IBM Field Engineering
Diagram Manual

Restricted Distribution
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2250 Display Unit Model 1
Restricted Distribution

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2250 Display Unit Model 1
PREFACE


The diagrams are in numerical order, grouped according to type. Diagram numbers are consecutive only within a diagram type.

Related manuals that may be used for reference are:
2250-1 PETOM, Form Y27-2043.
2250-1 FRMM, Form Y27-2045.

This diagram manual supersedes the 2250-1 FE Diagram Manual, Form Y27-2044-0. Major changes are the addition of diagrams to cover the graphic design feature and the updating of existing diagrams. A block diagram of the 2250-1, an intensity diagnostic flow chart, and a diagram of the arc-protection circuit have also been added.

If the 2250 is equipped with the graphic design feature (GDF), use the diagrams listed in column 2 below instead of those listed in column 1. Any reference to a diagram listed in column 1 (when concerned with GDF) should be interpreted as a reference to its counterpart in column 2.

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Addressee comments concerning the manual to this address.

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- Step TP0
- Set Service Req, Latch
- Switch Even Out 0 (Y) Latch
- Wait for Service in Early from TIC

- Set Service Req, Latch
- Switch Even Out 0 (Y) Latch
- Wait for Service in Early from TIC

- Set Service Req, Latch
- Switch Even Out 0 (Y) Latch
- Wait for Service in Early from TIC

- Set Service Req, Latch
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- Set Service Req, Latch
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- Wait for Service in Early from TIC

- Set Service Req, Latch
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- Wait for Service in Early from TIC

- Set Service Req, Latch
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- Set Service Req, Latch
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Start

Is light pen feature operating properly? Yes

No

Place Light Pen while switch on, and perform Light Pen alignment procedure. Check seating of Light Pen pads card is O18A2A3.

Is Light Pen alignment working properly? Yes

No

Vector is partially blocked near light pen? Yes

No

Replace light pen verification card in O18A2A4.

Vector is partially deflected near light pen? Yes

No

Replace light pen verification card in O18A2A4.

Vector is partially blocked near light pen? Yes

No

Replace light pen verification card in O18A2A4.

Vector is partially deflected near light pen? Yes

No

Replace light pen verification card in O18A2A4.

Any light pen active and sync lights on when fastwitch is depressed? Yes

No

Check Logic

Is light pen diagnostic program? Yes

No

Replace light pen amplification card in O18A2A54. 

Light pen detects light comes on and regeneration starts when target is detected and fastwitch is depressed? Yes

No

Check Logic

Aim at point

Is vector unlocked to the left and down from the point? Yes

No

Replace light pen verification card in O18A2A36.

Replace light pen verification card in O18A2A62.

Is small vector unlocked to the left and down from the point? Yes

No

Faulty light pen. Check grounding of pen circuits.

Can light pen gain be adjusted to correct this? Yes

No

Replace E - Unblank 1 card in O18A2A26.

Faulty light pen

Yes

No

Replace E - Unblank 1 card in O18A2A26.

Check Logic
Figure 6038. De-Skew Test Flow Chart
Figure 6039. Character Stroke Control, Flow Chart
Figure 6040. Character Sequences, Flow Chart
Figure 6041. Absolute Vector Graphics Diagnostic Test Flowchart

CAUTION: TURN DC POWER OFF BEFORE REPLACING CARDS.

AVG Maintenance Call

AVG Feature Set, Enabled

AVG Feature Aligned

Yes

No

Is Basic Unit Aligned

Yes

No

Can Basic Unit be Aligned

Yes

No

Disconnect Cable at 01A2/187

Can Basic Unit be Aligned

Yes

No

Align Basic Unit

Proceed to Fig. 6001 Basic Unit

End Maintenance Call

Does Pattern Indicate Open or Shorted Switches (See Photo)

Yes

No

Can Faulty Cord be Determined

Yes

No

Replace Faulty Cord

Replace Cards 01A2/186/186

Yes

No

Reference Voltage Within Spec (20V)

Adjust Reference Voltage 20V

Replace Cards 01A2/187, 187

"K2, K3

Replace DC Offset Cards Is Detecting Axis

Note 1

Replace DC Offset Set be Adjusted

Yes

No

Do Vential and Horizontial Vector Intersect the Crosses

Yes

No

End Maintenance Call

Enter Feature

Adjust

Troubleshoot and correct

Proceed to ALPS and Flow Charts

Input Present

Yes

No

01A2G1212-250m

02B11212-250m

A4112-250m

M612-250m

M612-250m

01A2G2607

Ref: ALPS VCI01

Scope Above

Note 1 DC Offset Board Locations:

X & Y: 01A2/202/02, 01A2/202/03, 01A2/202

Y & Y: 01A2/202/03, 01A2/202/02, 01A2/202

*Identical
Figure 6042. Intensity Test Flow Chart

1. Start
2. Is intensity problem?
   - Yes
     - Is any display visible?
     - No
       - Is pattern normal except for intensity?
       - No
         - Scope 0182A29A, refer to Analog Waveforms page 7 of 9
         - Go to Service Display De-clutcher Test flow chart, figure 6032
       - Yes
         - Is voltage swing between +30 and approximately +15v?
         - No
         - Remove card(s) at 0182A29A and 0182A26A. See CAUTION.
         - Yes
           - Is output transistor shorted?
           - No
             - Re-install cards
             - Yes
               - Replace blank/ublink in O182A29A
               - Adjust card mounted power meter on 0182A206. Refer to FEMM paragraph 4.2.1.
               - Is voltage swing now between -30v and approx +15v?
               - No
                 - Replace blank/ublink in 0182A29A
                 - Yes
                   - Scope unblank input circuit, using moving waveforms in FEMM as a guide
   - No
     - Turn off power, remove CRT socket, test power on, and check for voltage swing between +50 and approximately +15v at pin 2 of socket.
     - Is voltage swing correct?
     - No
       - Check voltage on CRT socket: 6.3v between pins 1 and 2, between +50v and 400v on pin 11 at brightness control is turned, and 1400vdc at pins 6 and 10.
       - All voltages present?
       - Yes
         - Remove CRT assembly from a safe area. Refer to FEMM paragraph 4.1.
         - Refer to FEMM paragraph 5.6
         - Is high voltage button socketed?
         - No
           - Replace CRT
           - Yes
             - Correct problem, re-install CRT assembly and CRT socket.
             - Is intensity normal?
             - No
               - Replace high voltage supply．
               - Yes
                 - Scope unblank input circuit, using moving waveforms in FEMM as a guide．

CAUTION

Damage could result to the Blank/ublink II card (PN: 1100129B) if the output transistors of the Dynamic Intensity II card (PN: 110012032) were to short. Excessive current will flow in the circuit, resulting in damage to the ublink switch of the Blank/ublink II card. At this circuit cannot be protected by a fuse or other safety circuit, the following caution should be taken:

If it becomes necessary to replace a Blank/ublink II card due to a short, the two Dynamic Intensity II cards (PN: 110012033) should be removed. A resistance reading should be made across the Type 120 transistors to insure they are not shorted. The Type 120 transistors are the two transistors on the card with heat sinks. This should be checked prior to installing a new Blank/ublink II card.
Figure 9002. A/N Keyboard, Encoding Chart
**Component Chart**

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<th>Code</th>
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<td>P.C.B1</td>
<td>579456</td>
<td>Circuit Breaker 15A</td>
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<tr>
<td>P.K1</td>
<td>512601</td>
<td>Contactor</td>
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<tr>
<td>P.T1</td>
<td>5112374</td>
<td>TPWR 24VDC</td>
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<tr>
<td>P.C1</td>
<td>208245</td>
<td>Capacitor 2.5 MFD</td>
</tr>
<tr>
<td>P.CE</td>
<td>541050</td>
<td>Capacitor, Feed Thru</td>
</tr>
<tr>
<td>P.CW10</td>
<td>104551</td>
<td>Diode</td>
</tr>
<tr>
<td>P.CW20</td>
<td>593 253</td>
<td>Diode</td>
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<tr>
<td>RT1</td>
<td>F.2</td>
<td>6325 Fuse</td>
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<tr>
<td>P.S2-B</td>
<td>511250</td>
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**Legend**

- 4 POS RELAY
- WIRING SIDE
- K1-K9

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#### 4 POS. RELAY Wiring Side K1 - K9

- **R16**: 4321 OP
- **R14**: 8888 O/C
- **R13**: 8888 N/C
- **R11**: 8888 N/O
- **R10**: 8888 COIL
- **R08**: 8888 PC18 P

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This supplement revises and updates the IBM 2250 Display Unit Model 1, FE Diagram Manual, Form Y27-2044-1. The updated information includes changes to incorporate the Isolation Feature.

Incorporate this supplement in the original manual by substituting the attached pages for corresponding pages in the manual and by adding new pages provided.

Replace i and ii.

Replace 1000.
Replace 5000 and 5001.
Replace 6006, 6007, 6008GDF, 6009, 6011 through 6013, 6013GDF, 6014, 6015, 6022, and 6023.
Replace 9003 (3 Sheets), 9003GDF (3 Sheets), 9004, 9007, and 9023 (2 Sheets).

File this cover letter at the back of the publication. It will then serve as a record of the changes received and incorporated.