MULTILIN

INSTRUCTIONS

DLP3512KDV0305

Digital Transmission Line Relaying System with Single Phase Tripping

Introduction

These instructions, GEK-106207 together with GEK-105548, constitute the complete instructions for the DLP3512KDV0305.

DESCRIPTION

This relay is similar to the standard DLP relay described in GEK-105548, EXCEPT for the following changes:

1. The ASCII function has been removed.

2. A PRINTER function has been added.

These two modifications result in textual **SUBSTITUTIONS, INSERTS,** and **DELETIONS** in the GEK-105548 Instruction Book. The reader should use this document (GEK-106207) to locate and implement specified changes in GEK-105548. Attached (final page of this document) is a **Document Coordination Guide** that helps the reader link these two documents together.

SUBSTITUTIONS

Substitutions are listed in the order that they appear in the GEK-105548 text. Chapter titles, section titles, and page numbers are given as a quick reference. Chapter, section, and sub-section titles appear in bold-face. Locate the affected sections and note the changes in the GEK-105548 book. Specific text to be altered is set off within the >> << symbols.

CHAPTER 3 - HARDWARE DESCRIPTION

3.1 Case Assembly

- Delete >>ASCII<< and replace it with >>PRINTER<< in the following figures:

1. Figure 3-1 (page 3-2)
2. Figure 3-2 (page 3-3)
3. Figure 3-4 (page 3-7)
4. Figure 3-5 (page 3-8)

3.2 Electrical Connections and Internal Wiring

- Delete >>(ASCII)<< and replace with >>PRINTER<< (page 3-5).

CHAPTER 8 - INTERFACE

8-1 Local Man-Machine (MMI) Interface Operation

- In **Figure 8-1** a PRINT **(PRT)** key replaces the DASH **(-)** key (***see p. 16*** of this document).
- Delete the **DASH (-) Key** section and replace it with the **PRT (Print) Key** section (***see INSERTS - p. 3*** and ***DELETIONS - p. 12*** of this document).

- Delete section 8-2 ASCII Interface (pages 8-18 and 8-19) and replaced with Section 8-2 Printer Interface (***see INSERTS - pp. 9-10*** **and** ***DELETIONS - p. 12*** of this document).

INSERTS

Inserts are listed in the order they appear in the GEK-105548 text. Chapter titles, section titles, and page numbers are given as a quick reference, and the positions of the inserts are specified. Chapter, section, and sub-section titles appear in bold face. The text to be inserted is given directly below each respective section title and is set off by the >> << symbols. Locate the affected sections and note appropriate changes in the GEK-105548 book.

CHAPTER 1 - PRODUCT DESCRIPTION

1-4 Other Features

Local Printer (*NEW SUB-SECTION)

- Insert the following text between sections **Local Man-Machine Interface (MMI)** and **Oscillography** (page 1-14).

>> **Local Printer**
A local printer can be connected to the serial port PL-2 on the rear of the DLP3 case. When a local printer is connected, all events (see *Sequence of Events* below) are

automatically printed at the time of occurrence. In addition, other information stored in the DLP3 memory can be printed when requested via the local MMI, as described in *Chapter 8 – Interface.* <<

CHAPTER 4 - ACCEPTACE TESTS

4-2 General Relay Tests

Display and Keypad Tests (page 4-7)

- Insert step **(9a)** between steps 9 and 10.

  >> 9a. The display prompt next is
  PRINTER TST?
  If there is no printer connected, then press the 3/N followed by the ENT key. If there is a printer, press the 1/Y followed by the ENT key. The printout contains 40 characters that include the alphabet, the numbers 0 through 9, and the : = / . characters. Forty lines are printed.<<

CHAPTER 5 - PERIODIC TESTS

5-2 General Relay Tests

T2 - MMI Display Test (page 5-3)

- Insert an LED reference in the first sentence. The first sentence now reads

  The MMI test is built into the software and tests the keypad, the display, >>and the LED.<<

CHAPTER 8 - INTERFACE

8-1 Local Man-Machine (MMI) Interface Operation

CLR (Clear) Key (page 8-2)

- Insert the following paragraph between the 2nd and 3rd paragraphs.

  >> If the CLR key is pressed after the PRT key (with no other intervening key presses), printing is terminated. A printout can thus be halted at any time. <<

PRT (Print) Key (*NEW SUB-SECTION)

- Insert the following text to replace the **Dash (-) Key** section (page 8-2) - (***see DELETIONS - p. 12*** of this document).

>> **PRT (Print) Key**

The PRT key directs information to the printer instead of to the display. When information is sent to the display, only one item at a time is displayed. When information is sent to the printer, all items within a category (or, in the case of settings, all settings) are printed. When the PRT key is pressed, the characters PRT appear on the display.

While the DLP3 is printing, any other MMI commands may be entered, except for another print command. Pressing PRT again causes an error message to be displayed. Printing must be completed before another PRT command may be issued. To stop printing, once started, press the CLR key. <<

SET (Settings) Key (pages 8-4 to 8-6)

- Insert a reference to **PRT** (2nd paragraph of section, page 8-4). This paragraph now reads

  The key sequence for selecting a settings group is
  SET {n} {ENT >>or PRT<<}
  where n is the optional setting group number.

- Insert the following text between the 4th and 5th paragraphs (left-hand column, page 8-5):

  >> Pressing the PRT key displays PRT in the rightmost positions. All setting are printed, regardless of whether a setting number was entered. The printout is arranged by categories. <<

- Insert a reference to **PRT** (4th paragraph, right-hand column, page 8-5). This paragraph now reads

  Pressing any command key or the >>PRT,<< ↑, ↓, or CLR key instead of the ENT key retains the old value and the newly entered value is lost.

- Insert printer display information (attach to the end of the 6th paragraph, right-hand column, page 8-5). The complete paragraph now reads

  The first time a setting is successfully changed, remote communication is inhibited from reading and changing settings in the DLP3. >>Also, the setting is reported on the printer as follows:
  DATE/TIME
  LOCAL - SETTINGS CHANGE STARTED.<<

Disable Outputs (page 8-7)

- Insert a printer display description onto the end of the "YES response" description. This text now reads

  - A YES response displays the message
    OUTPUTS DISABLED

  the action is performed, the MMI LED turns red, >>and the printer reports the

following:
TIME/DATE
LOCAL - DISABLE OUTPUTS<<

Enable Outputs (page 8-8)

- Insert a printer display description onto the end of the "YES response" description. The text now reads as follows:

  - A YES response displays the message
    OUTPUTS ENABLED
    the action is performed, the MMI LED turns green, >>and the printer reports the following:
    TIME/DATE
    LOCAL - ENABLE OUTPUTS<<

Trip (page 8-8)

- Insert printer displays into the "YES response" text in step 3 of this section. This text now reads

  - A YES response causes the DLP3 to send a trip command to the selected breaker. When the 52/b contact reports that the breaker is open, then the message
    BKR x TRIPPED
    appears on the display, >>and the printer reports the following:
    TIME/DATE
    LOCAL - MANUAL TRIP<<
    If the 52/b contact reports that the breaker is not open, then the message
    NOT TRIPPED
    appears on the display, >>and the printer reports the following:
    TIME/DATE
    LOCAL - MANUAL TRIP ATTEMPTED<<

Close (page 8-9)

- Insert printer displays into the "YES response" text in step 3 of this section. This text now reads
  - A YES response causes the DLP3 to send a trip command to the selected breaker. When the 52/b contact reports that the breaker is closed, then the message
    BKR x CLOSED
    appears on the display, >>and the printer reports the following:
    TIME/DATE
    LOCAL - MANUAL CLOSE<<
    If the 52/b contact reports that the breaker is not closed then the message
    NOT CLOSED
    appears on the display, >>and the printer reports the following:
    TIME/DATE
    LOCAL - MANUAL CLOSE

ATTEMPTED<<

MMI Test (page 8-12)

- Insert a printer reference into the first sentence. This sentence now reads

  This category tests the display, keyboard, MMI LED, >>and printer.<<

- Insert the following paragraph directly after the first sentence.

  >> Pressing the PRT key displays an error message, since this category does not have a printing option. <<

- Insert step 5 directly after step 4.

  >> **5.** The display prompts with
  PRINTER TEST?
  - Press the 3/N key, followed by the ENT key, to skip the printer test and terminate the MMI test.
  - Press the 1/Y key, followed by the ENT key, to test the printer. Patterns containing all printable characters are printed in all possible columns. <<

- Insert additional text into Table 8-12 (page 8-12). The completed table now reads

Key	Display
ACT	ACT:PASSWORD
9	ACT:9
ENT	########NEXT?
1/Y	########NEXT?YES
ENT	LED TST?
3/N	LED TST?NO
ENT	KEYBRD TEST?
3/N	KEYBRD TEST?NO
>> ENT	PRINTER TEST?
3/N	PRINTER TEST?NO <<
ENT	ACT:MMI TEST

Table 8–12. Sample key sequence and display contents for a MMI test.

Fix Up Settings (pages 8-12 to 8-13)

- Insert a printer display description into this section (top of page 8-13). The bulleted text now reads
  - Press the 1/Y key to recalculate the setting's CRC code. The message
    CHECK SETTINGS
    appears on the display >>and the printer reports:
    TIME/DATE
    LOCAL - FIXUP SETTINGS<<

INF Key (Information) (page 8-14)

- Procedure 3 has been modified to include the PRT key. Step 3 now reads

  3. Press ENT to display the first item or prompt in the category.
  - If the category contains a list of items, scroll through the list with the ↑or ↓ key. Press the ENT >>or PRT<< key when the desired item appears.
  - If the category contains prompts, respond to the prompt and press either the ENT >>or PRT<< key to display the next prompt (if any). To leave the prompt sequence, press any Command key or the END key.

Request DLP3 Status Information (pages 8-14 to 8-15)

- Insert the following text relevant to the PRINT function directly after Table 8-16 (page 8-15).

  >> Press the PRT key (rather than the ENT key, as above), to print the DLP3 status. Header lines similar to the following are printed first:

  UNIT ID: 1234
  DATE: 07/12/90
  TIME: 10:23:44

  The DLP3 then prints the status as follows:
  - If the DLP3 is working properly and protecting the line, the DLP3 prints the following line:
    DLP STATUS: OK
  - If there is a critical failure, the printer output is
    DLP STATUS: FAILURE
    with additional messages printed in the order given above.
  - If there is a noncritical failure, the printer output is
    DLP STATUS: WARNING
    with additional messages printed in the order given above.
  - If the DLP3 is working properly and not protecting the line, the printer output is
    DLP STATUS: PROTECTION OFF
  - If the DLP3 is working properly and protecting the line but outputs are disabled, the printer output is
    DLP STATUS: DISABLED OUTPUTS
  - If the DLP3 hardware is working properly but miscellaneous status information is present, the printer output is
    DLP STATUS: MISC

  Table 8–17 lists the event messages printed by the DLP3. <<

Request Fault Information (pages 8-15 to 8-16)

- Insert a reference to the PRT key in the following locations:

  1. The last line of page 8-15

     Press the ENT >>or PRT<< key to display the prompt...

  2. The first paragraph on page 8-16

     Enter a number from 1 to 14 (where 1 is the most recent fault, 2 the second most-recent fault, etc.), then press ENT >>or PRT<<. If there is no valid...

- Insert the following text (bottom, left-hand column, page 8-16).

  >> If PRT is pressed after the fault number is entered, the message
  INF: FAULT PRT
  appears on the display.<<

- Insert **Figure 8-1a. Sample Printed Fault Report** (*see p. 17* of this document).

Request Present Values (page 8-15)

- Insert the following paragraph between the 1st and 2nd paragraphs.

  >> Press the PRT key to print the present values as illustrated in Figure 8-1b. PRT appears in the right-most display positions. <<

- Insert **Figure 8-1b. Sample Present Values printout** (*see p. 18* of this document).

Request Events (* NEW SUB-SECTION)

- Insert this section between **Request Present Values** and **View Password** (page 8-17).

  >> **Request Events**
  This category prints Sequence-of-Events information.

  Press the PRT key to print messages similar to those in Figure 8-1c. PRT appears in the rightmost display positions. Pressing the ENT key displays an error message, since events can only be printed. <<

- Insert **Figure 8-1c. Sample Sequence of Events printout** (*see p. 19* of this document) into the end of this section.

View Password (page 8-17)

- Insert the following paragraph directly after the first paragraph of this section.

>> Pressing the PRT key displays an error message, since the passwords can only be displayed. <<

Request DLP3 Model/Version (page 8-17)

- Insert the following text at the end of the first sentence. The complete first paragraph now reads

  This category displays the DLP3 model number and the PROM version number. >>Press the PRT key to print messages similar to those in Figure 8-1d. PRT appears in the rightmost display positions.<<

- Insert **Figure 8-1d. DLP3 model and version number display** (***see p. 19*** of this document).

Station ID (page 8-17)

- Insert the following text directly after the 2nd paragraph of this section.

  >> Pressing the PRT key displays an error message. The Station ID is printed, however, on all of the DLP3 reports. <<

Line ID (pages 8-17 to 8-18)

- Insert the following text directly after the last paragraph of this section (top, left, page 8-18).

  >> Pressing the PRT key displays an error message. The Line ID printed is printed, however, on all of the DLP3 reports. <<

CHAPTER 8 - INTERFACE

8-2 Printer Interface (** NEW SECTION – Replaces Section **8-2 ASCII Interface**)

- Insert this section between sections 8-1 and 8-3 ; it replaces section 8-2 (pages 8-18 and 8-19).

  >> The pin-to-pin connections for the cable connecting the printer to plug PL2 on the back of the DLP3 are shown in Figure 8–1e. Virtually any ASCII printer with a serial interface may be used. The printer's serial interface must be programmable to 1200 baud, 8 character bits, 1 stop bit, and no parity. The printer's handshaking mode must be set to either XON/XOFF or DTR Ready. *The DLP3 printer port (plug PL2) is fixed at 1200 baud.* The DLP3 setting COMMPORT affects the baud rate of the RS232 port (plug PL1) but not the printer port.

Recommended printer
If the printer is to be installed permanently at the DLP3 location, then the thermal printer listed in Table 8–24 is recommended because of its temperature-range specification.

Description	Vendor
FP40 Printer	Radix
FC401 Single-Unit battery Charger	Radix

Table 8–24. Recommended printer, cable, and paper.

The addresses and phone numbers for the printer and paper vendors are as follows:

Radix Corporation
4855 Wiley Post Way
Salt Lake City, UT 84116
800-453-5195
Lord Label
3435 W. Madison
Skokie, IL 60076
800-621-9301<<

- Insert **Figure 8-1e. Pin connections for cable connecting printer to DLP3** (*see p. 20* of this document).

CHAPTER 9 - SOFTWARE

9-1 DLP-Link Software

Modem Initialization string (* NEW SUB-SECTION)

- Insert the following text between sub-sections **Dial type** and **Modem connection time** (page 9-14).

>> **Modem Initialization string**
To select this item, either click on it with the left mouse button or use the ALT-D hot key. This item allows the user to enter an additional modem initialization string. This string will be sent by DLP-LINK to the PC modem before dialing. Please consult your modem instruction manual for information on modem initialization commands.<<

DELETIONS

Deletions are listed in the order that they appear in the GEK-105548 text. Chapter titles, section titles and page numbers are given as a quick reference. Text to be deleted is set within the >> << symbols. Locate the deleted text/sections and note the appropriate changes in the GEK-105548 book.

CHAPTER 1 - PRODUCT DESCRIPTION

1-4 Other Features

Password Protection (page 1-14)

- Delete the following references to **ASCII port**:
  1. >>and during ASCII port communications,<< (located in the first paragraph)
  2. >>A single view only password provides ASCII port security.<< (3rd paragraph)
  3. >>and ASCII port<< (last sentence of section)

Remote Communications (page 1-15)

- Delete the following text (second paragraph, page 1-15).

  >> A second DB-25 plug (PL-2) located on the rear of the case is provided for the following:
  - Connecting the DLPI to an IBM PC compatible computer using an ASCII protocol interface.<<

- Delete the last paragraph of this section (bottom of page 1-15).

  >> The third port, PL-2, is also implemented with a separate UART. This port is never disabled and may be used when the other ports are active. The capabilities and use of the ASCII port are described in Chapter 9 - Software. Refer to Chapter 8 - Interface for details on the required cables.<<

Sequence of Events (page 1-16)

- Delete the reference to PL-2 in this section.

CHAPTER 2 - CALCULATION OF SETTINGS

2-2 Scheme-Independent Settings

Communication Port (COMMPORT) [1509] (page 2-11)

- Delete the reference to PL-2 (2nd paragraph, first sentence, page 2-11). This sentence now reads

  " The baud rate setting must match the baud rate of the modem or serial device connected to the RS232 serial ports (PL-1 or the front port) of the system."

- Delete the following sentence (final sentence, 2nd paragraph this section, page 2-11).

  >> The DLP3 setting must match the setting of the ASCII device connected to port

PL-2.<<

CHAPTER 4 - ACCEPTANCE TESTS

4-2 General Relay Tests

Display and Keypad Tests (page 4-7)

- Delete the last sentence of step 8.

CHAPTER 8 - INTERFACE

8-1 Local Man-Machine (MMI) Interface Operation

- Delete the **DASH (-) Key** sub-section (page 8-2).

8-2 ASCII Interface (pages 8-18 to 8-19)

- Delete this entire section, including Figure 8-2.

CHAPTER 9 - SOFTWARE

9-5 DLP-ASCII Interface (pages 9-24 to 9-25)

- Delete this entire section.

FIGURES

The attached figures have undergone minor revisions or are additions. Drawings are attached in the order that they appear in the GEK-105548 book. They are listed below and attached to the end of this document for your convenience.

---

1. Figure 1-6. (0216B3220) Elementary diagram.
2. Figure 1-6. (0216B3221) Elementary diagram.
3. Figure 8-1. (8043811) DLP3 MMI keyboard.
4. Figure 8-1a. Sample printed Fault report.
5. Figure 8-1b. Sample Present Value printout.

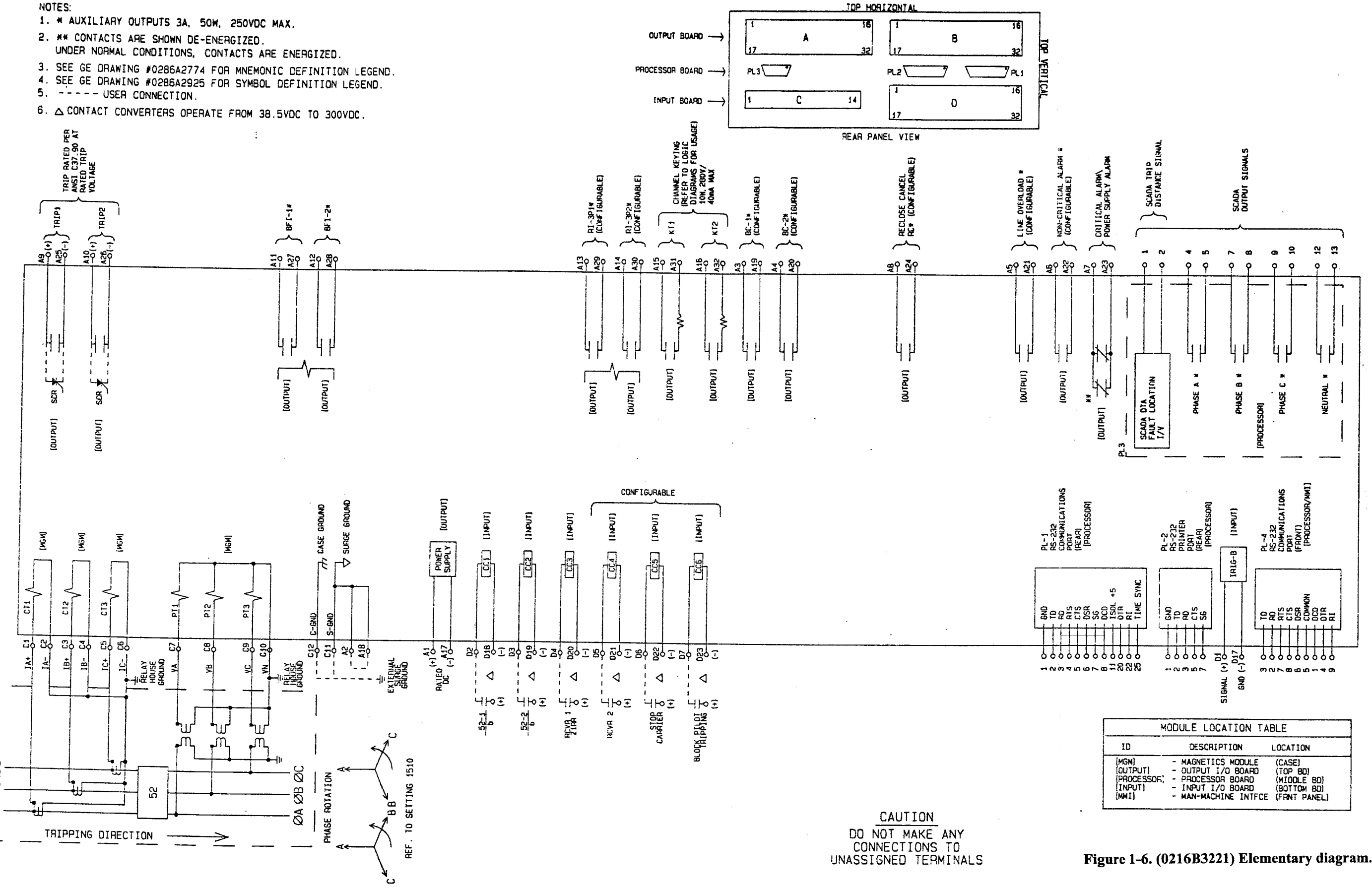
6. Figure 8-1c. Sample Sequence of Events printout.

7. Figure 8-1d. DLP3 Model and Version Number display.

8. Figure 8-1e. (0286A4821) Pin Connections for Cable Connecting Printer to DLP3.

All other descriptions, calculations, testings and drawings shown in GEK-105548 apply equally to the DLP3512KDV0305.

NOTES:
1. * AUXILIARY OUTPUTS 3A, 50W, 250VDC MAX.
2. ** CONTACTS ARE SHOWN DE-ENERGIZED.
   UNDER NORMAL CONDITIONS, CONTACTS ARE ENERGIZED.
3. SEE GE DRAWING #0286A2774 FOR MNEMONIC DEFINITION LEGEND.
4. SEE GE DRAWING #0286A2925 FOR SYMBOL DEFINITION LEGEND.
5. ----- USER CONNECTION.
6. △ CONTACT CONVERTERS OPERATE FROM 38.5VDC TO 300VDC.

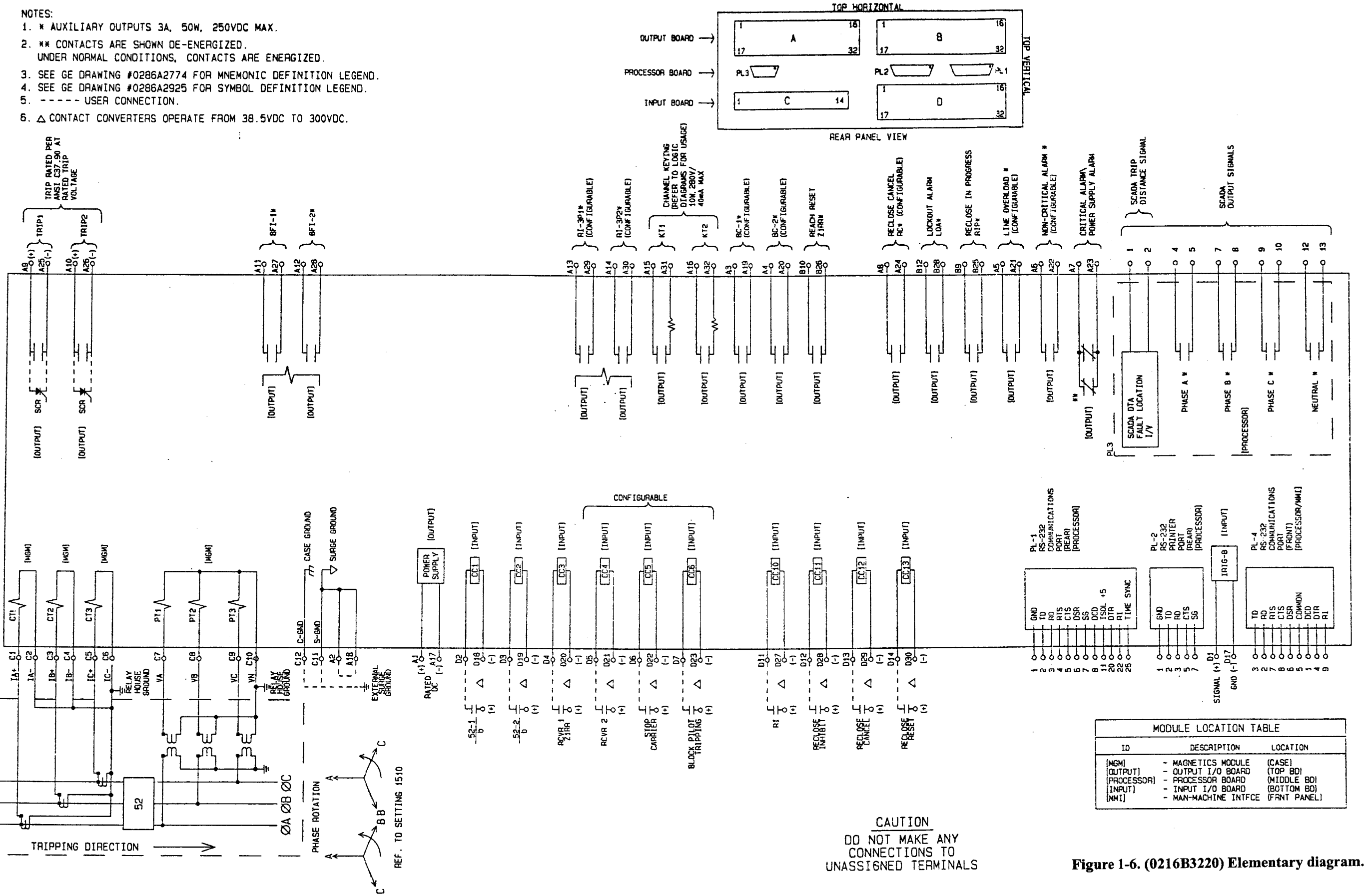


MODULE LOCATION TABLE		
ID	DESCRIPTION	LOCATION
[MGM]	- MAGNETICS MODULE	(CASE)
[OUTPUT]	- OUTPUT I/O BOARD	(TOP BD)
[PROCESSOR]	- PROCESSOR BOARD	(MIDDLE BD)
[INPUT]	- INPUT I/O BOARD	(BOTTOM BD)
[MMI]	- MAN-MACHINE INTFCE	(FRNT PANEL)

CAUTION
DO NOT MAKE ANY CONNECTIONS TO UNASSIGNED TERMINALS

Figure 1-6. (0216B3221) Elementary diagram.

NOTES:
1. * AUXILIARY OUTPUTS 3A, 50W, 250VDC MAX.
2. ** CONTACTS ARE SHOWN DE-ENERGIZED.
   UNDER NORMAL CONDITIONS, CONTACTS ARE ENERGIZED.
3. SEE GE DRAWING #0286A2774 FOR MNEMONIC DEFINITION LEGEND.
4. SEE GE DRAWING #0286A2925 FOR SYMBOL DEFINITION LEGEND.
5. ----- USER CONNECTION.
6. △ CONTACT CONVERTERS OPERATE FROM 38.5VDC TO 300VDC.



MODULE LOCATION TABLE		
ID	DESCRIPTION	LOCATION
[MGM]	- MAGNETICS MODULE	(CASE)
[OUTPUT]	- OUTPUT I/O BOARD	(TOP BD)
[PROCESSOR]	- PROCESSOR BOARD	(MIDDLE BD)
[INPUT]	- INPUT I/O BOARD	(BOTTOM BD)
[MMI]	- MAN-MACHINE INTFCE	(FRNT PANEL)

Figure 1-6. (0216B3220) Elementary diagram.

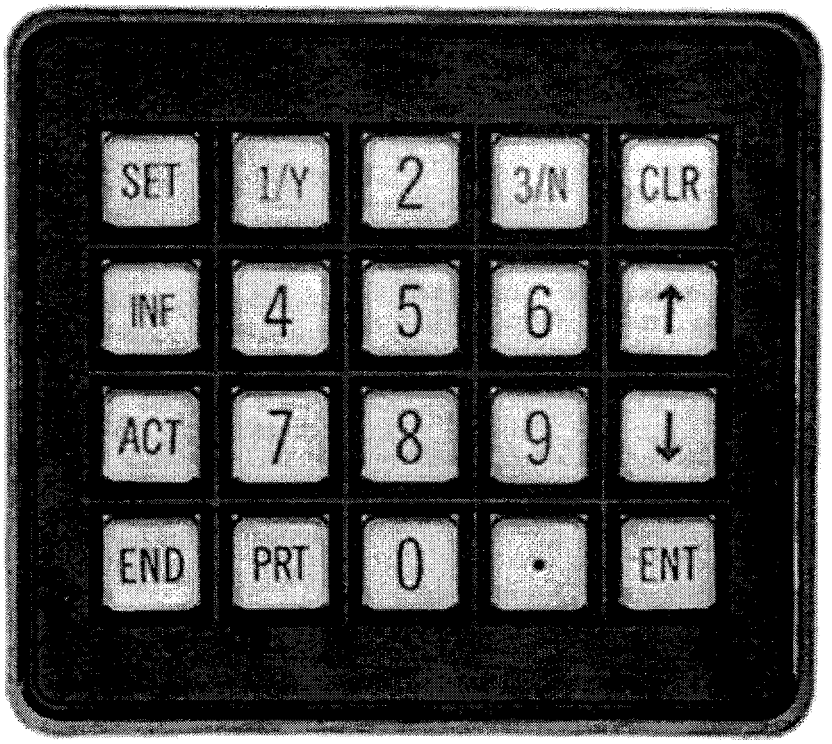


Figure 8-1. (8043811) DLP3 MMI keyboard.

```
-----------------------------------------------------------
                    FAULT REPORT
-----------------------------------------------------------

          UNIT ID: 1234
          TRIP DATE: 07/20/90
          TRIP TIME: 13:01:23.205
          OPERATING TIME: 10 MS
          FAULT TYPE: AG
          TRIP TYPE: Z1
          DISTANCE: 34.3 MI

          PREFAULT IA: 5.61 A
          PREFAULT IB: 5.23 A
          PREFAULT IC: 5.30 A
          PREFAULT IN: 0.51 A

          FAULT VA: 51.2 V
          FAULT VB: 66.2 V
          FAULT VC: 67.3 V

          FAULT IA: 15.34 A
          FAULT IB: 5.12 A
          FAULT IC: 4.96 A
          FAULT IN: 12.13 A

          07/20/90   13:01:23.205
          TRIP SIGNALS ON

          07/20/90        13:01:23.210
          TRIP CIRCUIT #1 ENERGIZED

          07/20/90              13:01:23.210
          TRIP CIRCUIT #2 ENERGIZED

          07/20/90              13:01:23.249
          TRIP SIGNALS RESET

          07/20/90              13:01:23.261
          BREAKER #1 OPEN

          07/20/90              13:01:23.261
          BREAKER #2 OPEN
-----------------------------------------------------------

-----------------------------------------------------------
```

Figure 8–1a. Sample printed Fault report.

```
                    UNIT ID:    1234
                    DATE:       07/12/90
                    TIME:       10:23:22
    IA = xxx.xx A
ANGLE IA = xxx.xx
    IB = xxx.xx A
ANGLE IB = xxx.xx
    IC = xxx.xx A
ANGLE IC = xxx.xx
    IN = xxx.xx A
ANGLE IN = xxx.xx
    VA = xxx.x V
ANGLE VA = xxx.x
    VB = xxx.x V
ANGLE VB = xxx.x
VC = xxx.x V
ANGLE VC = xxx.xx
        Watts = xxxxxx
        Vars  = xxxxxx
        BKR1 = OPEN
        BKR2 = CLOSED
        PLC 1 SIG = ON
        PLC 2 SIG = ON
        PLC 1 STS = OFF
        PLC 2 STS = OFF
```

Note: Currents and voltages are RMS values and are either primary or secondary as the user selected.

Note: Phase angles go from 0°to 180°or –1°to –179° referenced to phase A voltage. VA must be present for this function to operate.

Note: Watts and Vars are primary or secondary.

Note: Signals are reported only for the number of breakers and carrier sets present in the configuration

Figure 8–1b. Sample Present Values printout.

EVENTS
UNIT ID: 1
DATE: 08/16/90
TIME: 04:40:19

08/14/90	00:57:49.783
TRIP SIGNALS RESET	
08/14/90	00:57:11.072
TRIP CIRCUIT #1 ENERGIZED	
08/14/90	00:57:11.069
TRIP SIGNALS ON	
08/13/90	22:07:48.119
TRIP SIGNALS RESET	
08/13/90	22:07:47.574
TRIP CIRCUIT #1 ENERGIZED	
08/13/90	22:07:47/571
TRIP SIGNALS ON	

Figure 8–1c. Sample Sequence of Events printout.

Station Id
Line ID
UNIT ID #
DATE/TIME (Hr:Min:Sec)
MODEL NUMBER = AAAAAAAAA
PROM VERSION = AAAAAAAAA

Figure 8–1d. DLP3 Model and Version Number display.

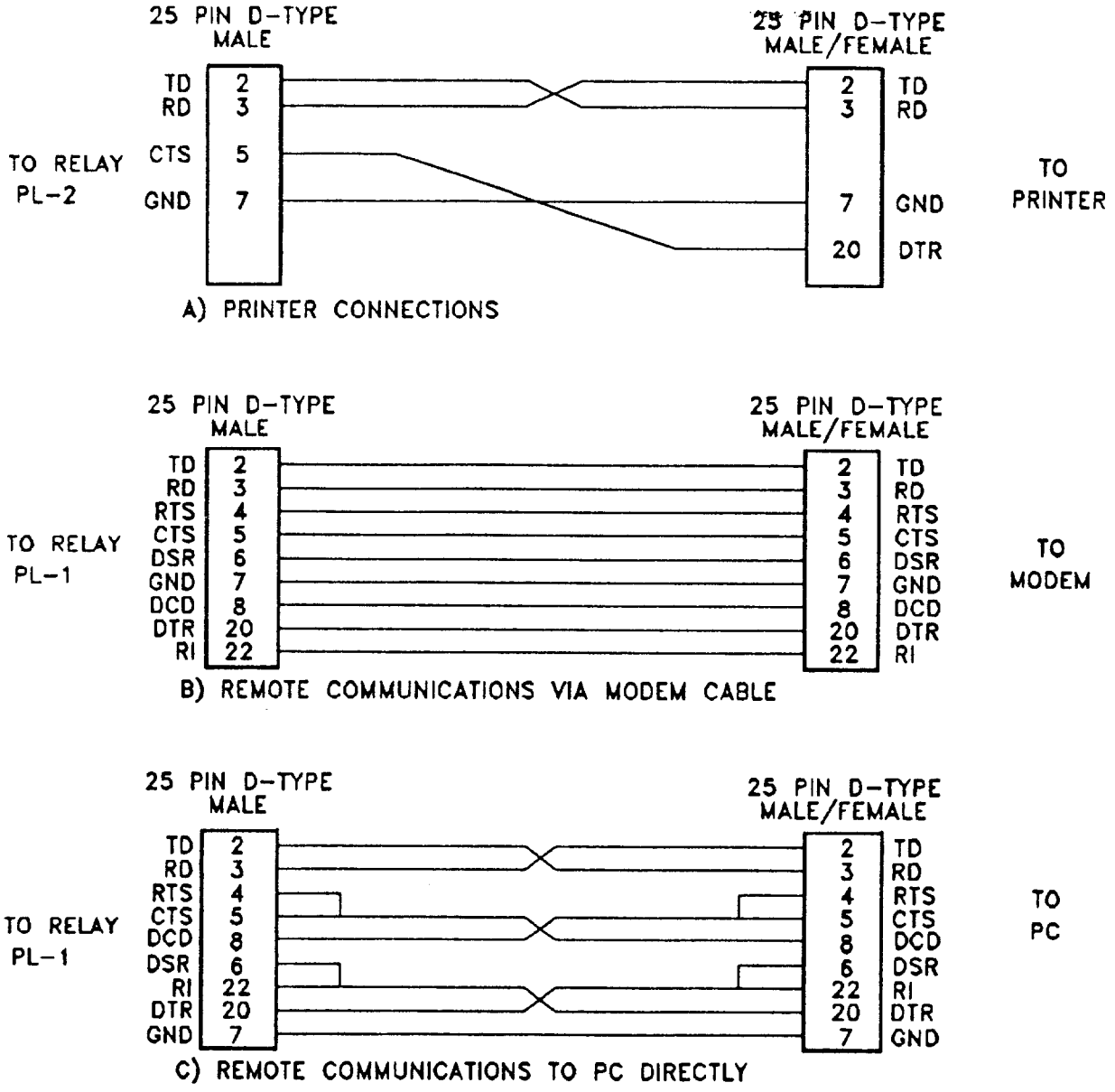


Figure 8-1e. (0286A4821) Pin Connections for Cable Connecting Printer to DLP3.

Document Coordination Guide

This Document Coordination Guide is designed to guide the reader through the GEK-105548 and GEK-106207 books. Reference this sheet while reading the GEK-105548 text. **When a section is specified on this sheet, refer to the GEK-106207 book for more details.**

SUBTITUTIONS	INSERTS	DELETIONS
	1-4 Other Features	1-4 Other Features
		2-2 Scheme-Independent Settings
3-1 Case Assembly		
3-2 Electrical Connections and Internal Wiring		
	4-2 General Relay Tests	4-2 General Relay Tests
	5-2 General Relay Tests	
8-1 Local Man-Machine (MMI) Interface Operation	8-1* Local Man-Machine (MMI) Interface Operation	8-1 Local Man-Machine (MMI) Interface Operation
8-2 ASCII Interface	8-2 Printer Interface	8-2 ASCII Interface
	9-1 DLP-Link Software	
		9-5 DLP-ASCII Interface

*** Indicates a large number of changes in section.**