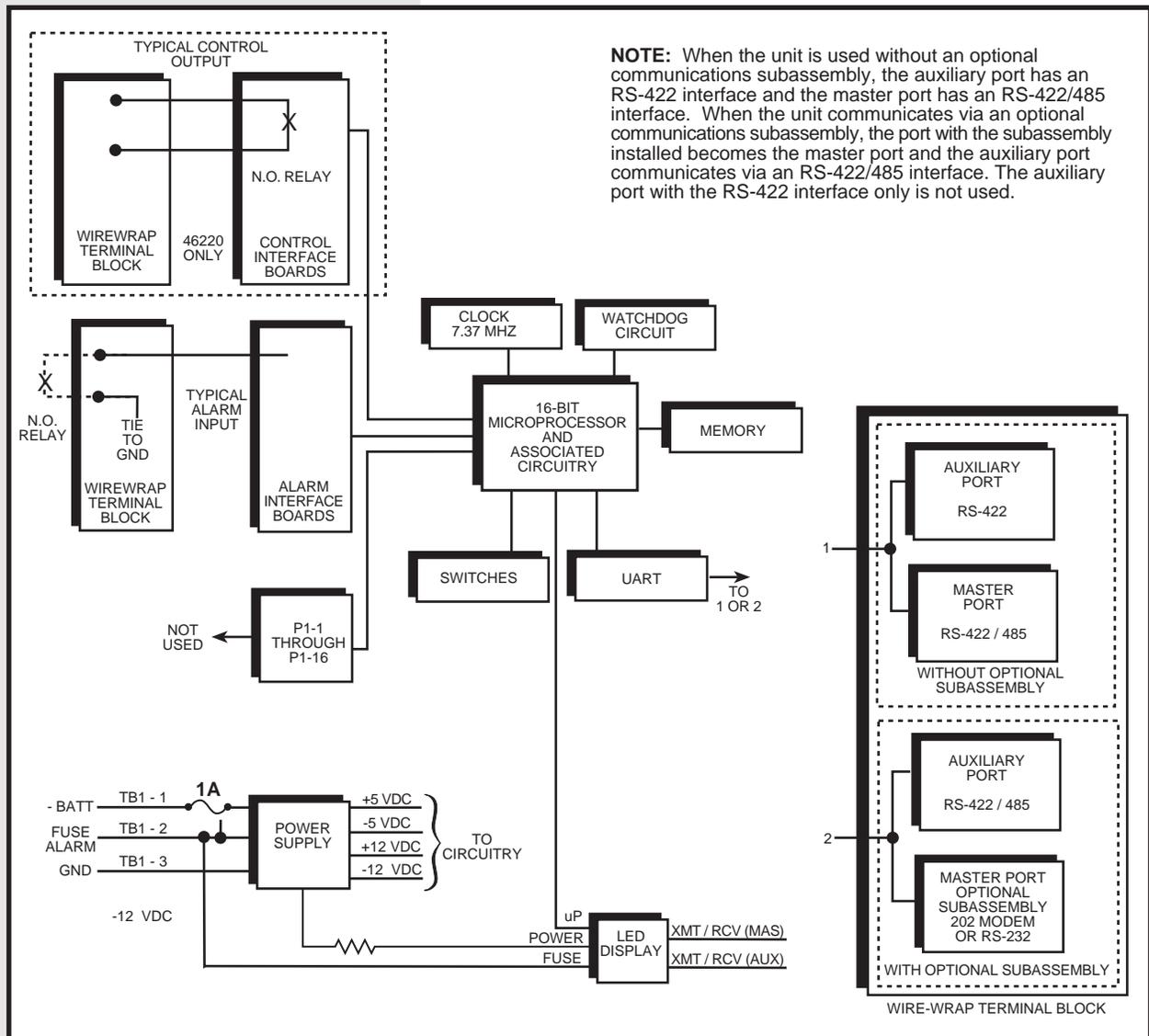
CONTINUED . . .

CIRCUIT DESCRIPTION

LEDs indicate:

♦ If the unit is transmitting or receiving data through the master or auxiliary ports,

♦ If the microprocessor is operating,

♦ If the power is on,

♦ If the power fuse has blown.

The unit operates on -21 to -56 VDC.

In addition to the fuse failure LED, an external light or bell can be connected to the power supply to indicate fuse failure.

FIG. 1 - 46210/46220 FUNCTIONAL SCHEMATIC

TYPICAL CONTROL OUTPUT

N.O. RELAY

WIREWRAP TERMINAL BLOCK

46220 ONLY

CONTROL INTERFACE BOARDS

NOTE: When the unit is used without an optional communications subassembly, the auxiliary port has an RS-422 interface and the master port has an RS-422/485 interface. When the unit communicates via an optional communications subassembly, the port with the subassembly installed becomes the master port and the auxiliary port communicates via an RS-422/485 interface. The auxiliary port with the RS-422 interface only is not used.

N.O. RELAY

TIE TO GND

TYPICAL ALARM INPUT

WIREWRAP TERMINAL BLOCK

ALARM INTERFACE BOARDS

CLOCK 7.37 MHZ

WATCHDOG CIRCUIT

16-BIT MICROPROCESSOR AND ASSOCIATED CIRCUITRY

MEMORY

SWITCHES

UART

TO 1 OR 2

NOT USED

P1-1 THROUGH P1-16

AUXILIARY PORT RS-422

MASTER PORT RS-422 / 485

WITHOUT OPTIONAL SUBASSEMBLY

- BATT   TB1 - 1   **1A**

FUSE ALARM   TB1 - 2

GND   TB1 - 3

POWER SUPPLY

+5 VDC
-5 VDC
+12 VDC
-12 VDC

TO CIRCUITRY

-12 VDC

uP

POWER FUSE

LED DISPLAY

XMT / RCV (MAS)
XMT / RCV (AUX)

AUXILIARY PORT RS-422 / 485

MASTER PORT OPTIONAL SUBASSEMBLY 202 MODEM OR RS-232

WITH OPTIONAL SUBASSEMBLY

WIRE-WRAP TERMINAL BLOCK

INSTALLATION

This chapter consists of four sections: equipment mounting, switch and strap settings, wiring, and checkout. Follow the sections in order.

WARNING: *Remove fuse F1 before plugging a live power connector into TB1. Plugging in a live connector without removing the fuse, may damage the unit. Reinstall the fuse after plugging in the connector.*

EQUIPMENT MOUNTING

Install the 46210/46220 in an equipment rack or distribution frame.

SELECTING A LOCATION

♦ Select a location at least two feet above the floor.

♦ Provide at least 3.5 inches of clearance above the unit.

♦ Provide at least 1.75 inches of clearance below the unit.

If it is not possible to meet the criteria above, refer to **Installation in Limited Space** in this chapter.

TOOLS REQUIRED

Installing the 46210/46220 unit may require one or more of the following tools:

♦ Phillips screwdriver

♦ Small standard screwdriver

♦ 11/32-inch wrench

EQUIPMENT RACK MOUNTING

The 46210/46220 attaches to a mounting bar on the equipment rack. Mounting bars can be ordered from Dantel. Refer to the **Ordering Information** section of this manual.

Each mounting bar holds two units.

To install:

1. Attach the carriage bolts to the unit with the retaining clips (refer to Fig. 2).

2. Attach the unit to the mounting bar with the locking hex nuts. Use mounting holes A, B, C, and D. Refer to Figs. 2 and 3.

3. Attach the mounting bar to the equipment rack (hardware not supplied).
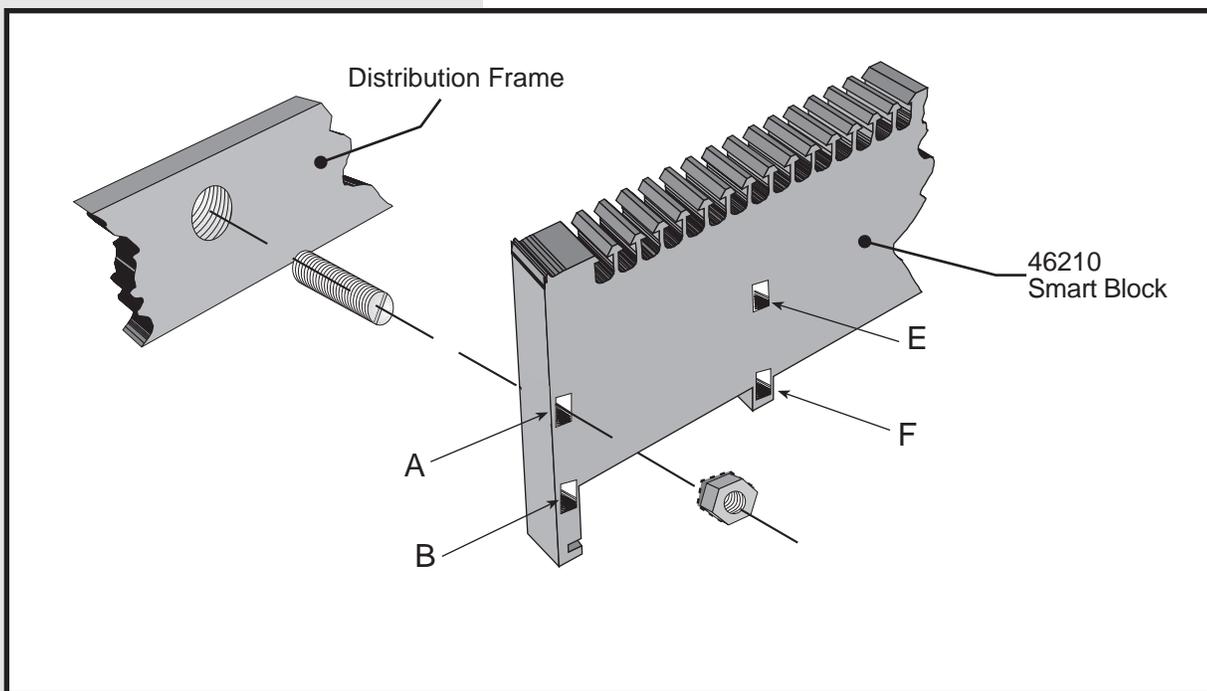
4. Equipment rack mounting complete.

FIG. 2 - INSTALLING CARRIAGE BOLT

FIG. 3 - MOUNTING HOLE LOCATIONS

7 1/2 "

A

E

Mounting Hole Locations

G

Mounting Hole Locations

C

1 3/8"

B

F

H

D

INSTALLATION

Install the 46210/46220 using mounting holes A, B, C, or D or mounting holes E, F, G, and H (refer to Fig. 3).

To install using mounting holes A, B, C, and D:

1. Screw the threaded studs into the distribution frame (refer to Fig. 4).

2. Place the unit on the studs.

3. Secure the unit with the locking hex nuts.

FIG. 4 - INSTALLING STUD

Distribution Frame

46210
Smart Block

E

F

A

B

To install using mounting holes E, F, G, and H:

1. Place the unit on a flat surface.

2. Hold the sides of the unit and pull out to separate the circuitry section from mounting chassis (refer to Fig. 5).

   For each mounting hole:

3. Place a lockwasher on a pan head screw (refer to Fig. 6).

4. Put the screw and lockwasher through the mounting hole of the unit.

5. Screw the screw securely into the distribution frame.

6. Reinstall the circuitry section in the chassis. Make sure the posts on the circuitry section are seated firmly in the holes of the chassis.
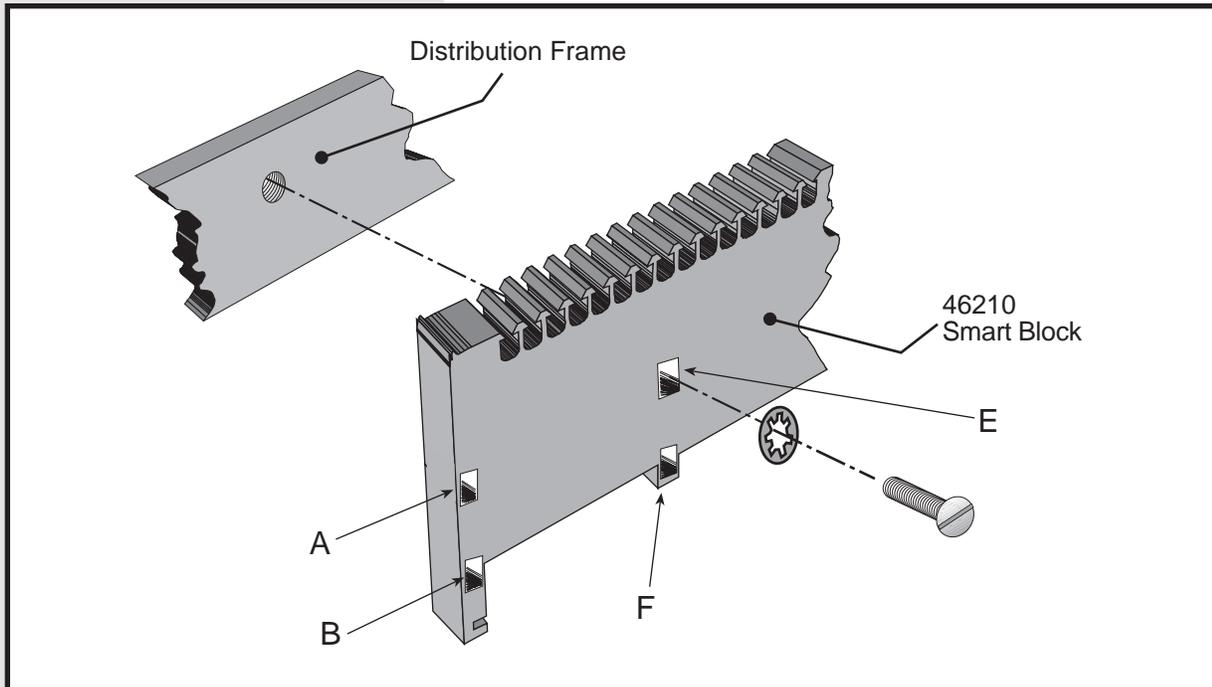
7. Installation using E, F, G, and H complete.

WARNING:

Do not use studs and nuts when using mounting holes E, F, G, & H. Use pan head screws only. Refer to Figs. 3 & 6.

FIG. 5 - SEPARATING 46210/46220 FROM MOUNTING CHASSIS

Front View

Unit

Mounting Chassis
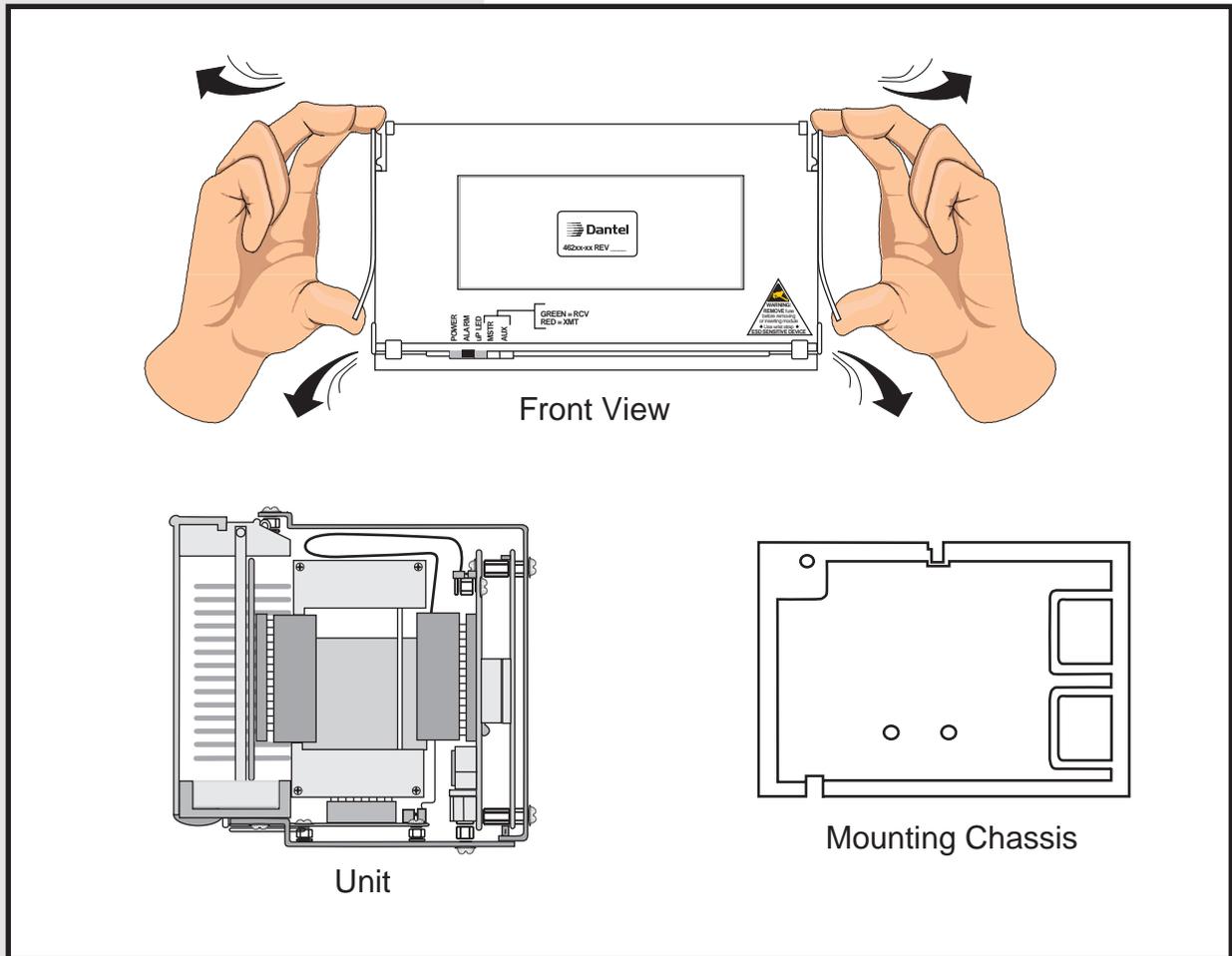
INSTALLATION IN LIMITED SPACE

Use the following procedure to install the 46210/46220 in places where there is inadequate clearance above and below the unit to open it.

To install:

1. Place the unit on a flat surface.

2. Hold the sides of the unit and pull out to separate the circuitry section from mounting chassis (refer to Fig. 5).

3. Install the chassis as explained in *Equipment Rack Mounting* or *Distribution Frame Mounting*.

4. Set the switches and straps on the circuit boards as described in this chapter.

5. Reinstall the circuitry section in the chassis. Make sure the posts on the circuitry section are seated firmly in the holes of the chassis.

NOTE: *When wiring the unit, allow enough slack in the wiring to remove the unit from the chassis for servicing.*
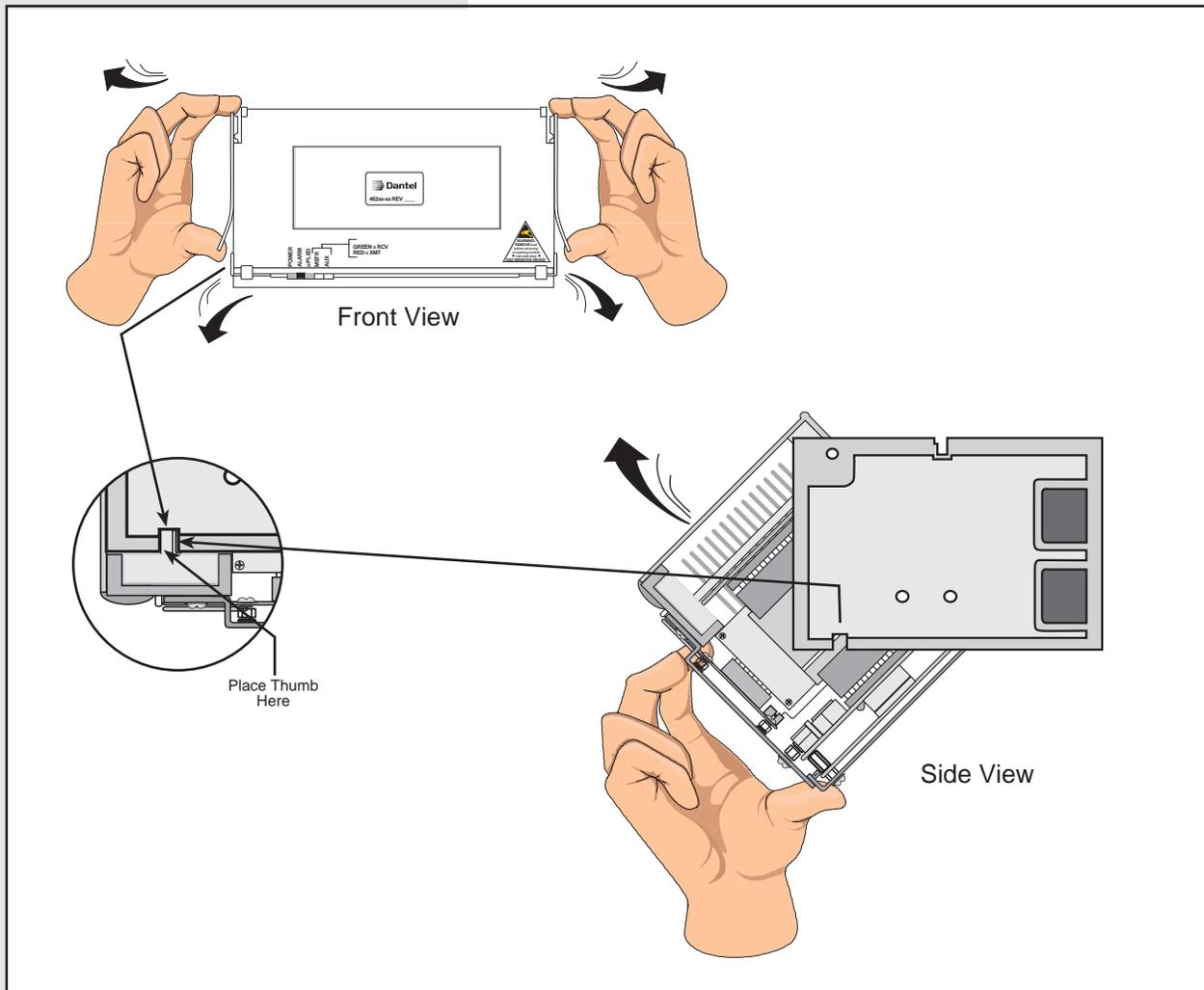
6. Installation in limited space complete.

SWITCH AND STRAP SETTINGS

POWER SUPPLY BOARD

To set the switches and straps:

1.   Open the unit (refer to Fig. 7).

FIG. 7 - OPENING THE 46210/46220

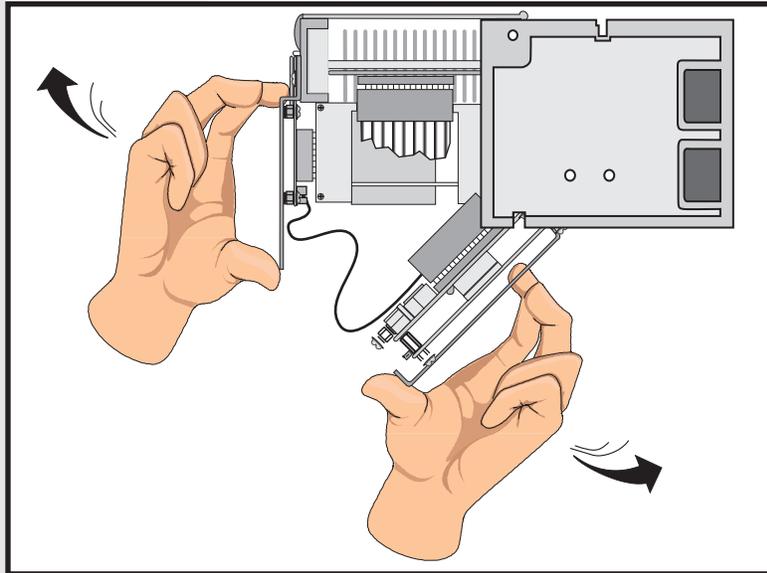Front View

Place Thumb
Here

Side View

2.   Pull the power supply and central processing unit (CPU) boards down (refer to Fig. 8). The power supply board is the top board and the CPU board is the bottom board.

CONTINUED . . .

Fig. 8 - Pulling Down Power Supply and CPU Boards

3.   Set the AUX LED strap (refer to Fig. 9).

Place the strap across pins 1 and 2 if you want the front panel LEDs to indicate transmit and receive data activity on the master and auxiliary ports.

  -or-

Place the strap across pins 2 and 3 if you want the front panel LEDs to indicate transmit and receive data activity on the master port only.

Fig. 9 - Power Supply Board Component Location
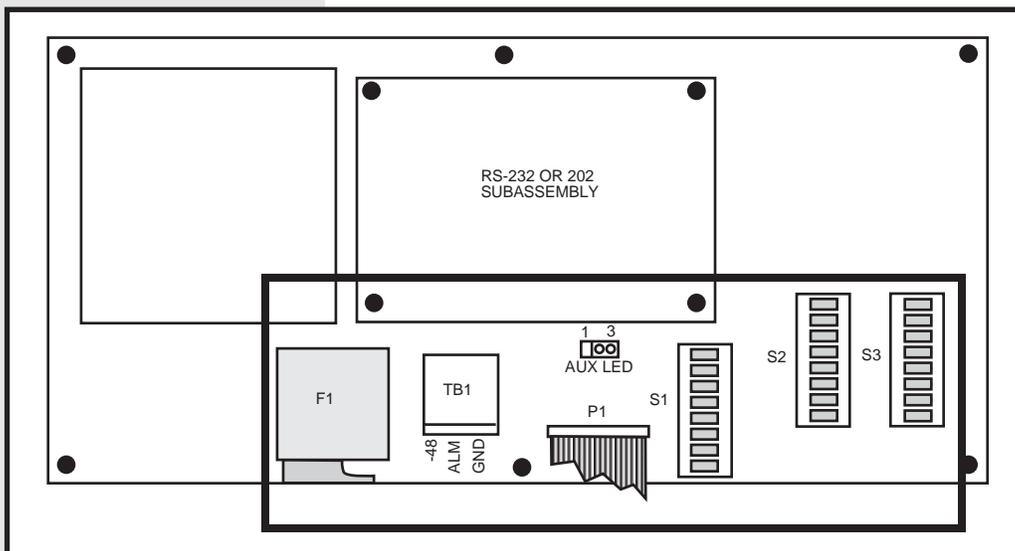
CONTINUED . . .

4. Set switches S1, S2, and S3 (refer to Fig. 9 and Tables A-D).

NOTE: *If the unit is communicating in TBOS protocol through the communications ports, use Table 3 to set the switches on S1. If the unit is communicating in DCP, DCPF, or DCM protocol through the communications ports, use Table 4.*

5. If the unit is equipped with a 202 Modem subassembly, set the straps on X1 (refer to Figs. 9 and 10).

   Place the straps across pins 2-3 and 4-5 to adjust the transmit output between -1 and -20 dBm.

   -or-

   Place the straps across pins 1-2 and 3-4 to adjust the transmit output between -20 and -40 dBm.

6. If the unit is equipped with an RS-232 subassembly, set strap X1 (refer to Figs. 9 and 11).

   Place the strap across pins 1 and 2 to use Data Carrier Detect (DCD) as a handshaking line.

   -or-

   Place the strap across pins 2 and 3 to keep DCD always active.

7. If the unit is equipped with an RS-232 subassembly, set strap X2 (refer to Figs. 9 and 11).
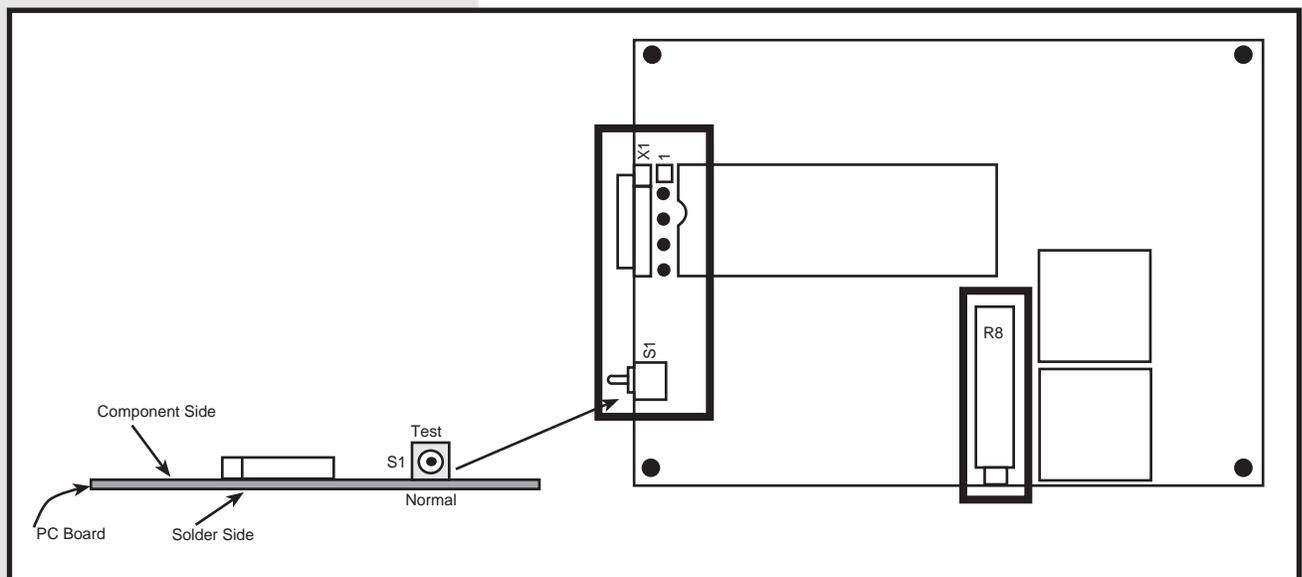
   Place the strap across pins 1 and 2 to use Clear to Send (CTS) as a handshaking line.

   -or-

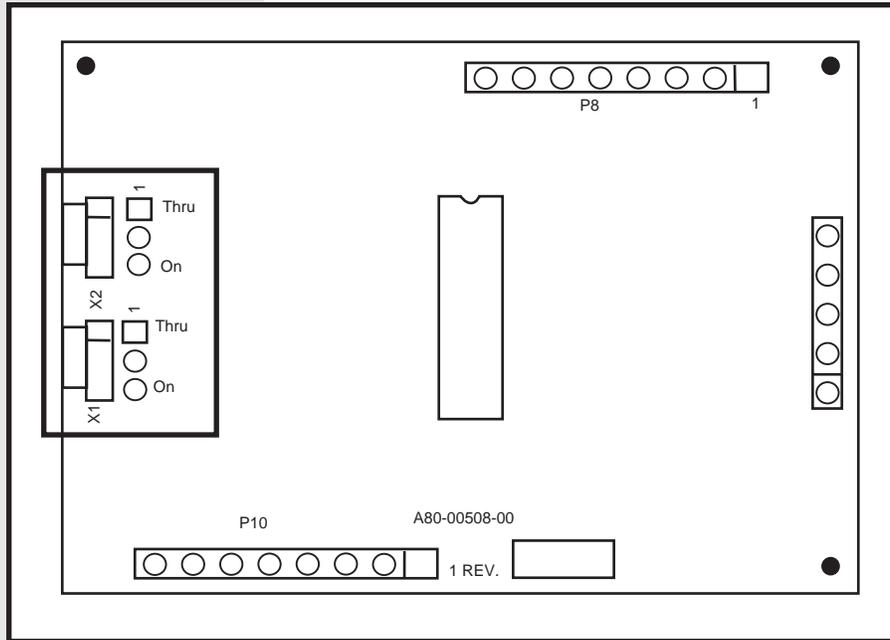   Place the strap across pins 2 and 3 to keep CTS always active.

8. This section complete.

FIG. 10 - 202 MODEM SUBASSEMBLY COMPONENT LOCATION

FIG. 11 - RS-232 SUBASSEMBLY COMPONENT LOCATION

P8

1

Thru

On

X2

1

Thru

On

X1

P10

A80-00508-00

1 REV.

TABLE A - S3 SWITCH SETTINGS

S3 SWITCH SETTINGS		
NOTE: Set switches S3-1 through S3-4 for the 46220-00 equipped with 32 control points. Set switches S3-1 and S3-2 for the -01 option equipped with 16 controls; set S3-3 and S3-4 OFF. For the 46210, set S3-1 through S3-4 OFF.		
S3-1	**S3-2**	CPM Points 1 - 16 Timing Control
OFF	OFF	Not Equipped
OFF	ON	.3 Second (Short)
ON	OFF	Latch
ON	ON	3 Second (Long)
S3-3	**S3-4**	CPM Points 17-32 Timing Control
OFF	OFF	Not Equipped
OFF	ON	.3 Second (Short)
ON	OFF	Latch
ON	ON	3 Second (Long)
S3-5		Alarm Point Latching*
OFF		Until Transmitted
ON		Until Transmitted and Acknowledged
S3-6		Alarm Point Delay**
OFF		200 m.s.
ON		500 m.s.
S3-7	**S3-8**	
OFF	OFF	Not Used

* Alarm points are latched in the active state until the alarm data is either transmitted or until the data is transmitted and acknowledged.

** To avoid spurious alarms, a 200- or 500-millisecond delay can be set before an alarm will be recognized.

TABLE B - S2 SWITCH SETTINGS

S2 SWITCH SETTINGS								
	S2-1	S2-2	S2-3	S2-4	S2-5	S2-6	S2-7	S2-8
Data Rate								
9600 Baud	OFF	OFF						
2400 Baud	OFF	ON						
1200 Baud	ON	OFF						
300 Baud	ON	ON						
Input Reversal*								
46210-00								
No Reversal			OFF	OFF				
First 64 Points			OFF	ON				
First 128 Points			ON	OFF				
All 256 Points			ON	ON				
46220-00								
No Reversal			OFF	OFF				
First 32 Points			OFF	ON				
First 64 Points			ON	OFF				
All 128 Points			ON	ON				
46220-01								
No Reversal			OFF	OFF				
First 48 Points			OFF	ON				
First 96 Points			ON	OFF				
All 192 Points			ON	ON				
Not Used					OFF			
Communications Port Protocol								
DCP					OFF	OFF	OFF	
TBOS					OFF	OFF	ON	
DCP**					OFF	ON	OFF	
DCPF					OFF	ON	ON	
DCM					ON	OFF	OFF	

* An alarm will be generated normally when a ground appears on the alarm input (normal switch settings).
Input reversal means a ground is normally present on the alarm input and an alarm will be generated when
the ground is removed from the input.

** Use when the Alarm Block's master port is connected to a 46033 E-System Adapter module.
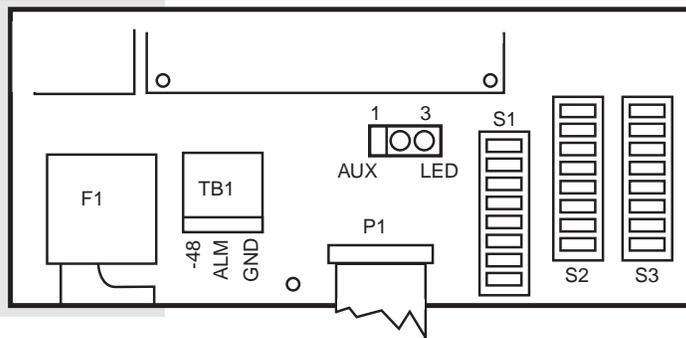
INSTALLATION

TABLE C - S1 SWITCH SETTINGS FOR TBOS PROTOCOL

S1 Switch Settings for TBOS Protocol								
NOTE: This table is for TBOS protocol. If the unit is communicating in DCP, DCPF, or DCM protocol through the communications ports, use Table 4 to set the switches on S1. NOTE: If the 46210/46220 is being wired to a Digital Alarm Scanner (DAS) unit, refer to Fig. 16 to set the switches on S1.								
	S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8
Beginning TBOS Display Number								
1	OFF	OFF	OFF					
2	ON	OFF	OFF					
3	OFF	ON	OFF					
4	ON	ON	OFF					
5	OFF	OFF	ON					
6	ON	OFF	ON					
7	OFF	ON	ON					
8	ON	ON	ON					
Number of TBOS Displays								
1				OFF	OFF	OFF		
2				ON	OFF	OFF		
3				OFF	ON	OFF		
4				ON	ON	OFF		
5				OFF	OFF	ON		
6				ON	OFF	ON		
7				OFF	ON	ON		
8				ON	ON	ON		

INSTALLATION

TABLE D - S1 SWITCH SETTINGS FOR DCP OR DCPF PROTOCOL

The table displays DIP switch settings (S1) numbered 1 through 255, each showing an 8-position switch diagram with ON/OFF positions labeled 1 2 3 4 5 6 7 8.

When using DCM protocol, the starting address set with switch S1 determines the addresses for all the alarm points on the block. Sixteen alarm points are assigned to each address. Therefore, the 46210 Alarm Block, which has 256 alarm points, requires 16 addresses (16 x 16 = 256). If the starting address is 17, the DCM addressing for a 256-point block would be addresses 17 through 32. The following table shows the number of addresses required for each type of block.

BLOCK	TOTAL ALARM POINTS	ADDRESSES REQUIRED
46210	256	16
46220-00	128	8
46220-01	192	12

The highest address that can be used is 128, which is a limitation of the DCM protocol. Thus, the highest starting address for a 256-point block would be 113 (113 through 128 = 16 addresses). If an address higher than 113 is used, addresses above 128 will not be polled. The following table shows the highest starting address for each type of block.

BLOCK	ADDRESSES REQUIRED	HIGHEST STARTING ADDRESS
46210	16	113 (113 + 15 more addresses = 128)
46220-00	8	121 (121 + 7 more addresses = 128)
46220-01	12	117 (117 + 11 more addresses = 128)

The same starting address that is used for alarms also is used for controls. The 46220-01 has 16 controls. If the starting address of the block is 17, then the address for controls on a 46220-01 would be 17. The 46220-00 has 32 controls. If the starting address of the block is 17, then the addresses for the controls on a 46220-00 would be 17 and 18. The 46210 does not have any controls.

UPDATED

INSTALLATION

To set the straps:

1. Set strap X1 (refer to Fig. 12).

    Place the strap across pins 1-2 to leave the auxiliary port receive input **unterminated.**

    -or-

    Place the strap across pins 2-3 to **terminate** the auxiliary port receive input. This is the default position.

NOTE: *If the 46210/46220 has an RS-232 or 202 tone modem subassembly installed, this port is not used (refer to Fig. 1).*

---

2. Set strap X2 (refer to Fig. 12).

    Place the strap across pins 1-2 to leave the master port receive input **unterminated.**

    -or-

    Place the strap across pins 2-3 to **terminate** the master port receive input. This is the default position.

NOTE: *If the 46210/46220 has an RS-232 or 202 tone modem subassembly installed, this is the auxiliary port (refer to Fig. 1).*

---

3. Set strap X3 (refer to Fig. 12).

    Place the strap across pins 1-2 for RS-422 output from the master port.

    -or-

    Place the strap across pins 2-3 for RS-485 output from the master port. This is the default position.

NOTE: *If the 46210/46220 has an RS-232 or 202 tone modem subassembly installed, this is the auxiliary port (refer to Fig. 1).*

---

4. CPU strapping complete.

INSTALLATION

A80-00504-00
REV.

1 ☐ X2 1 ☐ X1   1 ☐ X3

WIRING

Wire the power, alarm inputs, control outputs, and the communications ports as described below. Connector P1 is not used.
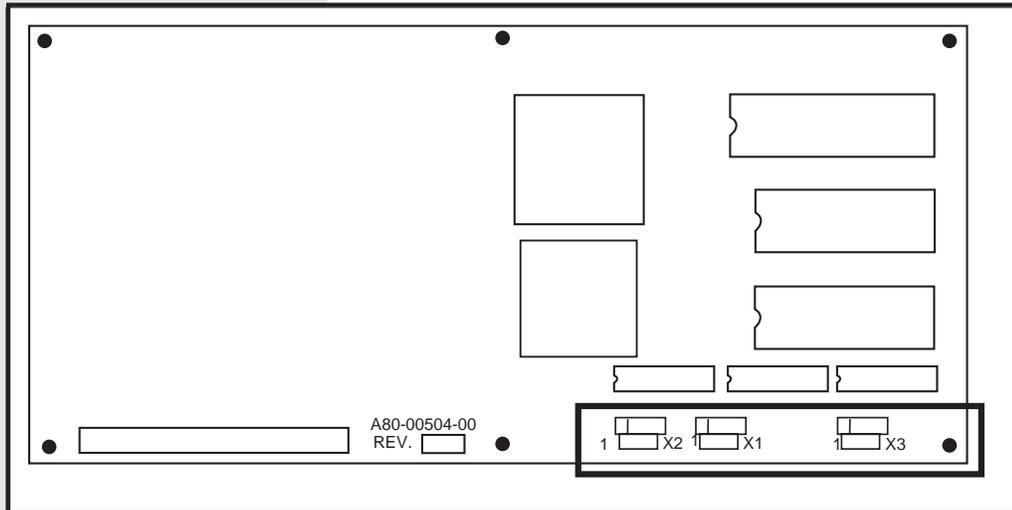
NOTE:

Chassis ground, if desired, can be connected to the screw in the front, right-hand corner of the top panel.

1. On the power supply board, wire negative battery (-21 to -56 VDC) and ground to connector TB1 (refer to Fig. 13). Remove the connector for easier access. Do not turn on the power until instructed.

2. Wire an external fuse alarm indicating device, such as a light or bell, to the ALM output of TB1 (optional). When the fuse fails, the external device operates as well as the ALARM LED on the front panel.

3. Push the power supply and CPU boards back into place and close the unit.

FIG. 13 - POWER SUPPLY BOARD COMPONENT LOCATION

RS-232 OR 202
SUBASSEMBLY

1   3
☐○○
AUX LED

S2   S3

F1   TB1   P1   S1

-48 ALM GND
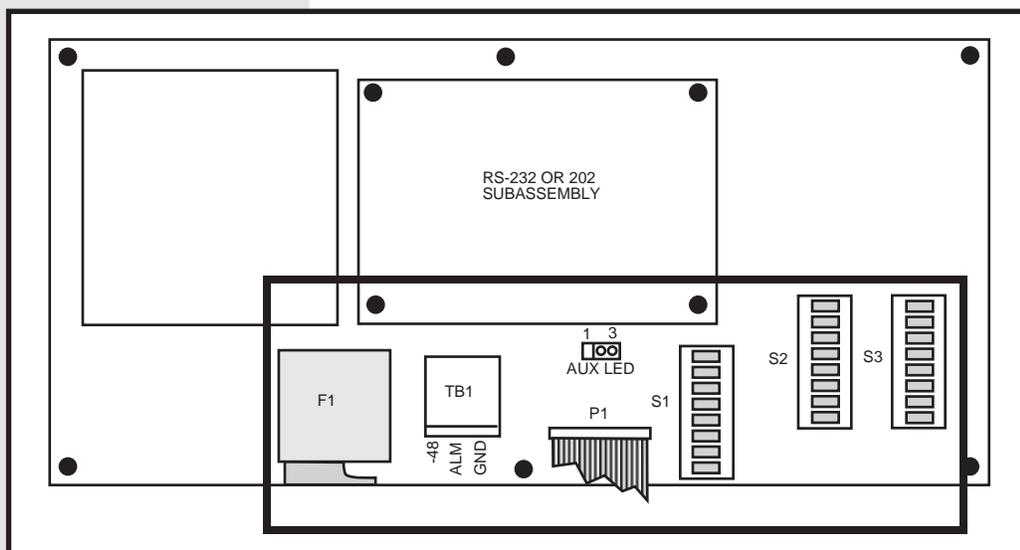
4. Open the plastic cover (refer to Fig. 14).

5. Wire the alarm inputs (refer to Fig. 15 or the template inside the plastic cover).

   There are two pins for each alarm input. One is for ground and the other is for the alarm input. The dark-colored columns are grounds and are wired together. Wire one of the ground pins to signal ground on your equipment.

   Leave enough slack in the wires to open the unit easily.

NOTE:

All even numbered rows except 32 are connected to digital ground internally. Connect one of these pins to signal ground.

FIG. 14 - OPENING PLASTIC COVER

To open front panel for access to wire wrap pins, lift up on the tabs on the front panel. The panel will swing forward.

Front View

Side View Closed

Side View Open
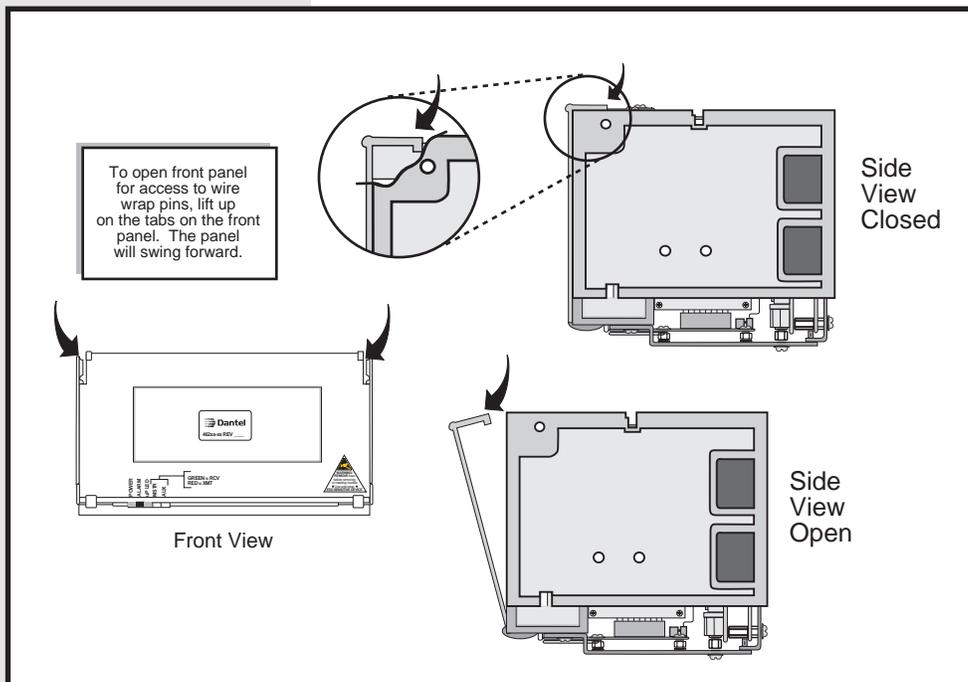
6. Wire the control outputs of any 46220 units (refer to Fig. 15 or the template inside the plastic cover).

   There are two pins for each normally open relay. Wire the pins for either a battery or ground output when the relays are closed. Pin pairs for the relays are A-B, C-D, E-F, G-H, J-K, L-M, N-P, and R-S.

7. Wire the master and/or auxiliary ports at column 32 (refer to Fig. 15 or the template inside the plastic cover).

   If no communications subassembly is used, pins A-D are the auxiliary port connections and pins E-H are the master port connections.

   If an RS-232 or 202 Tone Modem subassembly, pins E-H are the auxiliary port connections and pins J-S are the master port connections.

   To wire to a Digital Alarm Scanner (DAS) unit, refer to Fig. 16.

7. Wiring complete.

FIG. 15 - WIRE-WRAP PIN DESIGNATIONS
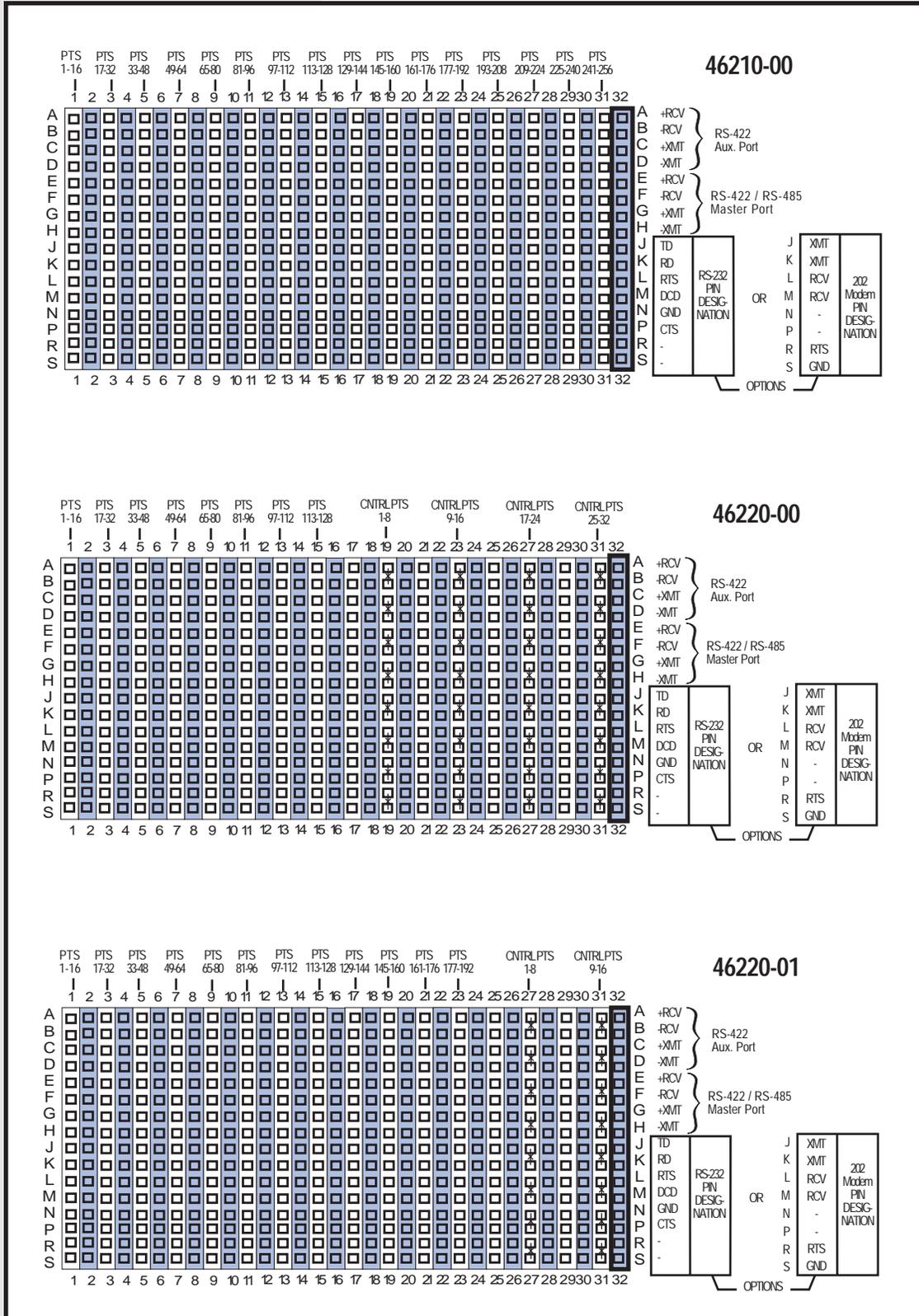
FIG. 16 - WIRING TO A DAS UNIT

**46210 / 46220
UNIT #2
DISPLAYS 1-4**

RS-422 AUX. PORT

RS-422 MASTER PORT

32

A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
S

RCV+
RCV-
XMT+
XMT-
RCV+
RCV-
XMT+
XMT-

Note: Display 1 must be
in the unit the furthest
from the DAS unit.

**46210 / 46220
UNIT #1
DISPLAYS 1-4
(Single Block Only)**

RS-422 AUX. PORT

RS-422 MASTER PORT

32

A
B
C
D
E
F
G
H
J
K
L
M
N
P
R
S

RCV+
RCV-
XMT+
XMT-
RCV+
RCV-
XMT+
XMT-

**DISPLAYS 5-8
(Two Blocks)**

DAS UNIT IN C.O.

RCV+
RCV-
XMT+
XMT-
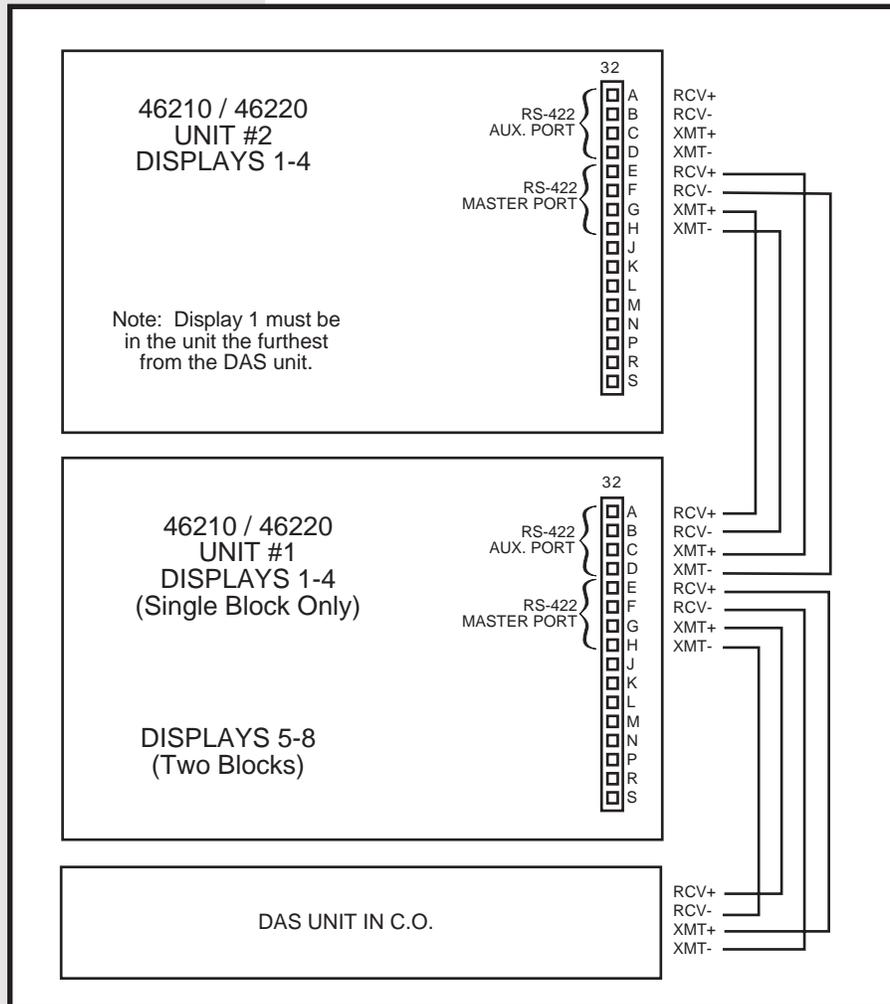
INSTALLATION

CHECKOUT

1.   Apply power to the 46210/46220.

WARNING: *Remove fuse F1 before plugging a live power connector into TB1. Failure to do so could damage the unit. If this method is used to apply power, refer to Figs. 7-9 to open the unit and locate the fuse. Reinstall the fuse after plugging in the connector.*

The POWER LED lights and the microprocessor (uP) LED blinks. The MSTR and AUX LEDs indicate if the master or auxiliary ports are transmitting (red) or receiving (green) data. Refer to Fig. 17.

FIG. 17 - FRONT PANEL LEDS
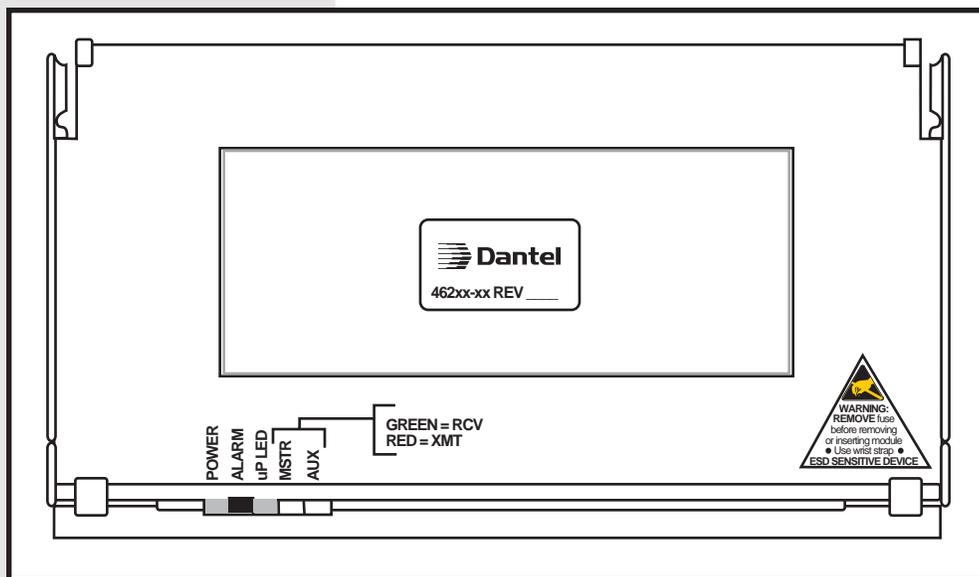
2.   If the 46210/46220 has a 202 Modem subassembly, adjust the transmit level. The modem must be connected to another modem at the other end of the communications line.

Open the 46210/46220 and locate the subassembly on the power supply board.

Place S1 in the TEST position (refer to Fig. 18). When the switch is placed in the TEST position, it activates the carrier detect of the opposing (distant end) modem and allows adjustment of the transmit level without the presence of data.

Connect a 600-ohm dB meter (bridging) to pins J and K (XMT) of column 32 of the wire-wrap terminal.

On the modem subassembly, adjust the transmit level using R8 (refer to Fig. 18). The amount of adjustment depends on the strapping of X1.

CONTINUED . . .

Place S1 in the NORM position (refer to Fig. 18).

Remove the dB meter.

NOTE: *To check the transmit level without making an adjustment, short pins R and S of column 32 instead of using S1.*

FIG. 18 - 202 MODEM SUBASSEMBLY COMPONENT LOCATION
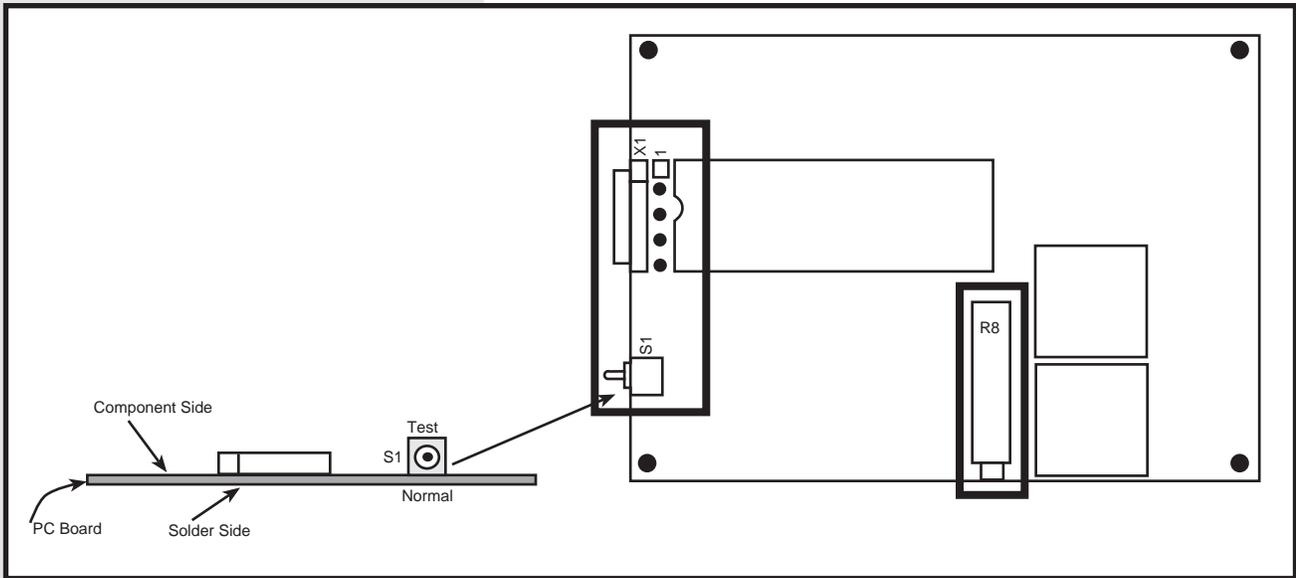
3. Generate one or more alarms and verify that they are reported correctly to the alarm reporting equipment.

4. Clear the alarms and verify that they are reported correctly to the alarm reporting equipment.

5. If the unit has controls, operate the controls and verify that they work properly.

6. Checkout complete.

OPERATION

The 46210/46220 has five LEDs (refer to Fig. 19):

- ♦ POWER - Lights when the unit has power.
- ♦ ALARM - Lights when the fuse fails.
- ♦ uP LED - Blinks when the microprocessor is operating.
- ♦ MSTR - Blinks green when the master port is receiving data and red when it is transmitting data.
- ♦ AUX - Blinks green when the auxiliary port is receiving data and red when it is transmitting data.

FIG. 19 - FRONT PANEL LEDS
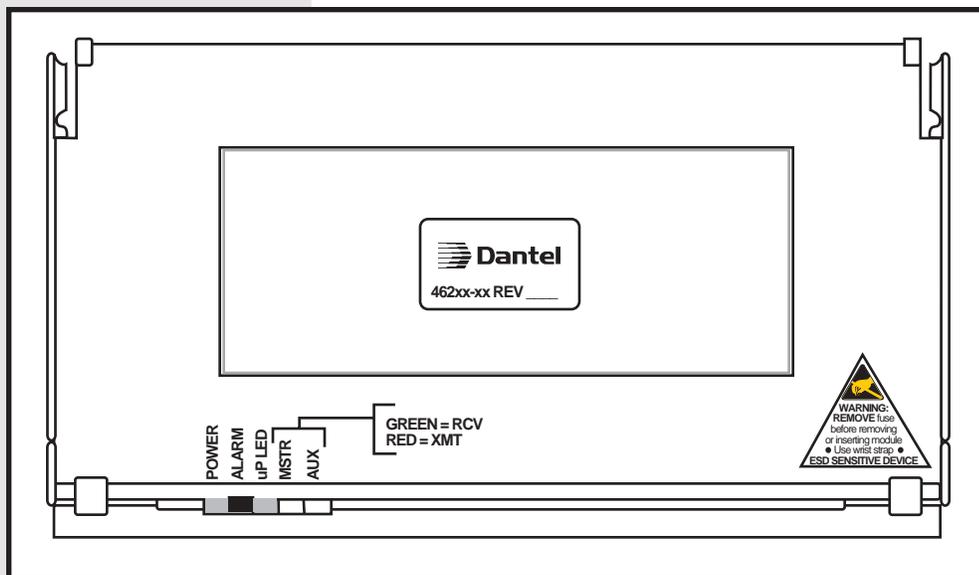
OPERATION

If one of the alarm interface boards inside the unit is removed or disconnected, a point-64 alarm failure is generated in the alarm display reporting that board's alarms.

Connect a dumb terminal or personal computer operating as a dumb terminal to the master port for maintenance purposes. Refer to the ***Printer Syntax*** chapter.

To replace the fuse:

1. Open the 46210/46220 (refer to Fig. 20).

2. Pull the power supply and CPU boards down from the other circuitry (refer to Fig. 21).

3. Replace the fuse (F1) on the power supply board with a GMT-type fuse rated at one ampere (refer to Fig. 22).

4. Push the power supply and CPU boards back into place and close the unit.

5. Fuse replacement complete.

FIG. 20 - OPENING THE 46210/46220

Front View

Place Thumb Here

Side View
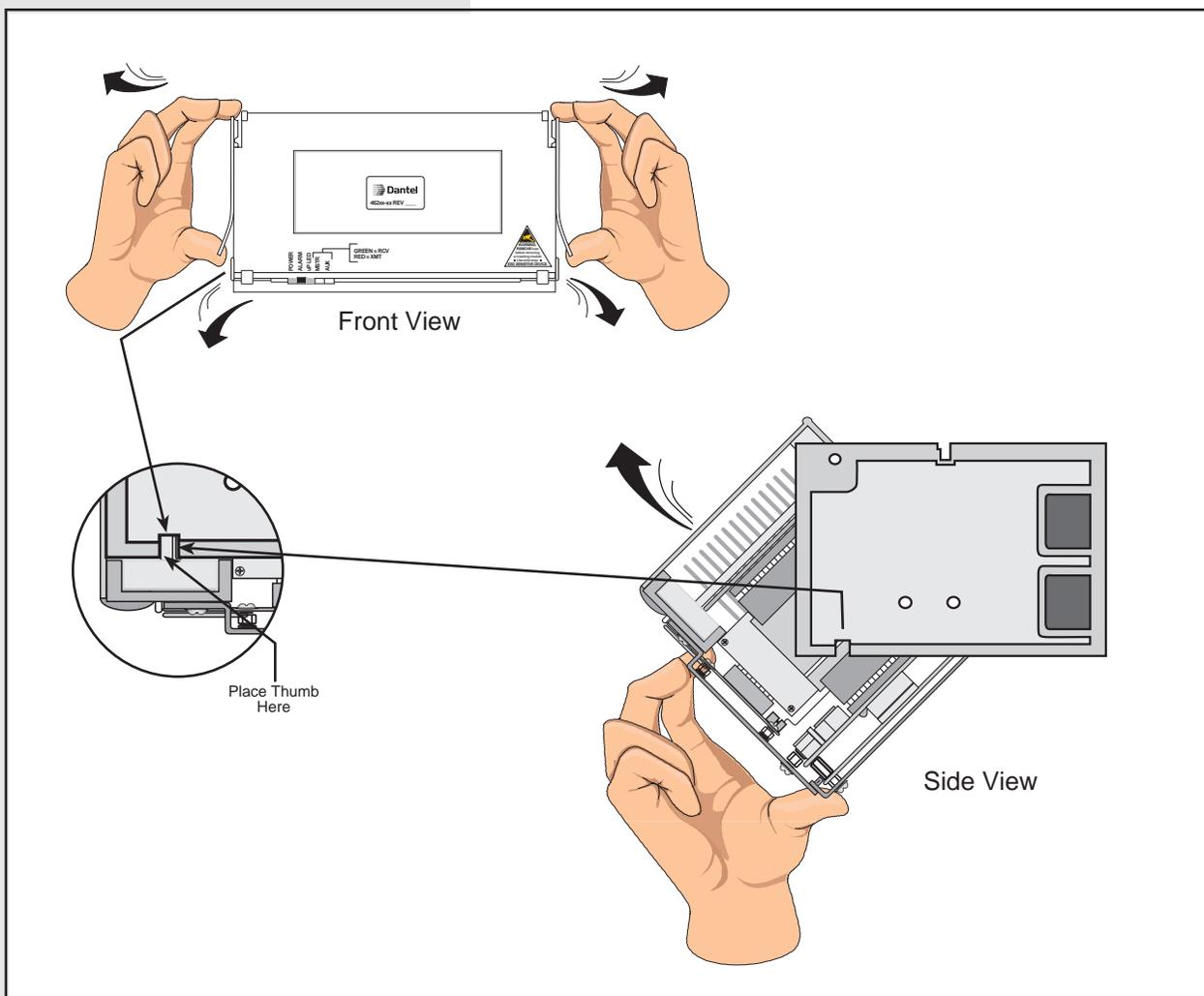
FIG. 21 - PULLING DOWN POWER SUPPLY AND CPU BOARDS

FIG. 22 - POWER SUPPLY BOARD COMPONENT LOCATION

RS-232 OR 202
SUBASSEMBLY

1   3
AUX LED

F1

TB1

P1   S1

S2   S3

-48 ALM GND
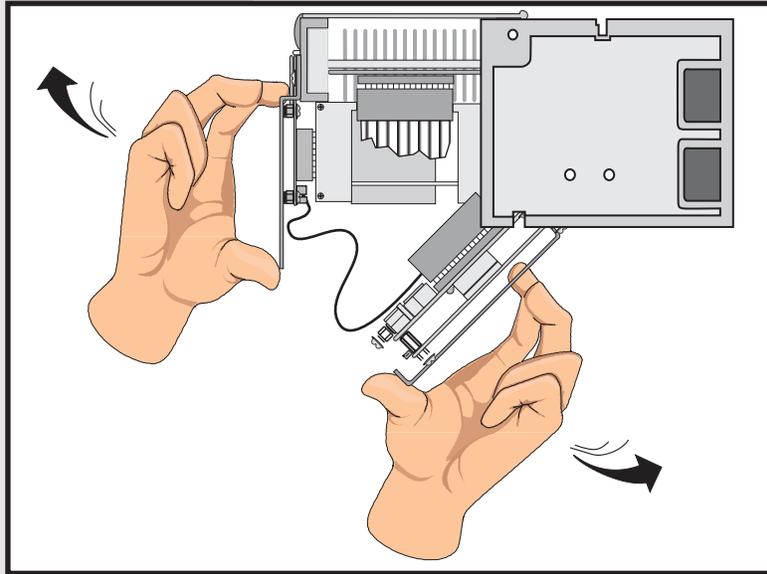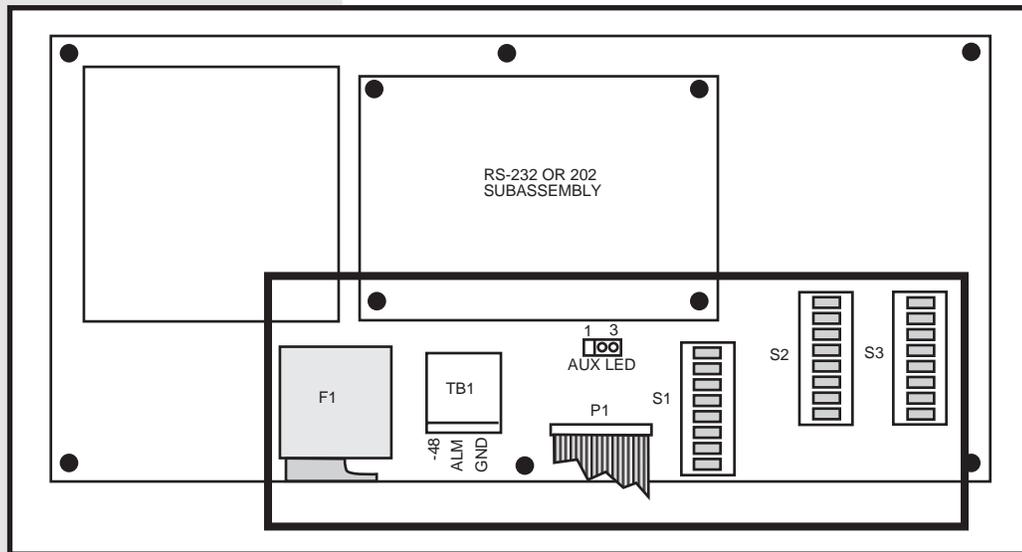
SUBASSEMBLY REPLACEMENT

The circuit board subassemblies inside the 46210/46220 can be replaced if any of them fail to operate. This can be done without removing any of the wiring to the unit.

For ordering information, refer to Table E.

DESCRIPTION	PART NUMBER	CLEI CODE
46210-00 Power Supply / CPU Board	A15-46034-00	RMMQ0091AA
46220-00 Power Supply / CPU Board	A15-46035-00	RMMQ0071AA
46220-01 Power Supply / CPU Board	A15-46036-00	RMMQ0081AA
Interface Board	B80-00427-00	RMPQAB97AA
Control Interface Board	B80-00445-00	RMPQAB87AA
RS-232 Subassembly	A12-49229-00	RMPQAB77AA
202 Modem Subassembly	A12-49213-00	RMPQAB67AA

SUBASSEMBLY REPLACEMENT

To replace the subassembly:

1. Open the unit (refer to Fig. 23).

FIG. 23 - OPENING THE 46210/46220

Front View

Place Thumb
Here

Side View
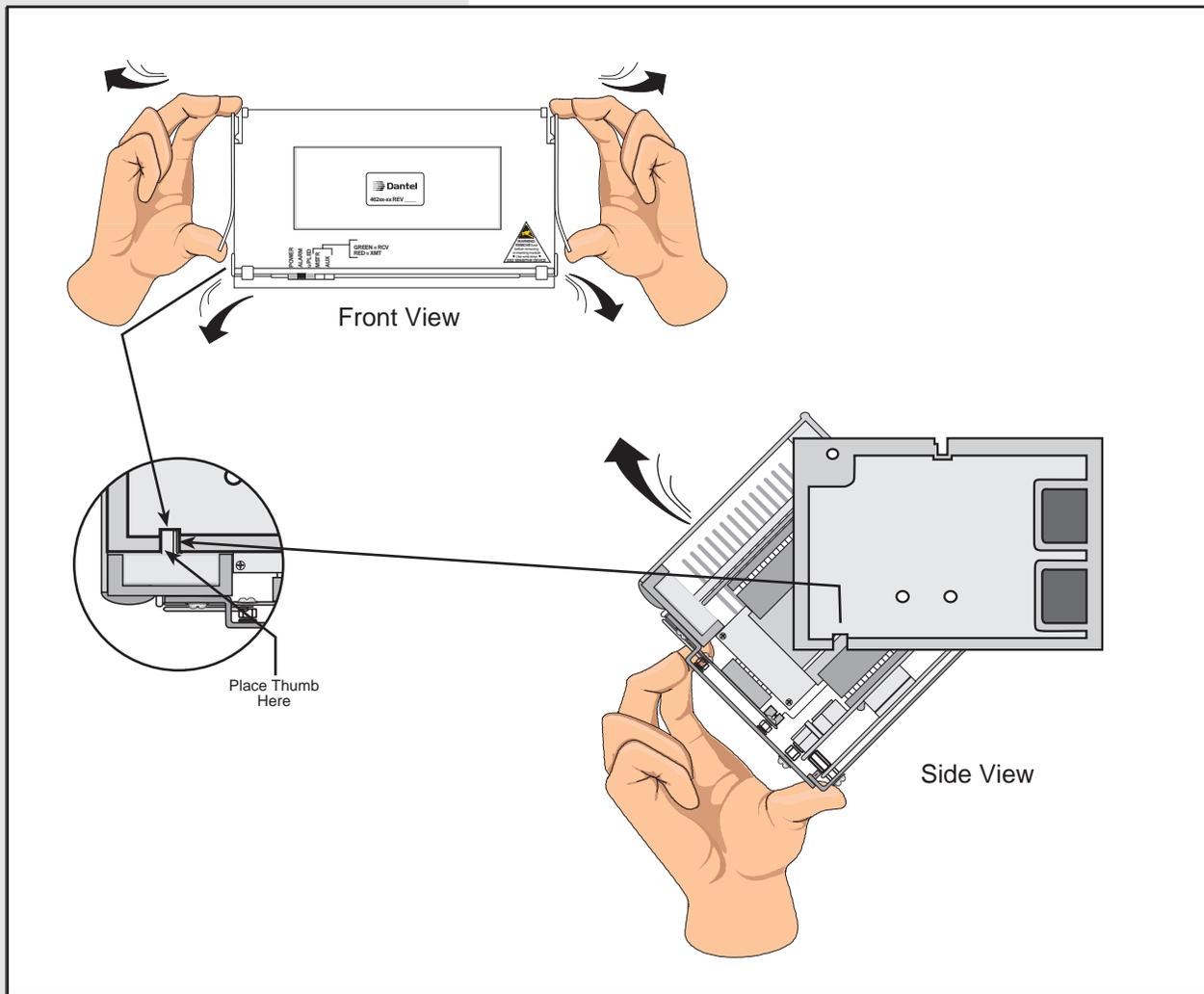
2. Pull the power supply and CPU boards down from the other circuitry (refer to Fig. 24).

CONTINUED . . .

SUBASSEMBLY REPLACEMENT

FIG. 24 - PULLING DOWN POWER SUPPLY AND CPU BOARDS
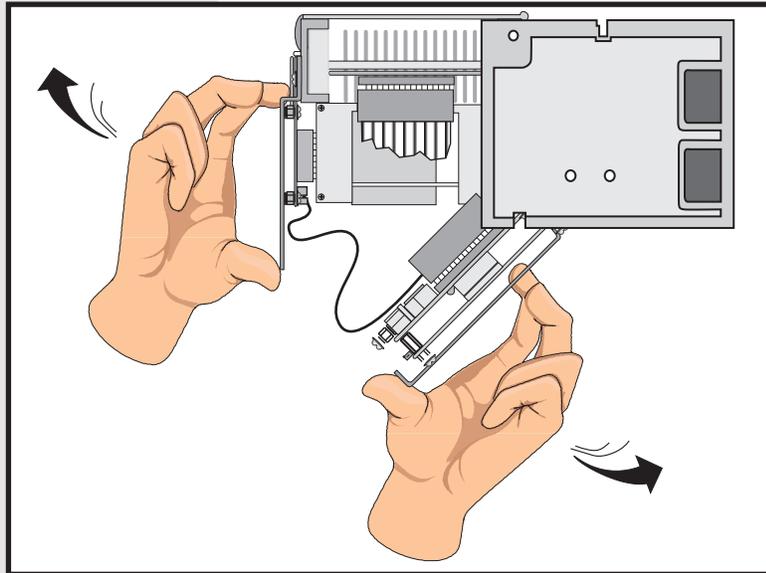
3. Remove power by pulling out the fuse.

4. Disconnect the power connector at TB1 by pulling the connector out of its socket.

5. Disconnect the ribbon cables.

6. Push the power supply and CPU boards back into place.

7. Rotate the unit in the mounting chassis to gain access to the back of the unit and remove the four screws that hold the subassembly to the chassis (refer to Fig. 25).

    After the screws are removed, the chassis swings free from the subassembly and the small standoffs separating the subassembly from the chassis should fall out. Avoid losing the standoffs and screws as they will needed during reassembly.

CONTINUED . . .

SUBASSEMBLY REPLACEMENT

FIG. 25 - POWER SUPPLY/CPU MOUNTING LOCATIONS

Remove Screws (4 places)

Front

UPDATED
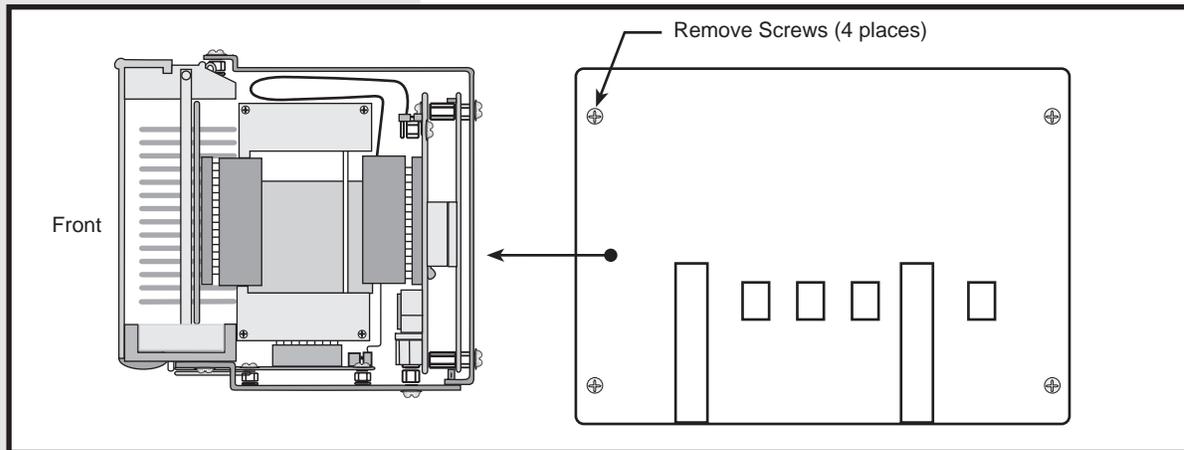
8. Pull the power supply and CPU subassembly free from the clips that are holding it in place.

9. The two halves of the Power Supply/CPU subassembly are held together by six (6) screws (refer to Fig. 26). Remove these screws and gently separate the two halves, noting first the routing of the black ground wire.

10. Disconnect the plastic connector in the black ground wire.

11. Put the two halves of the old Power Supply/CPU unit back together and set it aside.

12. Separate the two halves of the replacement unit as in step 9 above. Connect the black ground wire, routing it in the same way as it was in the old board.

13. Put the two halves of the replacement board back together, ensuring that all the pins seat correctly. Secure with its six screws.

14. Install the new subassembly using the original hardware by inserting each screw through the housing, through a standoff, and into the subassembly one at a time. Start each screw into the subassembly, but do not tighten any of them until all four screws have been started.

15. Reconnect the ribbon cables.

16. Set the switches and straps (refer to the subassembly that you removed, or to the *Installation* chapter).

17. Reconnect the power connector at TB1, then reinstall the fuse.

WARNING: *Do not connect the power connector at TB1 with the fuse installed. This may damage the unit.*

---

13. Push the power supply and CPU boards into place.

14. Close the unit.

CONTINUED . . .

15. Verify proper operation of alarms and controls.

16. Power Supply/CPU replacement complete.

INTERFACE BOARD SUBASSEMBLY

To replace a subassembly:

1. Open the unit (refer to Fig. 23).

2. Pull the power supply and CPU boards down from the other circuitry (refer to Fig. 24).

3. Remove power by pulling out the fuse. The power connector at TB1 does not need to be disconnected.

4. Refer to Fig. 26 for the location of the Interface Board subassemblies.

FIG. 26 - SUBASSEMBLY LOCATIONS

Interface Board

Control Interface Board

Power Supply CPU Board

Dantel
Power supply
AB8-00415-04
Made In USA

Six screws holding two halves together.
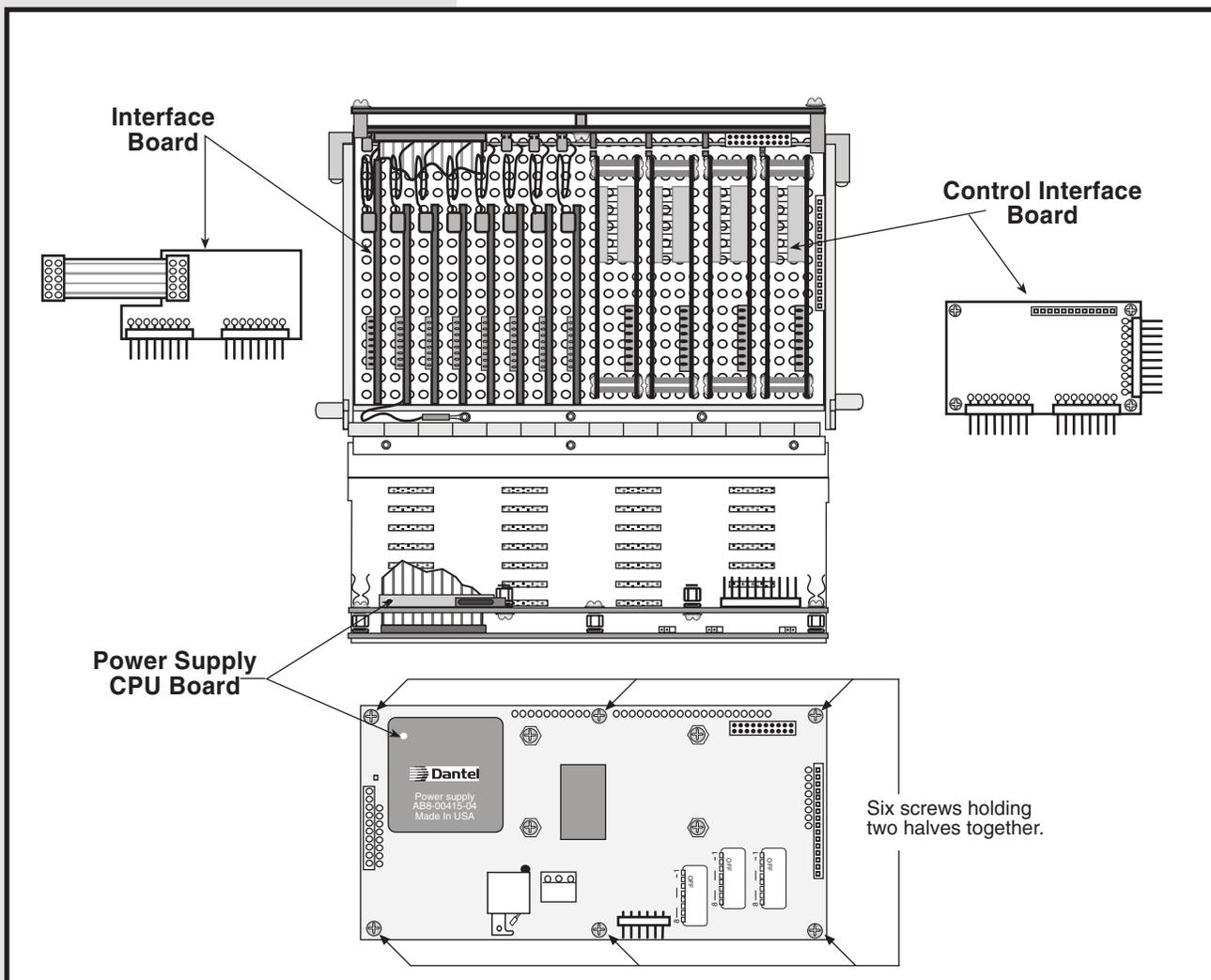
UPDATED

CONTINUED . . .

SUBASSEMBLY REPLACEMENT

5. Disconnect the ribbon cables to the power supply and CPU boards if necessary for easier access.

6. Pull the subassembly out of its connectors.

7. Disconnect the ribbon cable.

8. On the replacement subassembly, make a Z-fold in the ribbon cable similar to the other cables already in the unit.

9. Connect the ribbon cable.

10. Install the subassembly board.

11. Reconnect the ribbon cables to the power supply and CPU boards if they were disconnected.

12. Reinstall the fuse.

WARNING: *Do not reconnect the power connector at TB1 with the fuse installed. This may damage the unit. Reinstall the power connector at TB1 first, then reinstall the fuse.*

---

13. Push the power supply and CPU boards into place.

14. Close the unit.

15. Verify proper operation of alarms by the replacement subassembly.

CONTROL INTERFACE SUBASSEMBLY

To replace a subassembly:

1. Open the unit (refer to Fig. 23).

2. Pull the power supply and CPU boards down from the other circuitry (refer to Fig. 24).

3. Remove power by pulling out the fuse. The power connector at TB1 does not need to be disconnected.

4. Refer to Fig. 26 for the location of the Control Interface subassemblies.

5. Disconnect the ribbon cables to power supply and CPU boards.

6. Remove the three screws from the bottom of the unit (refer to Fig. 27).

CONTINUED . . .

FIG. 27 - CONTROL INTERFACE BOARD REMOVAL

REMOVE SCREWS (3 PLCS)

BOTTOM OF UNIT
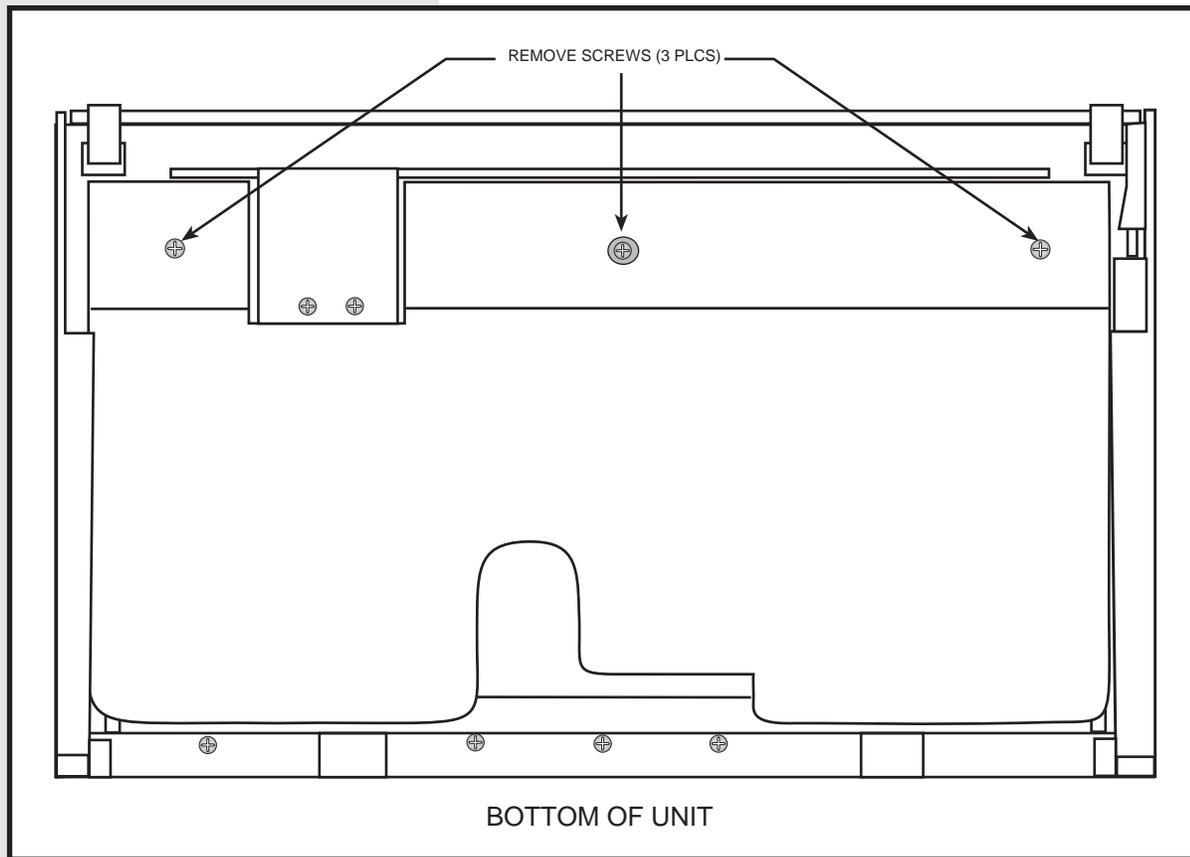
7. Pull the bottom panel out of the connectors that go to the Control Interface subassemblies.

8. Remove the subassembly from the unit.

9. Install the replacement subassembly.

10. Reinstall the bottom panel.

11. Reconnect the ribbon cables to the power supply and CPU boards.

12. Reinstall the fuse.

WARNING: *Do not reconnect the power connector at TB1 with the fuse installed. This may damage the unit. Reinstall the power connector at TB1 first, then reinstall the fuse.*

13. Push the power supply and CPU boards into place.

14. Close the unit.

15. Verify proper operation of the controls by the replacement subassembly.

16. Control Interface replacement complete.

PRINTER SYNTAX

You may check the status of alarm points and operate control points by issuing commands using a dumb terminal, a personal computer operating as a dumb terminal, or a 46001 Status Monitor.

GETTING STARTED

To issue commands, a dumb terminal or personal computer operating as a dumb terminal must be connected to the RS-232 master port connections. If the 46210/46220 is not equipped with an RS-232 interface, one must be installed.

To install an RS-232 subassembly:

1. Open the 46210/46220 (refer to Fig. 28).

FIG. 28 - OPENING THE 46210/46220

Front View

Place Thumb
Here

Side View
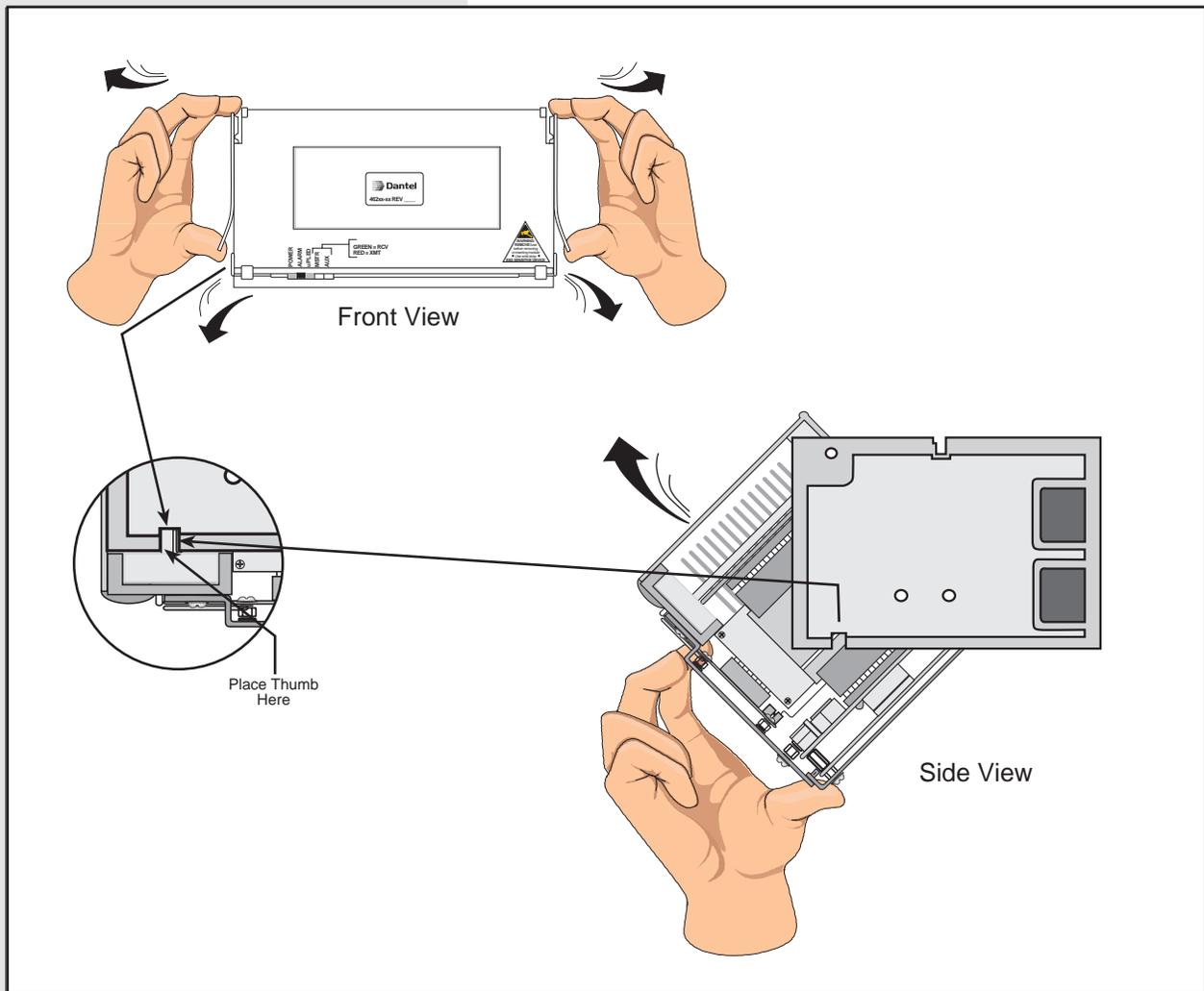
2. Pull the power supply and CPU boards down (refer to Fig. 29).

FIG. 29 - PULLING DOWN POWER SUPPLY AND CPU BOARDS
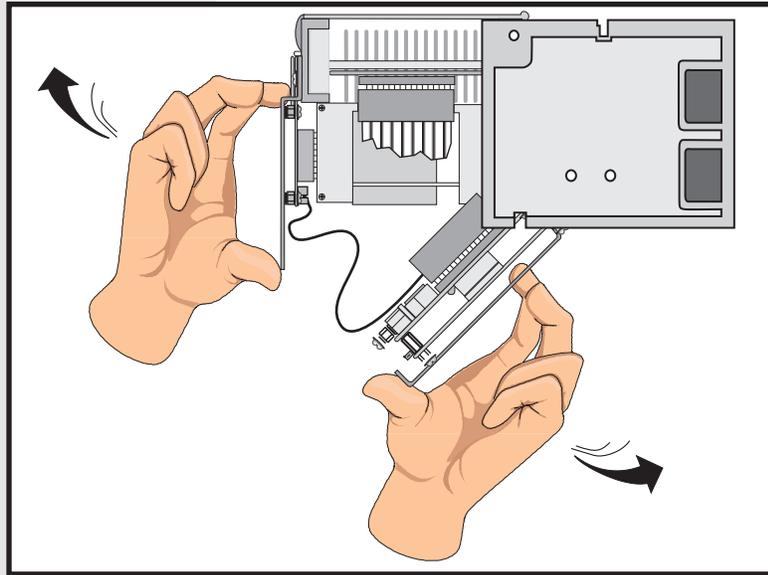
3. Remove power by pulling out the fuse (refer to Fig. 30). The power connector at TB1 does not have to be disconnected.

4. On the power supply board (the top board), remove the 202 subassembly or the subassembly bypass module (refer to Fig. 30).

5. Install the RS-232 subassembly.

FIG. 30 - POWER SUPPLY BOARD COMPONENT LOCATION

CONTINUED . . .

6. Place straps X1 and X2 in the 2-3 positions.

7. Connect the 46210/46220 to the dumb terminal as described below.

8. When you are finished using the dumb terminal, remove the RS-232 subassembly and reinstall the 202 subassembly or the sub-assembly bypass module.

9. RS-232 subassembly installation complete.
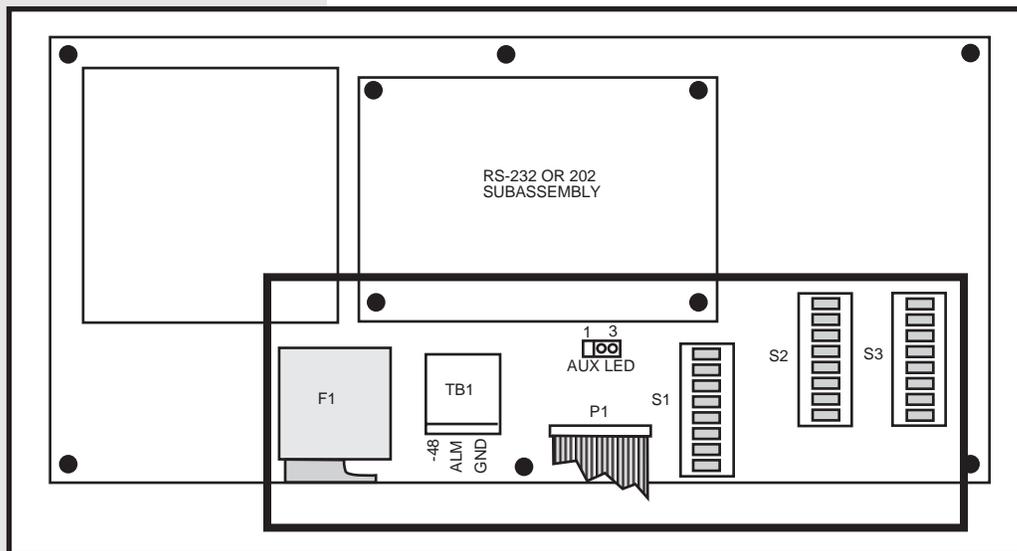
NOTE:
Communication with the host alarm equipment must be interrupted to perform this testing. Reconnect host communication after testing is complete.

To connect a dumb terminal:

1. Open the 46210/46220 (refer to Fig. 28).

2. Pull the power supply and CPU boards down (refer to Fig. 29).

3. Remove power by pulling out the fuse (refer to Fig. 30). Do not disconnect the power connector at TB1.

4. Set the protocol of the 46210/46220 to DCPF. Set S2-6 OFF and S2-7 and S2-8 ON (refer to Fig. 30).

5. Set the dumb terminal for the same data rate as switches S2-1 and S2-2 (refer to Table B in the *Installation* chapter).

6. Set the dumb terminal for eight data bits, one stop bit, and no parity.

7. Open the plastic cover of the 46210/46220.

8. Disconnect any wiring at the RS-232 master port connections. Refer to the template inside the plastic cover for the master port wiring connections.

9. Connect the transmit data of the dumb terminal to the RS-232 receive data (RD) of the 46210/46220.

10. Connect the receive data of the dumb terminal to the RS-232 transmit data (TD) of the 46210/46220.

11. Connect the signal ground of the dumb terminal to the RS-232 ground (GND) of the 46210/46220.

12. Dumb terminal connection complete.

To start the terminal program:

1. Reinstall the fuse. Push the power supply and CPU boards back into place and close the unit.

WARNING: *Do not reconnect the power connector at TB1 with the fuse installed. This may damage the unit. Reinstall the power connector at TB1 first, then reinstall the fuse.*

2. Turn on the dumb terminal.

   When the terminal is turned on, the screen should be blank.

3. Type **!!!** to change the protocol of the 46210/46220 to use a dumb terminal.

CONTINUED . . .

A report will appear on the terminal screen showing the configuration of the 46210/46220 (refer to the QUERY command).

NOTE: *If the terminal and 46210/46220 do not communicate, remove power from the 46210/46220. Then check the switch settings of the terminal. Also check switches S2-1, S2-2, S2-6, S2-7, and S2-8 of the 46210/46220.*

A timer starts when entering the Printer Syntax. After ten minutes, the 46210/46220 returns to the default protocol of DCPF. Type !!! to return to the Printer Syntax. Change the time period using the TIME OUT command.

---

4. Type **UNLOCK** and press Enter.

   This command unlocks the 46210/46220 so commands can be entered. If there is a password in the 46210/46220, enter it to unlock the 46210/46220.

   See Password in the ***Input Commands*** section for instructions on setting up a password.

5. Terminal program started.

To use a Status Monitor:

The protocol of the 46210/46220 must be DCPF. To set the switches, open the 46210/46220 (refer to Fig. 28), and pull down the power supply and CPU boards (refer to Fig. 29). S2 is the middle switch on the top board. Set S2-6 OFF and S2-7 and S2-8 ON.

Use the Status Monitor's CALL command to access the Printer Syntax.

A timer starts when entering the Printer Syntax. After ten minutes the 46210/46220 returns to the default protocol of DCPF. Use the CALL command to return to the Printer Syntax. Change the time period using the TIME OUT command of the 46210/46220.

ENTERING COMMANDS

After each command, press Enter to execute the command.

Some standard ASCII terminals (or computers operating as terminals) have functions keys that can be programmed to do frequently used keystroke sequences in a single stroke. Refer to the terminal's user manual for instructions on how to program the function keys.

PRINTER SYNTAX

ERROR MESSAGES

Two error messages may appear on the terminal screen:

MESSAGE	MEANING	ACTION
COMMAND ERROR	Command not understood	Enter the command correctly
SYNTAX ERROR	Entry doesn't follow the rules of syntax	Enter the command correctly

EDITING

The following table shows how to do some common editing tasks. The term **Ctrl** refers to the Control key on the terminal keyboard.

TASK	KEYSTROKES
Stop output (Stop data flow from the processor)	Hold down Ctrl and press D
Backspace	Press backspace key - or - Hold down Ctrl and press H
Recall previous line (Use to edit command after receiving an error message)	Hold down Ctrl and press K (Recalls contents of last line typed)
Recall current line (Use when interrupted by a system status message)	Hold down Ctrl and press R (Recalls contents of current line)
Pause output (Interrupt data flow from the processor)	Hold down Ctrl and press S (Hold down Ctrl and press Q to restart)
Re-execute last command	Hold down Ctrl and press X

PRINTER SYNTAX

ABBREVIATIONS AND SUBSTITUTIONS

Several of the syntax commands can be abbreviated or replaced by other commands. Here is a list of alternate commands:

REGULAR COMMAND	ABBREVIATION OR SUBSTITUTION
Activate	ACT
Bell	BEEP or DING
Clear	CLR
CPM	C
Linefeed	LF
Period	PER
Query	? or Q
Reset	RST
SG	M or MAT
Switches	DIPS
System	SYS
Terminology	TERMI

OUTPUT MESSAGES

Whenever there is a change of status of an alarm point or a change in the status of a device, a report will be issued.

Example:

```
>SG  2 POINT 1 FAIL ALM LVL A
```

The example above shows an A-level alarm failure at input 17 (point 1 of subgroup 2). When the point returns to normal operation, another report will be issued and the FAIL will change to NORM.

Example:

```
>SG  2 POINT 1 NORM ALM LVL A
```

CONTINUED . . .

46210/46220-0998 <90-00036>

PRINTER SYNTAX

A report also will be issued if one of the alarm status input modules inside the 46210/46220 is removed or disconnected.

Example:

```
>SG  8 OFF LINE
```

The example above shows a failure of alarms 113 through 128 (subgroup 8). When the subgroup returns to operation, another report will be issued showing the subgroup on line.

Example:

```
>SG  8 ON LINE
```

INPUT COMMANDS

Alarm inputs are divided into subgroups of 16 alarm points each. When referring to alarms, the term "MAT" or the term "SG" (for SubGroup) may be used. They both refer to the same thing: a group of alarm inputs (refer to Table F). The MAT is a Multiple Alarm Transmitter module, which is not part of the 46210/46220. The commands that are used for the MAT, however, also work with the 46210/46220. The 46210 has 16 subgroups of alarms. The 46220-00 has eight subgroups of alarms. The 46220-01 has 12 subgroups.

Control points also are divided into subgroups of 16 points each (the same as alarm subgroups 1-4 in Table F). The dumb terminal uses the term "CPM" when referring to control points. The CPM is a Control Point Module, which is not part of the 46220. But the commands for the CPM also work with the 46220. The 46220-00 has four subgroups. The 46220-01 has two subgroups.

TABLE F - ALARM POINTS WITHIN SUBGROUPS

ALARM POINT NUMBERS	SUBGROUP NUMBER	ALARM POINT NUMBERS	SUBGROUP NUMBER
1 through 16	1	129 through 144	9
17 through 32	2	145 through 160	10
33 through 48	3	161 through 176	11
49 through 64	4	177 through 192	12
65 through 80	5	193 through 208	13
81 through 96	6	209 through 224	14
97 through 112	7	225 through 240	15
113 through 128	8	241 through 256	16

PRINTER SYNTAX

ACKNOWLEDGE

Purpose:

Acknowledges alarms and control points.

Format:

ACK ALL

ACK SG#

ACK CPM #

Remarks:

The command ACK ALL acknowledges all alarms and control points at the 46210/46220.

The command ACK SG # applies only to the alarm subgroup(s) specified.

The command ACK CPM # applies only to the control point subgroup (s) specified.

can be a range of subgroups from 1 through 16 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

SG -10   Alarm subgroups 1-10 (alarm points 1-160)

SG 10-   Alarm subgroups 10-16

SG 5-10   Alarm subgroups 5-10

SG ALL   All alarms

Input Examples:

```
>ACK ALL
```

```
>ACK SG 10
```

The first example would acknowledge all alarms. The second example would acknowledge all alarms in subgroup 10 (alarms 145 through 160).

PRINTER SYNTAX

Output Responses:

All commands give the following response:

```
>ACK POINTS
```

BELL

Purpose:

Reports if the terminal bell is on or off. Turns bell on or off. When bell is on, it sounds when a change of alarm status occurs.

Format:

BELL

BELL ON

BELL OFF

Remarks:

The command BELL shows if the bell is on or off. The other commands turn the bell on or off.

Output Response:

Only the BELL command gives a response and that is to report if the bell is on or off.

CPM POINT ACTIVATE

Purpose:

Operates a control point.

Format:

CPM # ACTIVATE point number

Remarks:

Point is activated for the time period set by the switch S3 or by programming (see OPTION and CPM POINT TIME PERIOD commands).

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CONTINUED . . .

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

Point number can be a single number from 1 through 16.

Input Example:

```
>CPM 2 ACT 5
```

Output Response:

```
>CPM 2 POINT 5 OPERATE
```

This example would operate control point 21 (point 5 in sub-group 2).

CPM POINT CLEAR

Purpose:

Resets a control point.

Format:

CPM # CLEAR point number

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

Point number can be a single number from 1 through 16.

Input Example:

```
>CPM 2 CLR 5
```

Output Response:

```
>CPM 2 POINT 5 RELEASE
```

This example would reset control point 21 (point 5 in subgroup 2).

CPM DEFAULT

Purpose:

Changes the S, E, or L time option settings for operating control points back to their default (switch) settings.

Format:

CPM # DEF

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

Output Response:

There is no output response.

CPM POINT DIRECT OPERATE

Purpose:

Momentarily turns control points on or off. Also latches control points on and resets latched points.

Format:

CPM # DLON point number(s)

CPM # DLOF point number(s)

CPM # DMON point number(s)

CPM # DMOF point number(s)

PRINTER SYNTAX

Remarks:

This group of commands overrides momentary/latching settings of switch S3.

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

List point numbers individually with a comma between them, or as a group with a hyphen between them, or use the word ALL; range can be from 1 through 16.

The DLON command latches control points on. The DLOF command resets the latched points.

The DMON command operates control points for three seconds.

The DMOF command turns latched control points off for three seconds, then back on.

Input Example:

```
>CPM 2 DLON 1,3,5
```

Output Response:

```
>CPM 2 POINT 1 OPERATE
 CPM 2 POINT 3 OPERATE
 CPM 2 POINT 5 OPERATE
```

This example would latch on control points 17, 19 and 21 (points 1, 3, and 5 of subgroup 2).

CPM POINT RELEASE

Purpose:

Resets control points.

Format:

CPM # RLS point number(s)

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4	Control subgroup 4 (control points 49-64)
CPM -3	Control subgroups 1-3 (control points 1-48)
CPM 2-	Control subgroups 2-4
CPM 2-3	Control subgroups 2-3
CPM ALL	All control subgroups

List point numbers individually with a comma between them, or as a group with a hyphen between them, or use the word ALL; range can be from 1 through 16.

Input Example:

```
>CPM 2 RLS 3,5
```

Output Response:

```
>CPM 2 POINT 3 RELEASE
 CPM 2 POINT 5 RELEASE
```

This example would release control points 19 and 21 (points 3 and 5 of subgroup 2).

CPM POINT RESET

Purpose:

Resets operated control points.

Format:

CPM # RESET

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4	Control subgroup 4 (control points 49-64)
CPM -3	Control subgroups 1-3 (control points 1-48)
CPM 2-	Control subgroups 2-4
CPM 2-3	Control subgroups 2-3
CPM ALL	All control subgroups

Input Example:

```
>CPM 1 RST
```

Output Response:

```
>CPM 1 POINT 1 RELEASE
 CPM 1 POINT 2 RELEASE
```

CPM POINT SELECT OPERATE

Purpose:

Momentarily turns control points on or off. Also latches control points on and resets latched points.

Format:

The following commands prepare the control points for operation:

CPM # SLON point number(s)

CPM # SLOF point number(s)

CPM # SMON point number(s)

CPM # SMOF point number(s)

The following command executes the above commands:

CPM # EXE (or EXECUTE)

Remarks:

This group of commands overrides momentary/latching settings of switch S3.

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

List point numbers individually with a comma between them, or as a group with a hyphen between them, or use the word ALL; range can be from 1 through 16.

CONTINUED . . .

The SLON command prepares control points for latching. The SLOF command prepares the latched points for resetting.

The SMON command prepares control points for operating for three seconds.

The SMOF command prepares to turn latched control points off for three seconds, then back on.

Input Example:

```
>CPM 2 SLON 1,3,5
>CPM 2 EXE
```

Output Response:

```
>CPM  2  POINT  1 OPERATE
 CPM  2  POINT  3 OPERATE
 CPM  2  POINT  5 OPERATE
```

This example would latch on control points 17, 19 and 21 (points 1, 3, and 5 of subgroup 2).

CPM POINT SET

Purpose:

Operates points at the CPM(s).

Format:

CPM # SET point number(s)

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

List point numbers individually with a comma between them, or as a group with a hyphen between them, or use the word ALL; range can be from 1-16.

Points are operated for the time periods set by switch S3 or by programming (see OPTION and CPM POINT TIME PERIOD commands).

Input Example:

```
>CPM 2 SET 1,3,5
```

Output Response:

```
>CPM  2 POINT  1 OPERATE
 CPM  2 POINT  3 OPERATE
 CPM  2 POINT  5 OPERATE
```

This example would operate control points 17, 19 and 21 (points 1, 3, and 5 of subgroup 2).

CPM POINT TIME PERIOD

Purpose:

Sets the time period for momentary operation of control points.

Format:

CPM # LONG time

CPM # SHORT time

CPM # PERIOD point number time

Remarks:

can be a range of subgroups from 1 through 4 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

CPM -3   Control subgroups 1-3 (control points 1-48)

CPM 2-   Control subgroups 2-4

CPM 2-3   Control subgroups 2-3

CPM ALL   All control subgroups

List point numbers individually with a comma between them, or as a group with a hyphen between them, or use the word ALL; range can be from 1 through 16.

Time is in tenths of seconds from 0.1 seconds to 25.5 seconds. To specify the time, use a number from 1 through 255, each number representing a tenth of a second.

PRINTER SYNTAX

The CPM LONG command sets the time period for control points that are set for extended (E) operation (switches S6-1 through S6-8). The CPM SHORT command sets the time period for control points that are set for short (S) operation (switches S6-1 through S6-8). See the OPTION command for more inFormat:ion.

NOTE: *When setting long or short time periods, the 46220 will use the switch settings (S3) for extended and short operation to determine what control points to set for long or short time periods. Extended and short operation (see OPTION command) must be reset before operating the control points if something different from the switch settings is desired.*

The command CPM PER sets a unique time period for momentary operation of a specific control point.

Use the command CPM # SET to operate the control points.

Input Example:

```
>CPM 2 LONG 200
```

If CPM points to be operated defaulted to something other than extended (E) operation, the CPM options must be reset, as shown below.

```
>CPM 2 OPT E E E E E E E E E E E E E S S S S
```

```
>CPM 2 SET 1-12
```

This example would set control points 17-28 (points 1-12 of subgroup 2) for 20 seconds.

Output Response:

The output response is the same as the CPM POINT SET command.

Input Example:

```
>CPM 2 PER 16 100
```

```
>CPM 2 SET 16
```

This example would set control point 32 (point 16 of subgroup 2) for 10 seconds.

Output Response:

The output response is the same as the CPM POINT SET command.

DELAY

Purpose:

When an alarm occurs, there is a delay before the 46210/46220 will recognize the alarm to filter out spurious alarms. The delay can be set for either 200 or 500 milliseconds.

Format:

DELAY

SG # DELAY 200

SG # DELAY 500

Remarks:

The command DELAY shows whether the delay is set for 200 or 500 milliseconds. The other commands set the delay time period. # can be a range of subgroups from 1 through 16. The number can be a single number or a range of numbers.

Input Example:

```
>SG 3 DELAY 500
```

This example would set a 500-millisecond delay before recognizing alarms on inputs 33-48 (subgroup 3).

Output Response:

Only the DELAY command gives a response and that is to show the delay time period for each subgroup.

SG	INPUT	DELAY
SG	1	200 ms
SG	2	200 ms
SG	3	200 ms
SG	4	200 ms
SG	5	200 ms
SG	6	200 ms
SG	7	200 ms
SG	8	200 ms
SG	9	200 ms
SG	10	200 ms
SG	11	200 ms
SG	12	200 ms
SG	13	200 ms
SG	14	200 ms
SG	15	200 ms
SG	16	200 ms

DISPLAY

Purpose:

Displays the status of alarms as stored in the 46210/46220's memory.

Format:

DISP #

Remarks:

can be a range of memory displays from 1 through 128. The number can be a single number or a range of numbers. A display consists of eight characters of eight points each for a total of 64 points. Two characters, or 16 points, equals one subgroup of alarms.

INPUT EXAMPLE:

```
>DISPLAY
```

Output Response:

```
       DISP 1
       DISP    1.1 . . FB. . . . .
       DISP    1.2 NA. . F . . . .
       DISP    1.3 . . . . . . . .
       DISP    1.4 . . . . . . . .
       DISP    1.5 . . . . . . . .
       DISP    1.6 . . . . . . . .
       DISP    1.7 . . . . . . . .
       DISP    1.8 . . . . . . . .
```

In the example above, display 1.1 has an unacknowledged B-level alarm failure (F). Display 1.2 has an unacknowledged A-level alarm that has returned to normal (N) operation; it also has an acknowledged alarm failure (F) that still exists.

NOTE: *The same reporting is used for both alarms and control points. To determine if displays are for alarms or control points, see the PROVISIONING command, which lists the memory displays where alarm and control point information is stored.*

LINEFEED

Purpose:

Reports if the linefeed is on or off. Turns the linefeed on or off.

Format:

LINEFEED

LINEFEED ON

LINEFEED OFF

Remarks:

The command LINEFEED shows if the linefeed is on or off. The other commands turn the linefeed on or off.

OUTPUT RESPONSE:

Only the LINEFEED command shows a response and that is to report if the linefeed is on or off.

PRINTER SYNTAX

LOCK

Purpose:

Prevents the use of commands that are password protected. See PASSWORD for a list of commands.

Format:

LOCK

Output Response:

```
System Locked
```

LOG

Purpose:

Reports if the logging feature is on or off. Turns on or off the logging feature that reports changes of status or device failures.

Format:

LOG

LOG ON

LOG OFF

Remarks:

The LOG command shows if the logging feature is on or off.

The LOG ON command turns logging on. Whenever there is a change of status of an alarm point, a report will be issued. A report also will be issued when there is a device failure.

The LOG OFF command turns logging off and changes of status and device failures will not be reported. The most recent changes, however, will be stored in memory and displayed when the logging feature is turned ON.

Output Responses:

Only the command LOG gives a response and that is to show if logging is on or off.

NOTE: *When logging is on, alarms and device failures will be reported automatically. See OUTPUT MESSAGES for examples of reports.*

PRINTER SYNTAX

MODE

Purpose:

Shows if the system is locked or unlocked.

Format:

MODE

Output Response:

The MODE command shows if the system is locked or unlocked.

OPTION

Purpose:

To display or set alarm levels.

Format:

SG # OPT

SG # OPT _____

CPM # OPT

CPM # OPT _____

Remarks:

The OPT command displays the alarm level option settings for the alarm subgroups and the time setting options for the control points. Options are displayed as A, B, C, and D for the alarms; the letters refer to the priority levels of alarms. Options are displayed as L, S, E, and M for the control points; L stands for latched points, E means extended momentary time period (three seconds), S is for short momentary time period (300 milliseconds), and M is for a unique time period.

The command OPT followed by a line sets the option settings for the alarm and control point subgroups. In setting the options, use the letters A, B, C, and D for alarms, and the letters L, S, and E for control points. Enter all 16 points; put spaces between the letters. To set a unique time period for the control points, see the CPM POINT TIME PERIOD command.

can be a range of subgroups from 1 through 16 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

SG -10   Alarm subgroups 1-10 (alarm points 1-160)

SG 10-   Alarm subgroups 10-16

CONTINUED . . .

SG 5-10   Alarm subgroups 5-10

SG ALL   All alarms

Input Example:

```
>SG 1 OPT
```

Output Response:

Only the commands SG # OPT and CPM # OPT give a response.

```
SG 1 OPTIONS A B C D A B C D A B C D A B C D
```

PASSWORD

Purpose:

Sets password for system security.

Format:

PASSWORD

Remarks:

Entry is followed by a query for a new password. If an old password exists, it must be entered before setting a new one. As the password is entered, asterisks appear on the screen to safeguard the identity of the password. Maximum length is seven characters.

The following commands are password protected:

All ACKNOWLEDGE commands

All control point commands except CPM # OPT and CPM # PROV

LOG ON

LOG OFF

SG # DELAY 200

SG # DELAY 500

SG # OPT _____

SG # REVERSE #

TERMINOLOGY SG

TIME OUT #

Input Example:

```
>PASSWORD
```

Output Response:

```
New Password:   ******
```

PROVISIONING

Purpose:

Displays the option settings and memory locations where alarm and control point information is stored.

Format:

PROV

SG # PROV

CPM # PROV

Remarks:

The command PROV gives a report on all the alarm and control point subgroups. The commands SG # PROV and CPM # PROV give a report on the subgroups specified.

can be a range of subgroups from 1 through 16 or the word ALL. Here are examples:

CPM 4   Control subgroup 4 (control points 49-64)

SG -10   Alarm subgroups 1-10 (alarm points 1-160)

SG 10-   Alarm subgroups 10-16

SG 5-10   Alarm subgroups 5-10

SG ALL   All alarms

Input Example:

```
>PROV
```

Output Response:

```
SG    1       BBBBBBBBBBBBBBB    1.1   1.2
CPM   1       DDDDDDDDDDDDDDD   33.1  33.2
```

Each line shows the subgroup number, alarm level, and the location in memory where the data is stored (display 1.1, 1.2, etc.). For control points the level is always D. For more information on the displays, see the DISPLAY command.

QUERY

Purpose:

Gives a report of the 46210/46220's configuration.

Format:

QUERY

Input Example:

```
>QUERY
```

Output Response:

```
Point latch until transmitted
Point display    :    200 ms
ESYS Mode        :    OFF
Port Protocol    :    DCP
Port baud        :    9600  N,1,8
DCP ID           :      1
```

REVERSE

Purpose:

Reverses the alarm input state from Open = Normal to Closed = Normal.

Format:

SG # REVERSE

SG # REVERSE #

Remarks:

After SG, # can be a range of subgroups from 1 through 16 or the word ALL. Here are examples:

SG 4   Alarm subgroup 4 (alarm points 49-64)

SG -10   Alarm subgroups 1-10 (alarm points 1-160)

SG 10-   Alarm subgroups 10-16

SG 5-10   Alarm subgroups 5-10

SG ALL   All alarms

After REVERSE, # can be a range of points from 1 through 16. See the examples above.

Input Example:

```
>SG 1 REVERSE
```

Output Response

```
SG INPUT REVERSE
SG   1   REVERSES . . . . . . . . . . . . . .
```

Input Example:

```
>SG 9 REVERSE 9
```

This example would reverse the condition for reporting an alarm on input 137 (input 9 of subgroup 9).

Output Response:

A change of status report is issued (see **OUTPUT MESSAGES**).

REVISION

Purpose:

Gives the revision level of the 46210/46220's firmware.

Format:

REVLIST

Input Example:

```
>REVLIST
```

Output Response:

```
DANTEL 256 POINT SMART BLOCK
COPYRIGHT 1991
04/04/91
A82-00312-00
```

RTUSG MODE

Purpose:

Shows or changes the current terminology being used to display alarms, either SG (intead of MAT) or MAT (instead of SG). SG stands for subgroup. Refer to the beginning of **Input Commands** for more information.

Format:

RTUSG MODE

RTUSG MODE ON

RTUSG MODE OFF

Remarks:

The command RTUSG MODE displays whether the mode is on or off. When it is ON, alarms will be displayed using SG; when it is OFF, alarms will be displayed using MAT.

The command RTUSG MODE ON causes alarms to be displayed using SG.

The command RTUSG MODE OFF causes alarms to be displayed using MAT.

SWITCHES

Purpose:

Gives a listing of 46210/46220 switch settings.

Format:

SWITCHES

PRINTER SYNTAX

```
>SWITCHES
```

Output Response:

```
DIP 1)DDDDDDD 2)DDDDDUDD 3)UUUUDDDD
```

In the example above, D DOWN and U UP.

SYSTEM

Purpose:

Shows the status of alarm subgroups.

Format:

SYSTEM

SG #

CPM #

Remarks:

The SYS command shows the status of all subgroups in the system. The other commands show the status of the subgroups specified.

Input Example:

```
>SYSTEM
```

Output Response:

```
LIST SYSTEM
SG   1 . . .FA. . F . . . FB. . . . .
SG   2 . . . . . . . . . . . . . . . FAIL
SG   3 . . .NC. . . . . . . . . . . .
CPM  1 . .CD. . . .OD. . . C  . . . .
```

The display for alarm subgroup 1 shows unacknowledged A-level and B-level alarms (F) and an acknowledged alarm (F) that still exists. Alarm subgroup 2 is shown not responding to polling. Alarm subgroup 3 shows an unacknowledged C-level alarm that has returned to normal operation.

CONTINUED . . .

The display for control subgroup 1 (CPM 1) shows whether the control points are closed (C) or open (O). The letter D indicates a control point operation that has not been acknowledged.

See the command ACKNOWLEDGE for information on acknowledging alarms and control points.

TERMINOLOGY

Purpose:

Shows or changes the terminology being used to display alarms, either SG (instead of MAT) or MAT (instead of SG). Refer to the beginning of the **Input Commands** for more information.

Format:

TERMINOLOGY

TERMINOLOGY SG

Output Response:

Only the command TERMINOLOGY gives a response and that is to show if the terminology is to be displayed as SG or MAT.

TIME OUT

Purpose:

Sets the time-out after which the 46210/46220 will return to the default protocol (DCPF).

The default time is 10 minutes.

Format:

TIME OUT

TIME OUT #

Remarks:

The command TIME OUT will display the number of minutes for which the time-out is set.

The command TIME OUT followed by a number will set the time-out period. the # can be a number from 1-30; the number represents minutes.

Output Response:

Both commands show the number of minutes for which the time-out is set.

UNLOCK

Purpose:

Unlocks the 46210/46220 so it will accept password-protected commands (see PASSWORD command).

Format:

UNLOCK

Remarks:

If a password has been set, it will be requested before the system can be unlocked.

Input Example:

```
>UNLOCK
```

Output Response:

```
Password : ****
System Unlocked
```

TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input Voltage Range	-21 to -56 VDC
Input Fuse	1 Amp., GMT Type
Input Current (does not include communications subassembly)	
46210-00	
@ -21 VDC	192 mA (max)
@ -24 VDC	182 mA (max)
@ -48 VDC	151 mA (max)
@ -56 VDC	140 mA (max)
46220-00	
@ -21 VDC	500 mA (max)
@ -24 VDC	470 mA (max)
@ -48 VDC	395 mA (max)
@ -56 VDC	390 mA (max)
46220-01	
@ -21 VDC	350 mA (max)
@ -24 VDC	335 mA (max)
@ -48 VDC	280 mA (max)
@ -56 VDC	275 mA (max)
Heat Dissipation (does not include communications subassembly)	
46210-00	
@ -21 VDC	16.5 Btu/Hr
@ -24 VDC	16.4 Btu/Hr
@ -48 VDC	21.3 Btu/Hr
@ -56 VDC	28.7 Btu/Hr
46220-00	
@ -21 VDC	35.8 Btu/Hr
@ -24 VDC	36.8 Btu/Hr
@ -48 VDC	99.9 Btu/Hr
@ -56 VDC	137.6 Btu/Hr
46220-01	
@ -21 VDC	25.1 Btu/Hr
@ -24 VDC	34.4 Btu/Hr
@ -48 VDC	60.6 Btu/Hr
@ -56 VDC	80.3 Btu/Hr
Control Relays (46220-00/-01 only)	
Contact Type	Single Form-C, Dry Contact
Contact Ratings	Max. 1 Amp @ 24 VDC
	Max. 0.5 Amp @ 120 VAC
Data Rates (selectable)	300, 1200, 2400, 9600 baud
Weight	3.0 lbs.
Physical Dimensions	7.9"W x 5"D x 4.5"H
Operating Temperature Range	0° to 55° C.

WARRANTY

LIMITED WARRANTY

The Seller warrants that the standard hardware products sold will be free from defects in material and workmanship and perform to the Seller's applicable published specifications for a period of 18 months for hardware, and 3 months for software, from the date of the original invoice. The liability of the Seller hereunder shall be limited to replacing or repairing, at its option, any defective products which are returned F.O.B. to the Seller's plant, (or, at the Seller's option, refunding the purchase price of such products). In no case are products to be returned without first obtaining permission and a customer return authorization number from the Seller. In no event shall the Seller be liable for any consequential or incidental damages.

Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. The Seller shall make the final determination as to the existence and cause of any alleged defect. No warranty is made with respect to custom equipment or products produced to the Buyer's specifications except as specifically stated in writing by the Seller in the contract for such custom equipment.

This warranty is the only warranty made by the Seller with respect to the goods delivered hereunder, and may be modified or amended only by a written instrument signed by a duly authorized officer of the Seller and accepted by the Buyer.

Warranty and remedies on products not manufactured by the Seller are in accordance with warranty of the respective manufacturer. THE SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY THE SELLER.

IN CASE OF DIFFICULTY

If you experience difficulty with this equipment, check the following, as appropriate:

1. **Switch settings**
2. **Signal levels**
3. **Software configuration**
4. **Connections between Dantel's equipment and your equipment.**

If there is still a problem, substitute equipment that is known to be good. For additional assistance, call Dantel's Technical Field Service Department weekdays, 6 A.M. to 5 P.M. pacific time:

1-800-4DANTEL (1-800-432-6835).

If a thorough checkout shows a piece of equipment has malfunctioned, you may return it to the factory. For repairs and emergency replacements, obtain a Return Material Authorization (RMA) number from the Customer Service Representative at **1-800-4DANTEL** (1-800-432-6835).

To ensure expedient processing of your order, provide a purchase order number and shipping and billing information when requesting an RMA number. Also, when the units are returned to Dantel, include a description of the failure symptoms for each unit returned. Send defective equipment to:

Dantel, Inc.   •   2991 North Argyle Avenue   •   Fresno, California 93727-1388

Dantel

P.O. Box 55013 • Fresno, CA 93747-5013   Phone (209) 292-1111   Fax (209) 292-9355   http://www.dantel.com