A Textron Company

**TECHNICAL BULLETIN** **412-21-247**

24 November 2021

**MODEL AFFECTED:** **412EP**

**SUBJECT:** **DISPLAY UNITS (DU) P/N 412-374-009-ALL ELECTRICAL INSTALLATION, MODIFICATION OF**

**HELICOPTERS AFFECTED:** **Serial numbers 37002 through 37013.**

[Serial number 37014 and subsequent will have the intent of this bulletin accomplished prior to delivery.]

**COMPLIANCE:** At customer's option.

**DESCRIPTION:**

It has come to Bell attention that when the instruments lighting NVG mode is selected, the DU screen may flicker. This behavior of the DU is caused by a lighting power supply load variation at the NVG input to the DU. This Technical Bulletin provides the instructions for the installation of isolation diodes that will reduce the load variations and prevent the DU screen flickering in NVG mode.

**APPROVAL:**

The engineering design aspects of this bulletin are FAA approved.

**CONTACT INFO:**

For any questions regarding this bulletin, please contact:

Bell Product Support Engineering
Tel: 1-450-437-2862 / 1-800-363-8023 / productsupport@bellflight.com

**MANPOWER:**

Approximately 8.0 man-hours are required to complete this bulletin. This estimate is based on hands-on time and may vary with personnel and facilities available.

**WARRANTY:**

There is no warranty credit applicable for parts or labor associated with this bulletin.

**MATERIAL:**

**Required Material:**
The following material is required for the accomplishment of this bulletin and may be obtained through your Bell Supply Center.

| Part Number | Nomenclature | Qty (Note) |
|---|---|---|
| 30-251-48AA | Diodes assembly | 1 |
| 30-251-71AA | Diodes assembly | 4 |
| M81824/1-2 | Splice | 5 |
| 130-061-04W4 | Ident tubing heat-shrink | 5 (1) |

**NOTE 1:** Use number 2530-05943-00 when placing the order.

**Consumable Material:**
The following material is required to accomplish this bulletin, but may not require ordering, depending on the operator's consumable material stock levels. This material may be obtained through your Bell Supply Center.

| Part Number | Nomenclature | Qty | Reference * |
|---|---|---|---|
| 2000-09120-00 | TAPE 299-947-110 TY3 CL1 | A/R | C-460 |
| 2000-00653-00 | 603-1 TAPE A-A-59163 TYII | A/R | C-548 |

* C-XXX numbers refer to the consumables list in the BHT-ALL-SPM, Standard Practices Manual

**SPECIAL TOOLS:**

Not required.

The following tools or equivalent that can be procured locally may be used to accomplish this bulletin:

Daniels CM389T-25A adapter tool
Daniels BT-HT-100 T-handle wrench 1/4" drive (or equivalent)
Daniels BT-BS-609 strap wrench
Raychem AD-1377 crimping tool (or equivalent)
M81969/14-01 insertion/extraction tool
HT-900 Raychem heat gun (or equivalent)

**WEIGHT AND BALANCE:**

Not affected.

**ELECTRICAL LOAD DATA:**

Not affected.

**REFERENCES:**

BHT-412-MMS-EPI, Maintenance Manual Supplement, Chapters 95 and 96

**PUBLICATIONS AFFECTED:**

Not affected.

**ACCOMPLISHMENT INSTRUCTIONS:**

1. Prepare the helicopter for maintenance.

2. Make sure all electrical power is removed from the helicopter.

3. Access and disconnect the copilot DU connector 3160DS1P2 located behind the instrument panel on the left side of the helicopter.

4. Cut the tie wraps and lower the harness bellow the instrument panel.

5. Remove the strain relief screws (qty.4) to access the backshell. Retain the screws and hardware for future use.

6. With the Daniels CM389T-25A adapter tool, the Daniels BT-HT-100 T-handle wrench 1/4" drive and with the Daniels BT-BS-609 strap wrench, carefully remove the backshell from the connector.

7. Pull back the backshell to expose the wires.

8. Remove the insulation tape from the wires.

9. With an extraction tool M81969/14-01, remove wire L1006B22 from pin 100 of connector 3160DS1P2.

10. With a cutter remove the contact P/N M33029/56-348 from wires L1006B22.

11. With a crimping tool AD-1377, splice wire L1006B22 to the lead wire on the cathode (-) side of diode assembly 3160CR1 P/N 30-251-71AA. Refer to the wiring diagram in Figure 1.

12. Place the ident tubing (Figure 1), identified with 3160CR1, on the diode assembly and apply heat until the tubing shrinks in place.

13. Insert the respective lead wire of diode assembly 3160CR1 into pin 100 of the connector 3160DS1P2. Refer to the wiring diagram in Figure 1.

14. Install the insulation tape 299-947-110 TY3 CL1 on the wire bundle located directly under the strain relief as install in step 16.

15. Assemble the backshell and the strain relief with the previously removed screws.

16. Repeat step 4 to step 15 for wire L1006C22 for the copilot DU connector 3160DS2P2 using diode assembly 3160CR2 P/N 30-251-71AA and ident tubing identified with 3160CR2. Refer to the wiring diagram in Figure 2.

17. Repeat step 4 to step 15 for wire L1008C22 for the pilot DU connector 3160DS3P2 using diode assembly 3160CR3 P/N 30-251-71AA and ident tubing identified with 3160CR3. Refer to the wiring diagram in Figure 3.

18. Repeat step 4 to step 15 for wire L1008B22 for the pilot DU connector 3160DS4P2 using diode assembly 3160CR4 P/N 30-251-71AA and ident tubing identified with 3160CR4. Refer to the wiring diagram in Figure 4.

19. Access the terminal block 8TB1-K located on the left side of the upper nose shelf. With an extraction tool M81969/14-01, remove wire L1005AB22 from pin J of terminal block 8TB1-K.

20. With a cutter remove the contact P/N M33029/22-191 from wire L1005AB22.

21. With a crimping tool AD-1377, splice wire L1005AB22 to the lead wire on the anode side (+) of diode assembly 8PS1CR1 P/N 30-251-48AA. Refer to the wiring diagram in Figure 5.

22. Place the ident tubing (Figure 5), identified with 8PS1CR1, on the diode assembly and apply heat until the tubing shrinks in place.

23. Insert the respective lead wire of diode assembly 8PS1CR1 into pin J of terminal block 8TB1-K. Refer to the wiring diagram in Figure 5.

24. Secure the wires in place.

25. Use a multimeter to perform a continuity check and a diode check on the affected wires for the copilot DU, pilot DU and lighting power supply. Refer to the wiring diagram in Figure 1,2,3,4, and 5.

26. Reinstall the connectors 3160DS1P2, 3160DS2P2, 3160DS3P2, 3160DS4P2, and all other removed components.

27. Connect the battery.

28. Perform a DU functional test as per the BHT-412-MMS-EPI, Chapter 95.

29. Perform an Instrument Panel Light functional test as per the BHT-412-MMS-EPI, Chapter 96.

30. Make an entry in the helicopter logbook and historical service records indicating compliance with this Technical Bulletin.

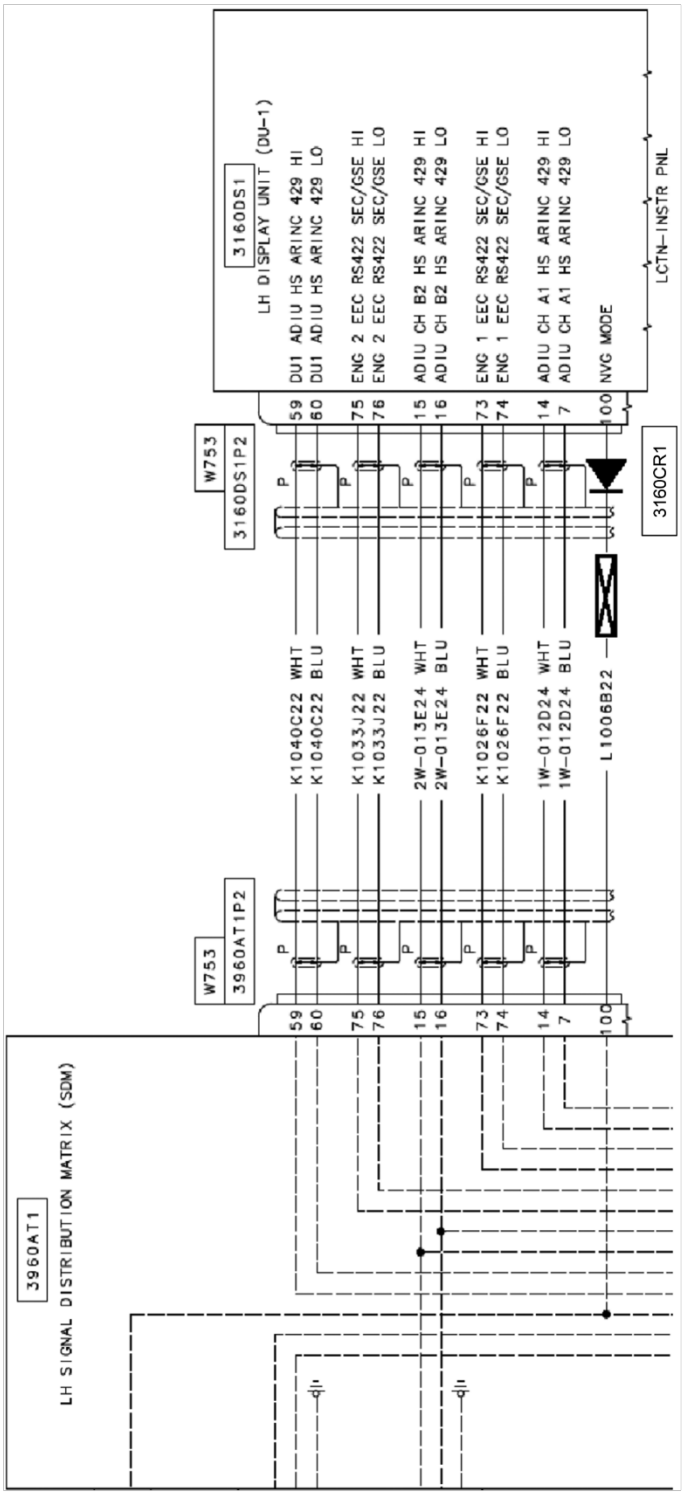


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**FIGURE 1 – DU-1, 3160DS1P2**

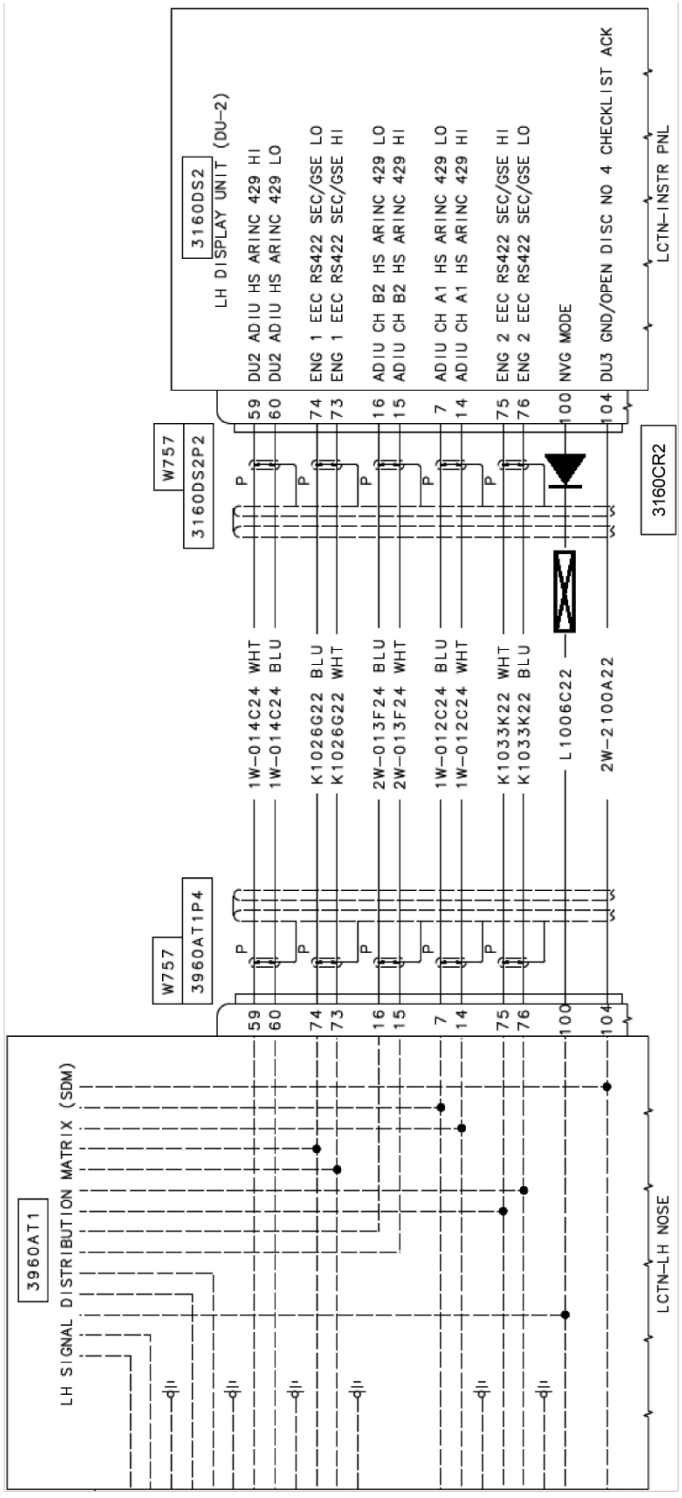


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**FIGURE 2 – DU-2, 3160DS2P2**

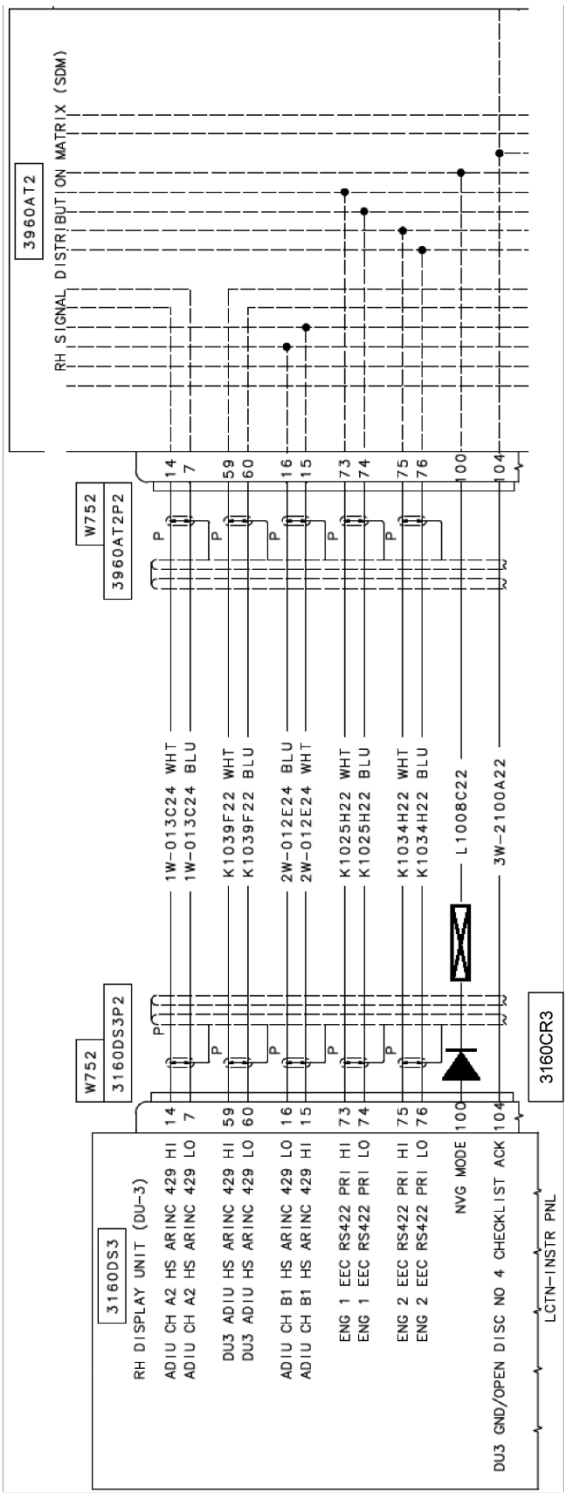


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**FIGURE 3 – DU-3, 3160DS3P2**

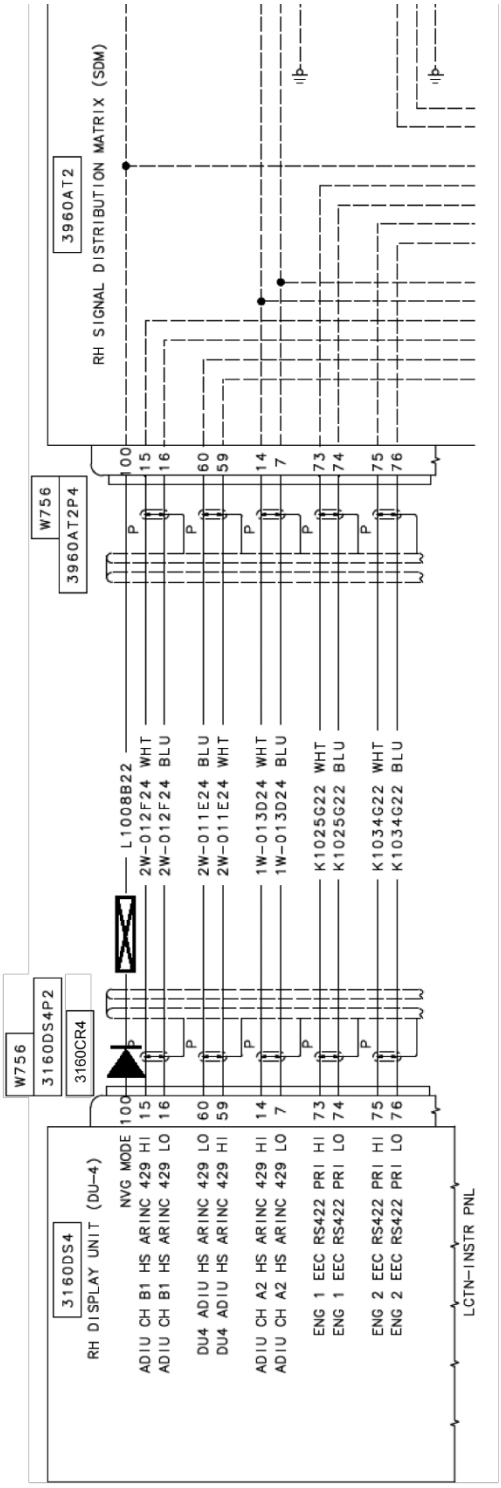


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**FIGURE 4 – DU-4, 3160DS4P2**

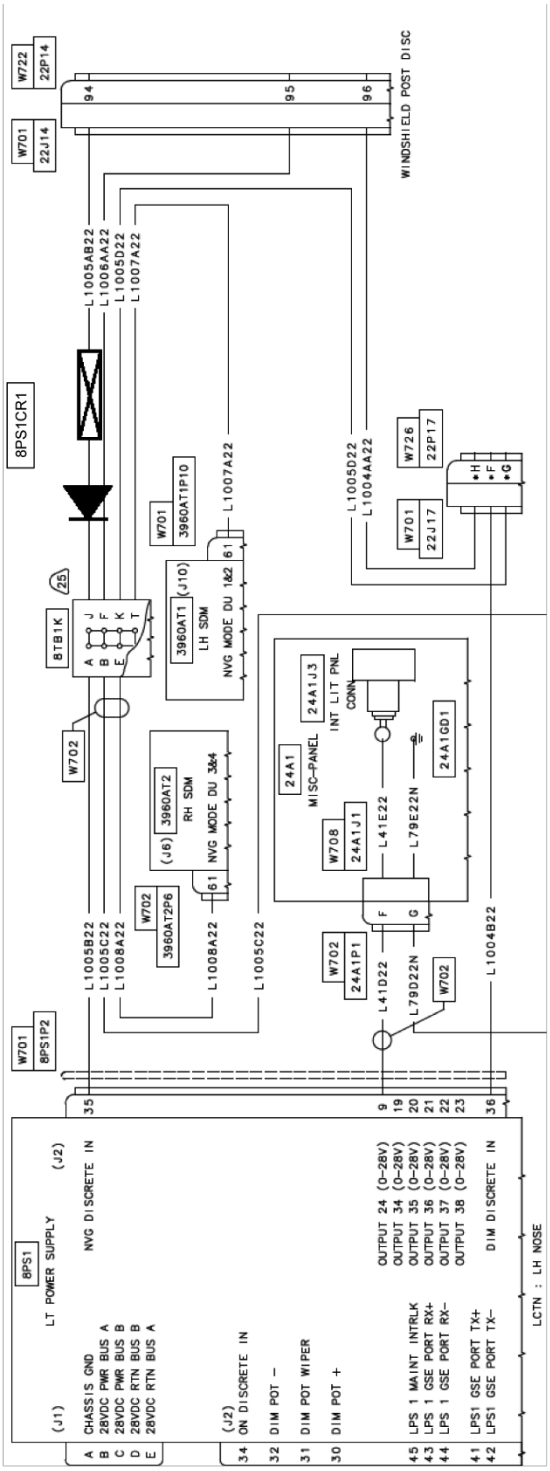


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**FIGURE 5 – 8TB1-K**