# LED Status Display, 635-0825-( )

Rockwell International

instructions

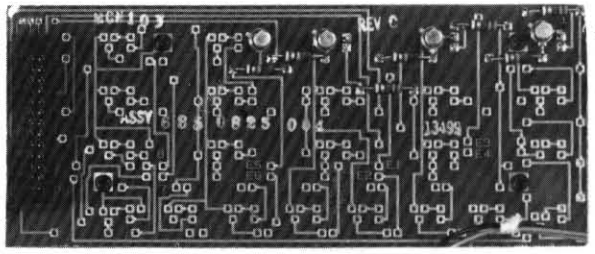
Collins Telecommunications Products Division

Printed in USA

523-0767946-002211
2nd Edition, 1 June 1978

## 1. DESCRIPTION

The LED Status Display 635-0825-( ), shown in figure 1, consists of up to 23 transistor-switch-controlled 5-V dc LED's. LED's are lighted when +5 V dc is applied at connector pin 25, a ground is applied at connector pin 16, and a positive voltage is applied to the connector pin associated with the individual LED. Refer to table 1 and figure 2 for signals (positive to light) and their associated connector pins and LED's.




TP5-2347-017

*LED Status Display*
*Figure 1*

## 2. TESTING/TROUBLESHOOTING PROCEDURES

### *2.1 Test Equipment and Power Requirements*

Test equipment and power sources required to test, troubleshoot, and repair the LED status display are listed in the maintenance section of this instruction book.

### *2.2 Testing*

The test procedures in table 2 check total performance of the LED status display. These test procedures permit isolation of a fault to a specific component or circuit when the results are used with the schematic to circuit trace the fault.

## 3. REPAIR

Repair of the LED status display is accomplished using the standard planar card repair procedures. Refer to the maintenance section of this instruction book for planar card repair procedures.

**NOTICE:** This section replaces first edition dated 1 June 1977.



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*Table 1. LED Status Display, Configuration Matrix.*

| LED | APPLIED SIGNAL (SILKSCREEN IF DIFFERENT) | JUMPER | INPUT PIN (A2J3) | LED STATUS DISPLAY | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 635-0825-( ) | | | | | | | | |
| | | | | -001 | -002 | -003 | -004 | -005 | -006 | -007 | -008 | -009 |
| DS1 | Sidetone en (RF OUT) | | 9 | | X | X | | X | X | X | | X |
| DS2 | PA READY ind | | 10 | | X | X | | X | X | X | | X |
| DS3 | PA FAULT ind | | 11 | | X | X | | X | X | X | | X |
| DS4 | KEY ind | | 12 | | X | X | | X | X | X | | X |
| DS5 | R/E FAULT ind | | 13 | | | X | | | X | | | |
| DS5 | RCV FAULT ind | | 13 | X | | | X | | | | X | |
| DS5 | EXC TR FAULT ind | | 13 | | X | | | X | | X | | X |
| DS6 | RCV OVERLOAD | | 14 | X | | X | X | | X | | X | |
| DS7 | (Reserved) | | 15 | | | | | | | | | |
| DS8 | COUPLER FAULT ind | | 8 | | X | X | | X | X | X | | X |
| DS9 | LSB (FL2) | R9 to E2 | 17 | | X | X | | | | | | X |
| DS9 | AM en | R9 to E1 | 4 | X | | | | | | | X | |
| DS10 | SSB en (SSB/CW) | R10 to E3 | 5 | X | | | | | | | X | |
| DS10 | CW en | R10 to E4 | 2 | | X | X | | | | | | X |
| DS11 | ISB en | | 1 | | X | X | | | | | | X |
| DS12 | USB (FL1) | R12 to E6 | 18 | | X | X | | | | | | X |
| DS12 | ISB en | R12 to E5 | 1 | X | | | | | | | X | |
| DS13 | AM en | R13 to E7 | | 4 | | X | X | | | | | X |
| DS13 | (Reserved) | R13 to E8 | 3 | | | | | | | | | |
| DS14 | 16 (FL8) | | 24 | X | | | | | | | X | |
| DS15 | A (FL3) | | 22 | X | | | | | | | X | |
| DS16 | B (FL4) | | 21 | X | | | | | | | X | |
| DS17 | USB (FL1) (U) | | 18 | X | | | | | | | X | |
| DS18 | LSB (FL2) (L) | | 17 | X | | | | | | | X | |
| DS19 | C (FL5) | | 19 | X | | | | | | | X | |
| DS20 | D (FL6) | | 20 | X | | | | | | | X | |
| DS21 | E (FL7) | | 23 | X | | | | | | | X | |
| DS22 | BUSY | | 6 | X | X | X | | | | | | X |
| DS23 | PRESEL FAULT ind | | 7 | X | | X | X | | X | X | X | X |

NOTES:

X indicates LED and associated circuit are installed in LED status display and any associated jumpers are installed.

A blank indicates LED and associated circuit are not installed in LED status display, and any associated jumpers are removed.

*Table 2. LED Status Display, Testing and Troubleshooting Procedures.*

| TEST | PROCEDURE | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|
| 1. Setup | a. Remove top cover of unit containing LED status display to be tested.<br><br>b. If local unit, remove control card A10. Install A10 extender.<br><br>If control unit, remove parallel output card A12. Install A12 extender.<br><br>**Note**<br><br>Control card A10 in local unit or parallel output card A12 in control unit is not installed during these tests.<br><br>c. Connect a test lead to (+5 V dc).<br><br>**Note**<br><br>This test lead is used for biasing on the switching transistors. | | |
| 2. LED Status Display 635-0825-001 and 635-0825-008<br><br>(Cont) | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead.<br><br>b. Check that each LED goes out when test lead is removed from associated extender pin.<br><br>c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected.<br><br>d. | | |

| EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
|---|---|---|---|---|
| 74 | 1 | ISB | DS12 | DS12, Q12, R12, and R34. |
| 8 | 4 | AM | DS9 | DS9, Q9, R9, R31, Q23, and R45. |
| 72 | 5 | SSB/CW | DS10 | DS10, Q10, R10, and R32. |
| 7 | 6 | BUSY | DS22 | DS22, Q22, R22, and R44. |
| 28 | 7 | PRESEL FAULT | DS23 | DS23, Q24, R46, and R47. |
| 12 | 13 | RCV FAULT | DS5 | DS5, Q5, R5, and R27. |
| 67 | 14 | RCV OVERLOAD | DS6 | DS6, Q6, R6, and R28 |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 2. (Cont) | EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 97 | 17 | L | DS18 | DS18, Q18, R18, and R40. |
| | 32 | 18 | U | DS17 | DS17, Q17, R17, and R39. |
| | 34 | 19 | C | DS19 | DS19, Q19, R18, and R41. |
| | 35 | 20 | D | DS20 | DS20, Q20, R20, and R42. |
| | 98 | 21 | B | DS16 | DS16, Q16, R16, and R38. |
| | 33 | 22 | A | DS15 | DS15, Q15, R15, and R37. |
| | 99 | 23 | E | DS21 | DS21, Q21, R21, and R43. |
| | 100 | 24 | 16 | DS14 | DS14, Q14, R14, and R36. |
| | e. Connect +5 V dc to extender pin 8 (A2J3-4). | | | DS9 (AM) lights. | DS9, Q9, R9, R31, Q23, and R45. |
| | f. Connect test lead to extender pin 74 (A2J3-1). | | | DS12 (ISB) lights and DS9 (AM) goes out. | DS12, Q12, R12, and R24. Q23 and R45. |
| | g. Remove +5 V dc from extender pin 8 and test lead from extender pin 74. | | | | |
| 3. LED Status Display 635-0825-002 | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each LED goes out when test lead is removed from associated extender pin. | | | | |
| | c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 74 | 1 | ISB | DS11 | DS11, Q11, R11, and R33. |
| | 9 | 2 | CW | DS10 | DS10, Q10, R10, and R32. |
| (Cont) | 8 | 4 | AM | DS13 | DS13, Q13, R13, and R35. |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 3. (Cont) | EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 7 | 6 | BUSY | DS22 | DS22, Q22, R22, and R44. |
| | 13 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 77 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 12 | 13 | EXCTR FAULT | DS5 | DS5, Q5, R5, and R27. |
| | 97 | 17 | LSB | DS9 | DS9, Q9, R9, Q23, and R45. |
| | 32 | 18 | USB | DS12 | DS12, Q12, R12, and Q34. |
| | e. Connect +5 V dc to extender pin 97 (A2J3-17) | | | DS9 (LSB) lights. | DS9, Q9, R9, R31, Q23, and R45. |
| | f. Connect test lead to extender pin 74 (A2J3-1). | | | DS11 (ISB) lights and DS9 (LSB) goes out. | DS11, Q11, R11, and R33.<br>Q23 and R45. |
| | g. Remove +5 V dc from extender pin 97 and test lead from extender pin 74. | | | | |
| 4. LED Status Display 635-0825-003 | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each LED goes out when test lead is removed from associated extender pin. | | | | |
| (Cont) | c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 4. (Cont) | EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 74 | 1 | ISB | DS11 | DS11, Q11, R11, and R33. |
| | 9 | 2 | CW | DS10 | DS10, Q10, R10, and R32. |
| | 8 | 4 | AM | DS13 | DS13, Q13, R13, and R35. |
| | 7 | 6 | BUSY | DS22 | DS22, Q22, R22, and R44. |
| | 28 | 7 | PRESEL | DS23 | DS23, Q24, R46, and R47. |
| | 13 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 77 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 12 | 13 | R/E FAULT | DS5 | DS5, Q5, R5, and R27. |
| | 67 | 14 | RCV OVERLOAD | DS6 | DS6, Q6, R6, and R28. |
| | 97 | 17 | LSB | DS9 | DS9, Q9, R9, R31, Q23, and R45. |
| | 32 | 18 | USB | DS12 | DS12, Q12, R12, and Q34. |
| | e. Connect +5 V dc to extender pin 97 (A2J3-17). | | | DS9 (LSB) lights. | DS9, Q9, R9, R31, Q23, and R45. |
| | f. Connect test leads to extender pin 74 (A2J3-1). | | | DS11 (ISB) lights and DS9 (LSB) goes out. | DS11, Q11, R11, and R33. Q23 and R45. |
| | g. Remove +5 V dc from extender pin 97 and test lead from extender pin 74. | | | | |
| 5. LED Status Display 635-0825-004 (Cont) | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each of the LED's go out when test lead is removed from associated extender pin. | | | | |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 5. (Cont) | c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 71 | 7 | PRESEL FAULT | DS23 | DS23, Q24, R46, and R47. |
| | 3 | 13 | RCV FAULT | DS5 | DS5, Q5, R5, and R27. |
| | 67 | 14 | RCV OVERLOAD | DS6 | DS6, Q6, R6, and R28. |
| 6. LED Status Display 635-0825-005 | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each LED goes out when test lead is removed from associated extender pin. | | | | |
| | c. Connect test lead to extender pin indicated in step d and check that the associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 70 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 4 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 3 | 13 | EXCTR FAULT | DS5 | DS5, Q5, R5, and R27. |
| 7. LED Status 635-0825-006 (Cont) | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each LED goes out when test lead is removed from extender associated extender pin. | | | | |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 7. (Cont) | c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 71 | 7 | PRESEL FAULT | DS23 | DS23, Q24, R46, and R47. |
| | 70 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 4 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 3 | 13 | R/E FAULT | DS5 | DS5, Q5, R5, and R27. |
| | 67 | 14 | RCV OVERLOAD | DS6 | DS6, Q6, R6, and R28. |
| 8. LED Status Display 635-0825-007 | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead. | | | | |
| | b. Check that each LED goes out when test lead is removed from associated extender pin. | | | | |
| | c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 71 | 7 | PRESEL FAULT | DS23 | DS23, Q24, R46, and R47. |
| | 70 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 4 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 3 | 13 | EXCTR FAULT | DS5 | DS5, Q5, R5, and R27. |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | | | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|---|---|
| 9. LED Status Display 635-0825-009 | a. Check that none of the LED's listed in step d are lighted before associated extender pin is connected to test lead.<br>b. Check that each LED goes out when test lead is removed from associated extender pin.<br>c. Connect test lead to extender pin indicated in step d and check that associated LED lights when test lead is connected. | | | | |
| | d. EXTENDER PIN NO | A2J3 PIN NO | PANEL MARKING | ASSOCIATED LED | CHECK |
| | 74 | 1 | ISB | DS11 | DS11, Q11, R11, and R33. |
| | 9 | 2 | CW | DS10 | DS10, Q10, R10, and R32. |
| | 8 | 4 | AM | DS13 | DS13, Q13, R13, and R35. |
| | 7 | 6 | BUSY | DS22 | DS22, Q22, R22, and R44. |
| | 71 | 7 | PRESEL FAULT | DS23 | DS23, Q24, R46, and R47. |
| | 70 | 8 | COUPLER FAULT | DS8 | DS8, Q8, R8, and R30. |
| | 5 | 9 | RF OUT | DS1 | DS1, Q1, R1, and R23. |
| | 69 | 10 | PA READY | DS2 | DS2, Q2, R2, and R24. |
| | 4 | 11 | PA FAULT | DS3 | DS3, Q3, R3, and R25. |
| | 68 | 12 | KEY | DS4 | DS4, Q4, R4, and R26. |
| | 3 | 13 | EXCTR FAULT | DS5 | DS5, Q5, R5, and R27. |
| | 97 | 17 | LSB | DS9 | DS9, Q9, R9, Q23, and R45. |
| | 32 | 18 | USB | DS12 | DS12, Q12, R12, and Q34. |
| (Cont) | | | | | |

*Table 2. LED Status Display, Testing and Troubleshooting Procedures (Cont).*

| TEST | PROCEDURE | NORMAL INDICATION | IF INDICATION IS ABNORMAL |
|---|---|---|---|
| 9. (Cont) | e. Connect +5 V dc to extender pin 97 (A2J3-17). | DS9 (LSB) lights. | DS9, Q9, R9, R31, Q23, and R45. |
| | f. Connect test lead to extender pin 74 (A2J3-1). | DS11 (ISB) lights and DS9 (LSB) goes out. | DS11, Q11, R11, and R33. Q23 and R45. |
| | g. Remove +5 V dc from extender pin 97 and test lead from extender pin 74. | | |

## 4. PARTS LIST/DIAGRAMS

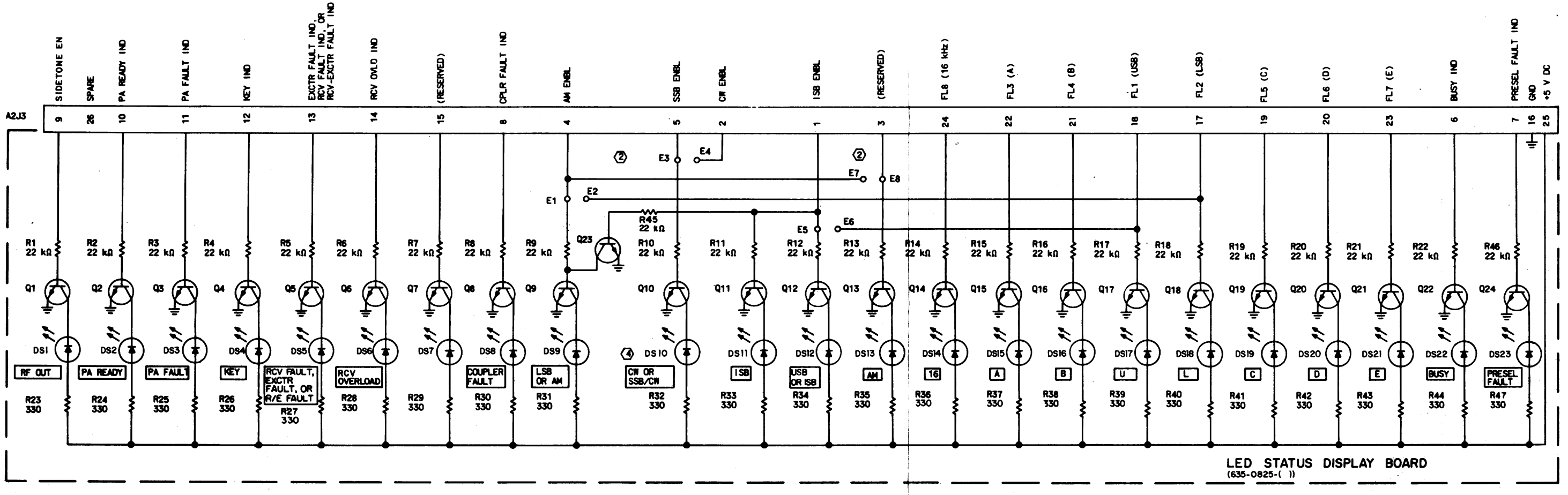
This paragraph assists in identification, requisition, and issuance of parts, and in maintenance of the equipment. A parts location illustration, schematic diagram, parts list tabulation, and modification history are included in the schematic diagram, figure 2. The parts location illustration is a design engineering drawing that shows exact component placement on the circuit cards.

Use the reference designator indicated on the schematic and parts location diagram to locate parts in the parts list tabulation. The Collins part number and description is listed for each reference designator.

Modifications are identified by an alphanumeric identifier assigned to each design change. These identifiers are referenced in the DESCRIPTION column of the parts list, in parentheses, and on the schematic diagram inside an arrow that points at the change. Each change relates to the revision identifier (REV) stamped on the circuit card/subassembly and is listed in the EFFECTIVITY column of the modification history.

Listed below are the circuit cards/subassemblies with the latest effectivity covered by these instructions.

| CIRCUIT CARD/ SUBASSEMBLY | COLLINS PART NUMBER | LATEST EFFECTIVITY |
|---|---|---|
| LED status display | 635-0825-001 | REV C |
| LED status display | 635-0825-002 | REV D |
| LED status display | 635-0825-003 | REV D |
| LED status display | 635-0825-004 | REV C |
| LED status display | 635-0825-005 | REV C |
| LED status display | 635-0825-006 | REV C |
| LED status display | 635-0825-007 | REV G |
| LED status display | 635-0825-008 | REV — |
| LED status display | 635-0825-009 | REV H |

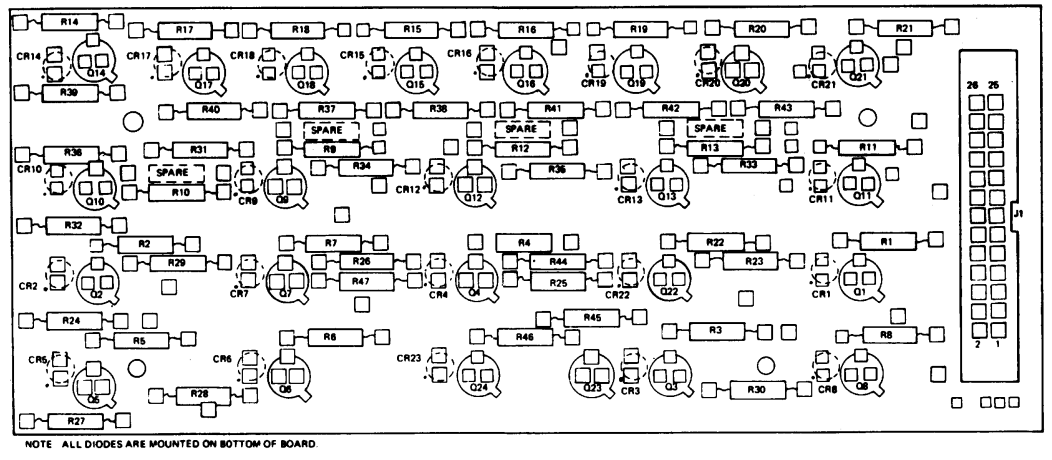



NOTES:

① Q1-Q24 ARE TYPE 2N2222A.
DS3, DS5, DS6, DS8 AND DS23 ARE TYPE HP5082-4684 (RED) LED.
DS1, DS2, DS4, DS7, AND DS9-DS22 ARE TYPE HP5082-4584 (YELLOW) LED.

② FOR RECEIVER CONTROL UNITS, CONNECT R9 TO E1, R10 TO E3, R12 TO E5, R13 TO E8.
FOR EXCITER OR RECEIVER/EXCITER CONTROL UNITS, CONNECT R9 TO E2, R10 TO E4, R12 TO E6, R13 TO E7.

③ UNLESS OTHERWISE SPECIFIED; RESISTANCE VALUES ARE IN OHMS.



NOTE ALL DIODES ARE MOUNTED ON BOTTOM OF BOARD.

TP5-1156-019

TPA-0155-024

*LED Status Display, Schematic Diagram*
*Figure 2 (Sheet 1 of 2)*

## PARTS LIST

| REF DES | DESCRIPTION | COLLINS PART NO | USABLE ON CODE |
|---|---|---|---|
| | INDICATOR BOARD A2A1 635-0825-001 | | |
| DS1-DS4 | NOT USED | | |
| DS5, DS6 | DIODE, LE 5082-4684 | 353-0232-030 | |
| DS7, DS8 | NOT USED | | |
| DS9-DS10 | DIODE, LE 5082-4584 | 353-0232-010 | |
| DS11 | NOT USED | | |
| DS12 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS13 | NOT USED | | |
| DS14-DS22 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q4 | NOT USED | | |
| Q5, Q6 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q7, Q8 | NOT USED | | |
| Q9, Q10 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q11 | NOT USED | | |
| Q12 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q13 | NOT USED | | |
| Q14-Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R4 | NOT USED | | |
| R5, R6 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R7, R8 | NOT USED | | |
| R9, R10 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R11 | NOT USED | | |
| R12 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R13 | NOT USED | | |
| R14-R22 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R23-R26 | NOT USED | | |
| R27, R28 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R29, R30 | NOT USED | | |
| R31, R32 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R33 | NOT USED | | |
| R34 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R35 | NOT USED | | |
| R36-R44 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R45, R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | INDICATOR BOARD A2A1 635-0825-002 | | |
| DS1, DS2 | DIODE, LE, 5082-4582 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS5 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS6, DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS9-DS13 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS14-DS21 | NOT USED | | |
| DS22 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| Q1-Q5 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q6, Q7 | NOT USED | | |
| Q8-Q13 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q14-Q21 | NOT USED | | |
| Q22, Q23 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R5 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R6,R7 | NOT USED | | |
| R8-R13 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R14-R21 | NOT USED | | |
| R22 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R23-R27 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R28, R29 | NOT USED | | |
| R30-R35 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R36-R43 | NOT USED | | |
| R44 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R45 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| | INDICATOR BOARD A2A1 635-0825-003 | | |
| DS1, DS2 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |

## PARTS LIST (Cont)

| REF DES | DESCRIPTION | COLLINS PART | USABLE ON CODE |
|---|---|---|---|
| DS5, DS6 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS9-DS13 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS14-DS21 | NOT USED | | |
| DS22 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q6 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q7 | NOT USED | | |
| Q8-Q13 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q14-Q21 | NOT USED | | |
| Q22-Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R6 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R7 | NOT USED | | |
| R8-R13 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R14-R21 | NOT USED | | |
| R22 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R23-R28 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R29 | NOT USED | | |
| R30-R35 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R36-R43 | NOT USED | | |
| R44 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R45, R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | INDICATOR BOARD A2A1 635-0825-004 | | |
| DS1-DS4 | NOT USED | | |
| DS5, DS6 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS7-DS22 | NOT USED | | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q4 | NOT USED | | |
| Q5, Q6 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q7-Q23 | NOT USED | | |
| Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R4 | NOT USED | | |
| R5, R6 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R7-R26 | NOT USED | | |
| R27, R28 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R29-R45 | NOT USED | | |
| R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FSD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | INDICATOR BOARD A2A1 635-0825-005 | | |
| DS1, DS2 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS5 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS6, DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q5 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q6, Q7 | NOT USED | | |
| Q8 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R5 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R6, R7 | NOT USED | | |
| R8 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R9-R22 | NOT USED | | |
| R23-R27 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R28, R29 | NOT USED | | |
| R30 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | INDICATOR BOARD A2A1 635-0825-006 | | |
| DS1, DS2 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS5, DS6 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS9-DS22 | NOT USED | | |

## PARTS LIST (Cont)

| REF DES | DESCRIPTION | COLLINS PART NO | USABLE ON CODE |
|---|---|---|---|
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q6 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q7 | NOT USED | | |
| Q8 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q9-Q23 | NOT USED | | |
| Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R6 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R7 | NOT USED | | |
| R8 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R9-R22 | NOT USED | | |
| R23-R28 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R29 | NOT USED | | |
| R30 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R31-R45 | NOT USED | | |
| R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | LED STATUS DISPLAY 635-0825-008 | | |
| DS1-DS4 | NOT USED | | |
| DS5, DS6 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS7, DS8 | NOT USED | | |
| DS9, DS10 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS11 | NOT USED | | |
| DS12 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS13 | NOT USED | | |
| DS14-DS21 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS22 | NOT USED | | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q4 | NOT USED | | |
| Q5, Q6 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q7, Q8 | NOT USED | | |
| Q9, Q10 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q11 | NOT USED | | |
| Q12 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q13 | NOT USED | | |
| Q14-Q21 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q22 | NOT USED | | |
| Q23, Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R4 | NOT USED | | |
| R5, R6 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R7, R8 | NOT USED | | |
| R9, R10 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R11 | NOT USED | | |
| R12 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R13 | NOT USED | | |
| R14-R21 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R22-R26 | NOT USED | | |
| R27, R28 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R29, R30 | NOT USED | | |
| R31, R32 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R33 | NOT USED | | |
| R34 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R35 | NOT USED | | |
| R36-R43 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R44 | NOT USED | | |
| R45, R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | LED STATUS DISPLAY 635-0825-007 | | |
| DS1, DS2 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS5 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS6, DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS9-DS22 | NOT USED | | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q5 | TRANSISTOR, 2N2222A | 352-0661-020 | |

## PARTS LIST (Cont)

| REF DES | DESCRIPTION | COLLINS PART NO | USABLE ON CODE |
|---|---|---|---|
| Q6, Q7 | NOT USED | | |
| Q8 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q9-Q23 | NOT USED | | |
| Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R5 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R6, R7 | NOT USED | | |
| R8 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R9-R22 | NOT USED | | |
| R23-R27 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R28, R29 | NOT USED | | |
| R30 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R31-R45 | NOT USED | | |
| R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| | LED STATUS DISPLAY 635-0825-009 | | |
| DS1, DS2 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS3 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS4 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS5 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS6, DS7 | NOT USED | | |
| DS8 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| DS9-DS13 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS14-DS21 | NOT USED | | |
| DS22 | DIODE, LE, 5082-4584 | 353-0232-010 | |
| DS23 | DIODE, LE, 5082-4684 | 353-0232-030 | |
| Q1-Q5 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q6, Q7 | NOT USED | | |
| Q8-Q13 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| Q14-Q21 | NOT USED | | |
| Q22-Q24 | TRANSISTOR, 2N2222A | 352-0661-020 | |
| R1-R5 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R6, R7 | NOT USED | | |
| R8-R13 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R14-R21 | NOT USED | | |
| R22 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R23-R27 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R28, R29 | NOT USED | | |
| R30-R35 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R36-R43 | NOT USED | | |
| R44 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |
| R45, R46 | RESISTOR, FXD, CMPSN, 22kΩ, 10%, 1/4W | 745-0797-000 | |
| R47 | RESISTOR, FXD, CMPSN, 330Ω, 10%, 1/4W | 745-0731-000 | |

*LED Status Display, Schematic Diagram*
*Figure 2 (Sheet 2)*