

A word or two about firmware issues on the 531X210DMCA cards:

There happens to be two different formats for EEPROM memory on these cards, old style and new style. The old style consists of three 8K EE's, of the 2864 variety, for a total of 24K of EE memory, in sockets U24, U26, & U27. This is in addition to the 27C512 EPROMs in socket positions U20 & U28. Cards that do NOT have jumper J21 in grid coordinate E2 (nearest U24, just under the space labeled "SPARE") are limited to this configuration. This includes base card Rev. level AA & AB, and "card with firmware" Rev. level BM1. The latest/greatest firmware set for this setup is 5 pieces, PSP531X210M1xxAB. Keep them matched up. Don't mix AF or any other pieces into the set, even if they do work and pass testing as some have.

Starting with base card Rev. AC, and "card with firmware" Rev. CM1, all the way up to the final Rev.'s AH & MM1, artwork revisions added a new jumper, J21, for use in selecting which style you want to use. Sockets U26 & U27 were left empty, and U24 is populated with a 32K EEPROM, a 28C256. Sockets U20 & U28 are still populated with 27C512 EPROM's, but of a newer firmware #. This requires J21 to be in the 1-2 position for it to recognize the 32K setup (It will look for the older 24K setup if J21 is set to the 2-3 position). The latest/greatest firmware set for this setup is 3 pieces, PSP531X210M1xxAF. Once again, while certain pieces of AF firmware have been found to function with AB firmware, it not advisable to mix the two.

Eric Rouse has written a Fluke test to check the memory components of these cards if need be. It is on the server under DMCB.H. You must power the card up in the Drop-in Operator Station with the Fluke pod sitting in place of the processor in the CPU socket. This will test the memory components ONLY of both new and old style cards.

Eric also wishes it to be known that the person who designed this card is Lee Silverthorne, and his number is 1-700-278-7801.

Make sure Default program has been loaded
into U24 before testing...

Instructions for DC2000 Drop In Operator Station

I. Mechanical details

1. Check all wiring across hinge for proper slack and securing ties.
2. All jumpers on the 210DMC and 211KLD should be in position 1-2. Jumpers with only one position should be across both pins.
3. Check that the 212DPC board is set for 115 vac operation. Jumpers should be from TX4 to TX7 and from TX5 to TX2.
4. Make sure that U20, U26, U27, and U28 on the 210DMC board are labeled with software identification.

II. Power connection / Start up

1. Connections

- a. Make sure that the 115 vac power is turned off or unplugged. Remove the connector in FXTB and LANTB on the 531X212DPC. Save these to be put back in when finished.
- b. Plug the 115 VAC power connector into FXTB. (FXTB1 is HOT, FXTB2 is ground and FXTB3 is common.) Connect the LAN connector into LANTB.
- c. Connect a ground wire to the chassis.
- d. Put SW1 on the 212DPC board to OFF.

2. Start up

- a. Read thru step 2.c. to be familiar with the start up sequence.
- b. Apply 115 vac. Put SW1 on the 212DPC board to ON.
- c. Verify the following start up sequence:
All keypad LED's light up.
Display: DROP IN SELF TEST RUNNING
The left group of key LED's will go out then the right group.
Top row of displays show all 0s (10 per display) and bottom row shows all *s.
Top row shows all 0s and bottom row shows all *s.
Display: DROP IN SELF TEST COMPLETE
Display: LEARN*****MODE (pauses here.)
Top six displays show .DFLT
Diagnostic display shows TEST READY
The keypad LED's will be blinking. Holding down any key (except the upper left one) will cause the displays to change to DFLT IOS.
- d. If the diagnostic display shows BIT FORCED do the following:
On the diagnostic keypad press SET, MODE, 8, 3, ENTER.
See below for keypad label information.
The display will show CLR. ALL?.N. Press the +/- key. The N will change to Y. Press ENTER. The display will show A 000000.0.
Press SET, MODE,0,ENTER. Display will show TEST READY.
Turn off SW1 and then turn it back on. The unit will repeat self test as in 2.c. If BIT FORCED appears again, replace the 531X210DMC board.
- e. If diagnostic display shows LAN FAULT make sure the LAN connector is plugged into LANTB and the LAN power supply is on.
If a correction was made, turn SW1 off and then on to restart self test.
- f. Verify that the fan lamp on panel is on.

III. Module checks

1. **Start up diagnostic monitor using the KEYPAD:** ~~ANAL~~
 - a. Press SET. Display shows SET.
 - b. Press MODE. Display shows MODE.
 - c. Press 8 then 4 then ENTER. Display shows MONITOR?.
 - d. Press SET, MODE, 8, 5, then ENTER. Display shows DIAGNOSTIC MONITOR ACTIVE.
The keypad LED's will stop blinking.
 - e. Press SET. Display shows LOCAL MODE ACTIVE. Diagnostic monitor shows 0000=00.

2. ~~keypad, LED, and display check.~~
- Press SET, then 5. Display shows KY/LED/DSP.
 - Press ENTER. The top row of display flashes from all 0s to all *s while the bottom row flashes from all *s to all 0s.
 - All keypad LED's will blink on and off, on when top row is *s.
 - When a keypad switch is held down, the LED for that switch will stay on instead of blinking. When the switch is released, the LED's will start blinking again. Check each switch/LED.
 - Quit the test by pressing ESCAPE (hold down for a moment) and then releasing. Diagnostic display will show 0000=00. The keypad LED's may be on or off, depending on when the ESCAPE key was pushed.
3. Check monitor keypad
- Press the +/- key. The diagnostic display changes to + 0000=00. Press +/- again to change back to 0000=00 (no + sign).
 - Press the INC key. The display will show 0001=00. Press the DEC key and the display will change back to 0000=00.
 - Press SET then 1. Diagnostic display will show CHG = 00000.
 - Press keys 1 thru 9. The number pressed will show on the display.
 - Quit testing by pressing ESCAPE until the display shows 0000=00.
4. I/O wire check
- Plug the loop back connector into 1PL on the 210DMC board. The connector is not keyed. UP ~~side of the cable should be towards the top of the module. Carefully put each clip jumper across the 210DMC board. It is located on the lower right side just inside the 3PL.~~
 - Press SET, 6 and ENTER. The diagnostic display will show WR-CK I/OA. The top display row will be :
OUTPUT 7-1 INPUT 16-9 INPUT 8-1
The second display row will bw all 0s.
 - On the diagnostic keypad, press numbers 1 thru 7 and then 0. The second display row will change as below:

Key Pressed	Display1	Display2	Display3
1	00000001	00000001	00000001
2	00000010	00000010	00000010
3	00000100	00000100	00000100
4	00001000	00001000	00001000
5	00010000	00010000	00010000
6	00100000	00100000	00100000
7	01000000	01000000	01000000
0	00000000	00000000	00000000

- ~~Remove the jumper across 1PL and the loop-back connector in 1PL. Put the loop-back connector in 2PL. ~~Remove the jumper across 2PL and the loop-back connector in 2PL.~~~~
- Press ESCAPE until 0000=00 shows on the diagnostic display and then press +/- to get + 0000=00. Press SET, 6, ENTER. The diagnostic display will be WR-CK I/OB and the top row will be as in 4.b.
 - Repeat step 4.c.
 - ~~Remove the jumper across 2PL and the loop-back connector in 2PL.~~
 - Reset unit.
 - Press ESCAPE until diagnostic display shows 0000=00. Press SET ~~then~~ 9. The display will show **RESET**.
 - Press ENTER and the module will repeat self test as in step II.2.c.
 - Thermoswitch check
 - Remove a stab connector on either SW1 or SW2 on the 210DMC board (or open a connector to the thermal switch). All displays will go out and all keypad LED's will turn on. Replace the connection and the unit will repeat self test.

MODE

MODE

Set mode 84

Press set mode

85-Set 0000

Should show

LOCAL MODE ACTIVE

0000=00

CLOSE OUT ALL PROGRAMS THAT CONTROL SERIAL LINK
~~BY~~ DOS. CALL UP PRO COM NOTE: Default Program must be
Loaded into U124 for this
Part of test to work.

IV. Communication checks

1. Serial link

- Connect the terminal to COMPL on the 210DMC board. Make sure the CAPS LOCK light on the terminal is on. If not, press the LOCK (or the CAPS LOCK) key on the terminal.
- At the terminal, hold down the SHIFT key and press the > key. Release these keys and press RETURN. The top display on the unit will show DIAGNOSTIC MONITOR ACTIVE. Press RETURN on the terminal and a > prompt will appear on the terminal screen.
- Press E on the terminal. NO RETURN. This enables echo mode.
- Type the following line: S THIS IS A TEST FOR THE DISPLAY ^{ENTER}
The top display row will show THIS IS A TEST FOR THE DISPLAY.
- Hold down any of the module keys which has an LED and KEEP IT HELD DOWN. Press X on the terminal. The module will start self test and then detect a fault. Fault information will be displayed on the second display line. After a pause the top display line will show DIAGNOSTIC MONITOR ACTIVE. Release the key.
- Press SET on the diagnostic keypad. The display will show LOCAL ^{MODE} MONITOR ACTIVE.
- Press SET then 7 on the keypad. Press RETURN on the terminal and the > prompt will appear. Press X on the terminal and the unit will reset.

2. Check LAN link

- Turn off the power supply for the LAN cable or remove the connector in LANTB on the 212DPC board. The diagnostic display will show LAN FAULT.
- Turn on the supply or reconnect the cable. The fault should still be displayed. Press the RESET button on the 210DMC board. The unit will reset and the LAN FAULT will not appear.

V. Disconnection

- Turn off SW1 on the 212DPC board.
- Unplug the 110 vac line cord and turn off the LAN power supply.
- Remove the connectors in FXTB and LANTB.
- Replace the customer plugs in FXTB and LANTB.
- Remove the terminal connection to COMPL.
- Set the 212DPC board for 230 vac operation by removing the jumpers on TX4 to TX7 and TX5. Put back one jumper from TX4 to TX5.

VI. Shipping Checklist

- There should be some foam protection between the display board and the front of the panel.
- Both card locking slides should be held securely in the locked position with cord ties.
- Check the catalog identification label for correct information.
- There should be a publicity nameplate on the upper left corner of the door.
- Check the overlay for correct information.
- Check the bag of separate ship items. Make sure there are two additional jumpers for the 212DPC board, gasket material. Spare overlays, and documentation on power connections.

VII. Failure Notes

If no displays come on when power is applied, check the following:

- If the keypad LED's are on but no lit, check the wiring from the thermo-switch at the back of the unit to the 210DMCB board (points SW1 and SW2). If the wiring is ok and the thermo-switch is the right part, replace the 210DMC.
- If the LEDS and the displays are blank, check to see if the fan is operating when power is on. If the fan is NOT operating, remove AC power, turn of SW1 and check the fuse on the 212DPC board.

If the fuse on the 212DPC board blows when power is applied, check the following:

- wiring from the transformer to the 212DPC board should be:

BLACK	TX1
BLACK/YELLOW	TX3
BLACK/RED	TX6
BLACK/WHITE	TX8
RED(either one)	TX9
RED(either one)	TX10
RED/YELLOW	TX11

CALL UP
PRO
COM

Must hold key
down for duration
of test.

we need some
sort of momentary
contact NC switch
for this

- b. Make sure jumpers on the 212SPC board are correct per step I3.
 - c. Make sure the fuse on the 212DPC is the right value(4amp fuse)
 - d. Make sure the ribbon cable from the 210DMC to 211KLD has been tested. (Look for a test stamp on the cable near the catalog number).
If the fuse is not blown, check the wiring from connector CPTPL on the 212DPC board to the CPT connector on the 210DMC board.
If all of the above check OK, replace the 210DMC board and try again.
3. If the displays and the LED's are off and the fan is operating when power is on, check the following:
- a. Turn off SW1 on the 212DPC board. Watch the two LED's on the 210DMC board and turn on SW1. If the LED's do not turn on any time, then CFU1 on the 210DMC is probably blown. This is a very small fuse near the large, blue capacitors. **DO NOT ATTEMPT TO REPLACE THE FUSE SINCE THE CAPACITORS STAY CHARGED FOR A LONG TIME!!!**

Check the ribbon cable connecting the 210DMC board to the 211KLD board. If it has been tested and appears OK, replace the 210DMC board.

If the cable appears damage, shorted, or was not tested, replace the cable, the 210DMC board and the 211KLD board.

