



INSTRUCTIONS

GEK-86076A
Supersedes GEK-86076
Insert Booklet GEK-86044C

SLS1500B/1600B SERIES STAND-ALONE MODULAR DISTANCE RELAY FOR TRANSMISSION LINE PROTECTION

INTRODUCTION

This instruction book, together with insert booklet GEK-86044C, forms the instructions for the SLS1500B/1600B series relays.

DESCRIPTION

The SLS1500B/1600B stand-alone modular distance relays are similar to the SLS1000B/1100B modular systems except they do not include the recloser. Contact converter input ports and auxiliary relay output contacts are provided for interface with an external recloser.

Models SLS1501B, 1502B, and 1503B consist of one case with a vertical dimension of four rack units. All other models of the SLS1500B/1600B series consist of two such cases in order to house the optional features.

The various available models are listed in Fig. 3A of this supplementary booklet. The numbers have been assigned so that the 1500B models have the same ratings and include the same optional features as their corresponding 1000B models (Fig. 75A of GEK-86044C). The 1600B models are the same as the 1500B models except they include the directional comparison blocking (and reverse zone five with timer) option. Therefore, the 1600Bs are to the 1500Bs as the 1100Bs are to the 1000Bs.

These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the General Electric Company.

To the extent required the products described herein meet applicable ANSI, IEEE and NEMA standards; but no such assurance is given with respect to local codes and ordinances because they vary greatly.

NOTES REGARDING TEXT OF GEK-86044C

- 1) Operating Principles: Disregard the section on the recloser on pages 9 and 10.
- 2) Recloser Logic: This section does not pertain to the SLS1500B/1600B.
- 3) Description of Hardware:

The following modules are not included in the SLS1500B/1600B

RLM101
ROM101
RTM101
MGM200 series
MGM300 series

- 4) Settings Procedures: Disregard the section on recloser settings beginning on page 71.
- 5) Testing:
 - a) Dielectric Tests: Refer to Fig. 3 of this supplementary booklet to determine the proper circuit grouping.
 - b) Acceptance Tests: Tests A through M (pages 102 through 122) may be conducted on the SLS1500B/1600B, with the exception of test J (recloser tests). The zone one extension test described below should be conducted in place of test J7. In test K3 (page 120), the channel trip will be a single pole trip (phase A).
 - c) Periodic Tests: The notes in item (b) above also pertain to the post-installation periodic tests.
- 6) Specifications: Disregard all references to the reclosing features.
- 7) Installation: Use Fig. 3 of this supplementary booklet to make external connections to the SLS1500B/1600B. Models of the 1500B series require one interconnection cable (PL-1) between the two cases except models 1501B, 1502B and 1503B, which consist of only one case and therefore require no cable. Models of the 1600B series require all three interconnection cables.

Zone One Extension Test (Acceptance)

Connect the relay according to the test circuit in Fig 1 of this supplement. Remove the DTM101 module and set the LOGIC switches so that D only is closed. Reinsert the module. Make the following reach and angle settings:

<u>Switch</u>	<u>Location</u>	<u>Setting</u>
Zp (1 amp relay)	DSM101	75 ohms
(5 amp relay)	"	15 ohms
I (1 amp relay)	DIM101	35 ohms
(5 amp relay)	"	7 ohms
I _X	DVM101	1.5
ØZ ₁ , ØZ ₀	DFM101, 102	75 degrees
K ₀	DIM101	4

Apply power and adjust V_T to 20 volts. Adjust the current control so that $I_T = 1.2$ amperes (five amp relay) or 0.24 amperes (one amp relay) while SW1 is closed. The current level is critical in this test. Reset the LED targets via the pushbutton on DLM101.

With SW2 open, apply a pulse of test current by momentarily depressing SW1 and verify a single pole zone one trip (phase A). Reset the LED targets.

Now close SW2 and again apply a pulse of test current. This time verify that the relay does not trip. The reach has been "pulled-back" by the closure of SW2. The yellow ØA phase selector LED, however, should blink as current is momentarily applied.

De-energize the test circuit, remove DTM101, and return the system to the stepped distance scheme by opening LOGIC switch D. Reinsert the module, and return the zone one reach to ten ohms (five amp relay) or 50 ohms (one amp relay) by adjusting the I switches on DIM101.

Zone One Extension Test (Periodic)

Bench-top Test - Fig. 1 of this booklet
 Post-Installation Test - Fig. 2 of this booklet.

NOTES:

- 1) Remove DOM201 module
- 2) Insert blank card extender in right hand position of DOM201.

NOTES REGARDING ILLUSTRATIONS IN GEK-86044C

- 1) The following figures do not pertain to the SLS1500B/1600B:

9	36
23	37
24	39
25	63
35	64
82 (A through F)	

- 2) Use Fig. 3 (A through E) of this supplementary booklet in place of Fig. 82 of GEK-86044C.
- 3) The following notes apply to the distance relay logic diagram (Fig. 5 of GEK-86044C).
 - a) The oval shaped symbols denote signals which originate in the SLS recloser and are sent to the distance relay through the interconnection cable(s). The arrow shaped symbols denote signals which originate in the distance relay and are sent to the recloser through the interconnection cable(s). Since the SLS1500B/1600B models do not contain a recloser, the following interfaces must be made for use with an external recloser and/or other external equipment.

<u>Function</u>	<u>Input/Output</u>		<u>Interface Component</u>	<u>Terminals</u>
One Pole Open	Input		CC6	AA7-AA8
Trip Directly	"		None	-
Manual Close	"	Line		
Close onto a Fault	"	Pickup	CC3	AA1-AA2
Pull Back	"			
Extended Zone 1	"		CC5	AA5-AA6
3 Pole Trip Enable	"		CC4	AA3-AA4
Enable Reclosing	Output	Auxiliary Relay		AB7-AB8
RI-ØA	"	3rd Contact on Tele. Relay		BA1-BA2
RI-ØB	"		"	BA3-BA4
RI-ØC	"		"	BA5-BA6

LIST OF ILLUSTRATIONS

Figure

- Fig. 1 (0285A8108-0) Test Circuit for Zone One Extension Tests
- Fig. 2 (0285A8107-0) Test Circuit for Post-Installation Zone One Extension Tests
- Fig. 3A (0138B7775, Sh. 1, Rev. 1) Elementary Diagram - General Information
- Fig. 3B (0138B7775, Sh. 2, Rev. 5) Elementary Diagram - AC Connections
- Fig. 3C (0138B7775, Sh. 3, Rev. 1) Elementary Diagram - DC Connections
- Fig. 3D (0138B7775, Sh. 4, Rev. 0) Elementary Diagram - Alarm Indication and Channel Connections
- Fig. 3E (0138B7775, Sh. 5, Rev. 1) Elementary Diagram - Contact Converters and Auxiliary Contacts

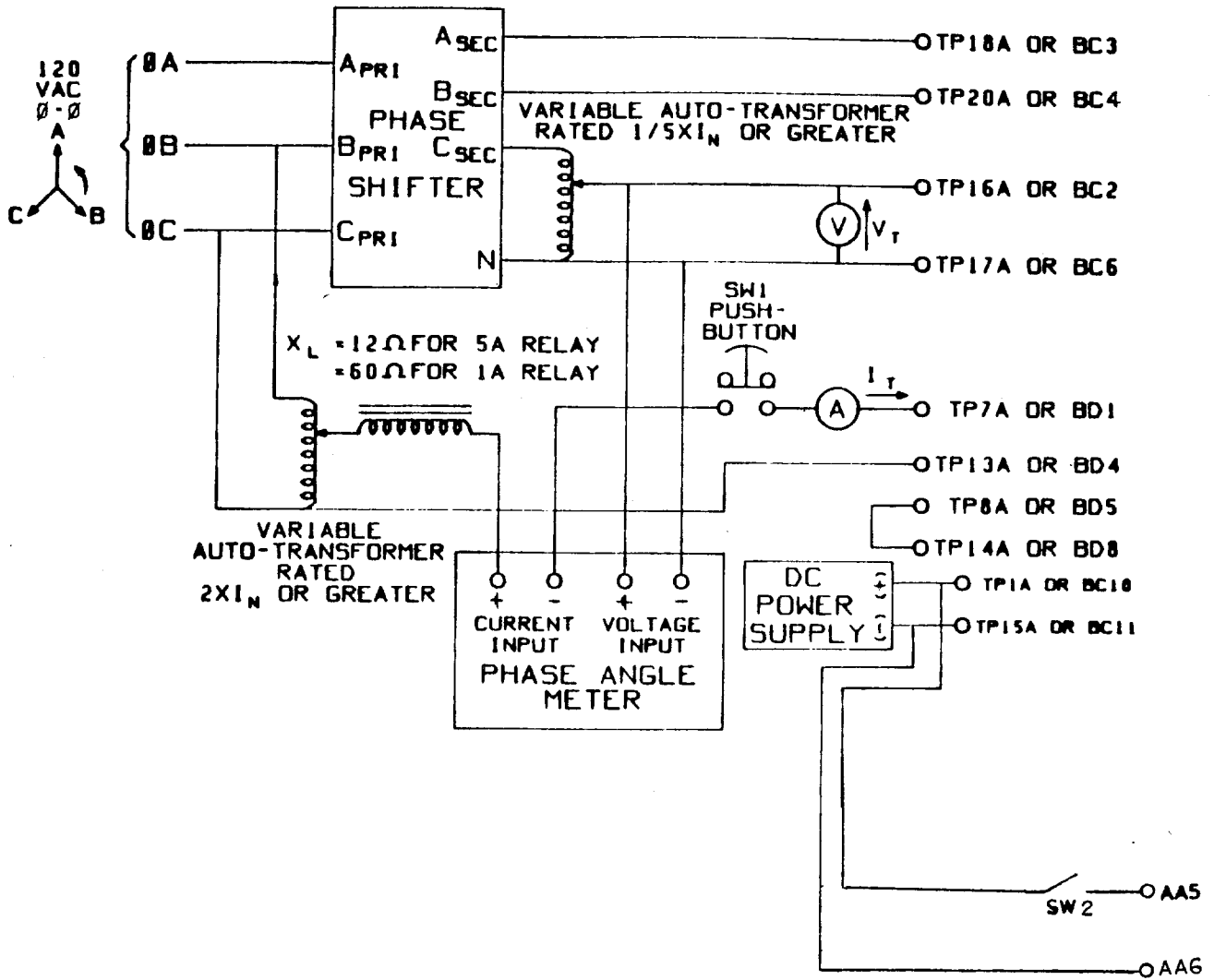


Fig. 1 (0285A8108-0) Test Circuit for Zone One Extension Tests

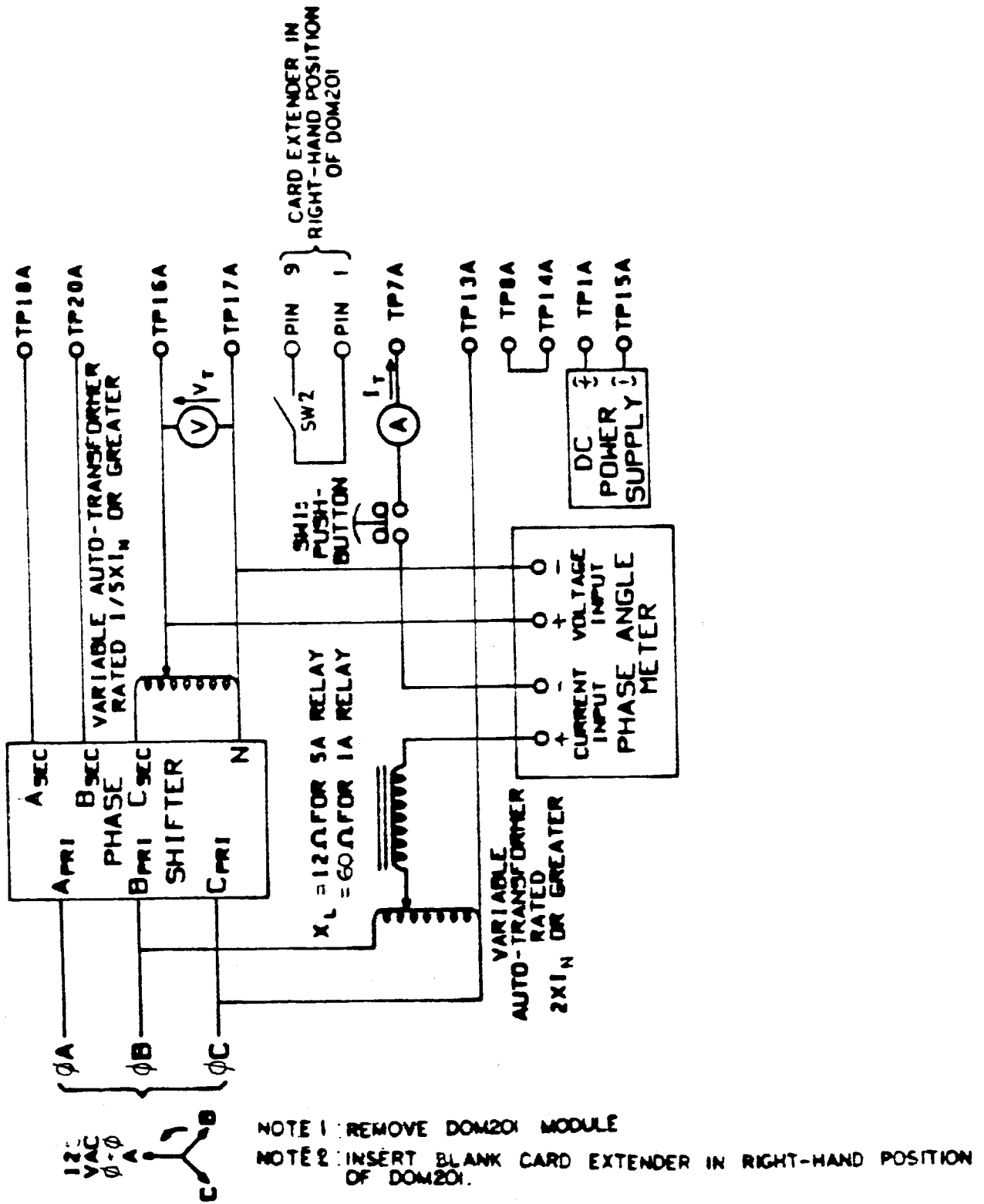


Fig. 2 (0285A8107-0) Test Circuit for Post-Installation Zone One Extension Tests

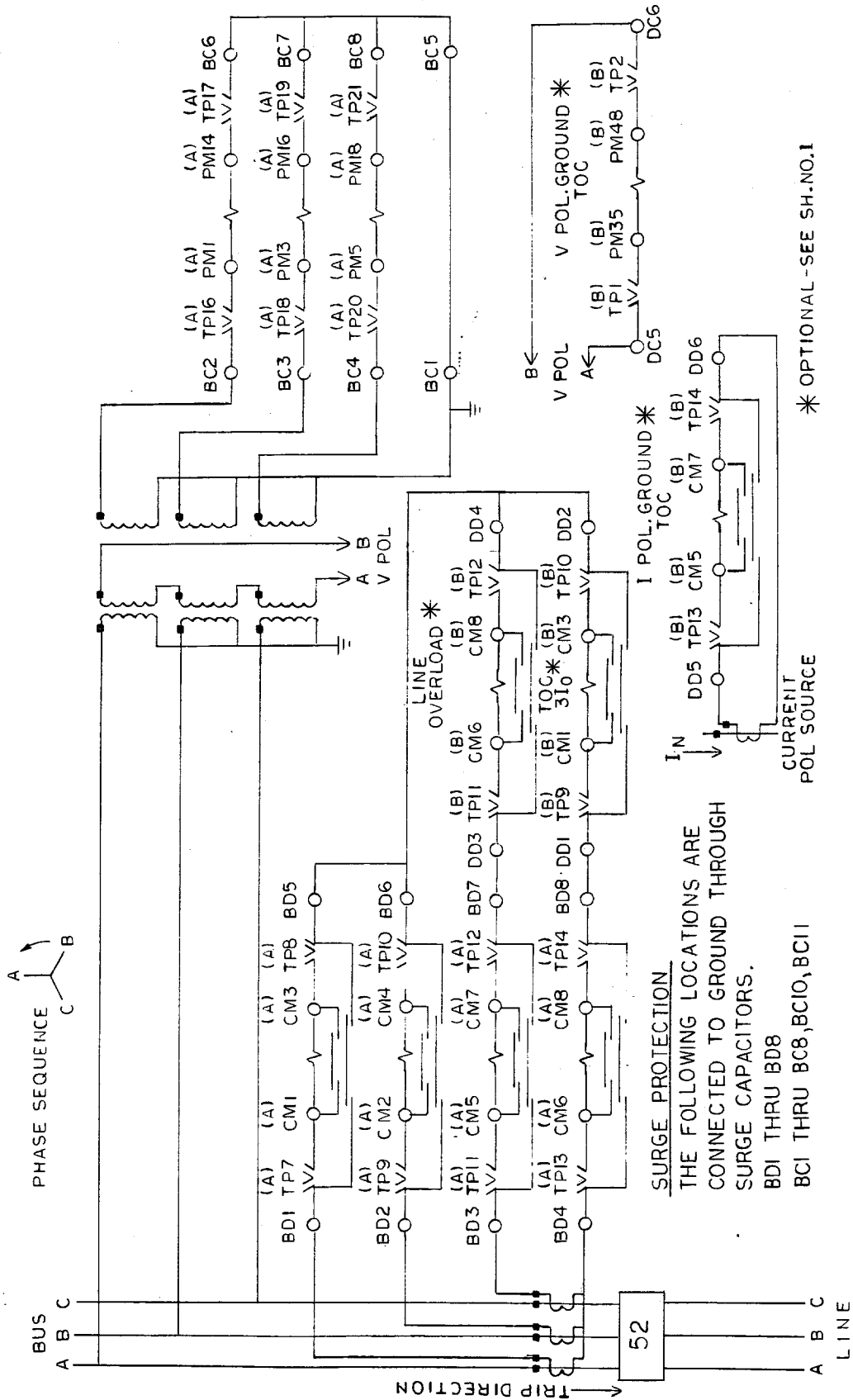


Fig. 3B (0138B7775, Sh. 2, Rev. 5) Elementary Diagram - AC Connections

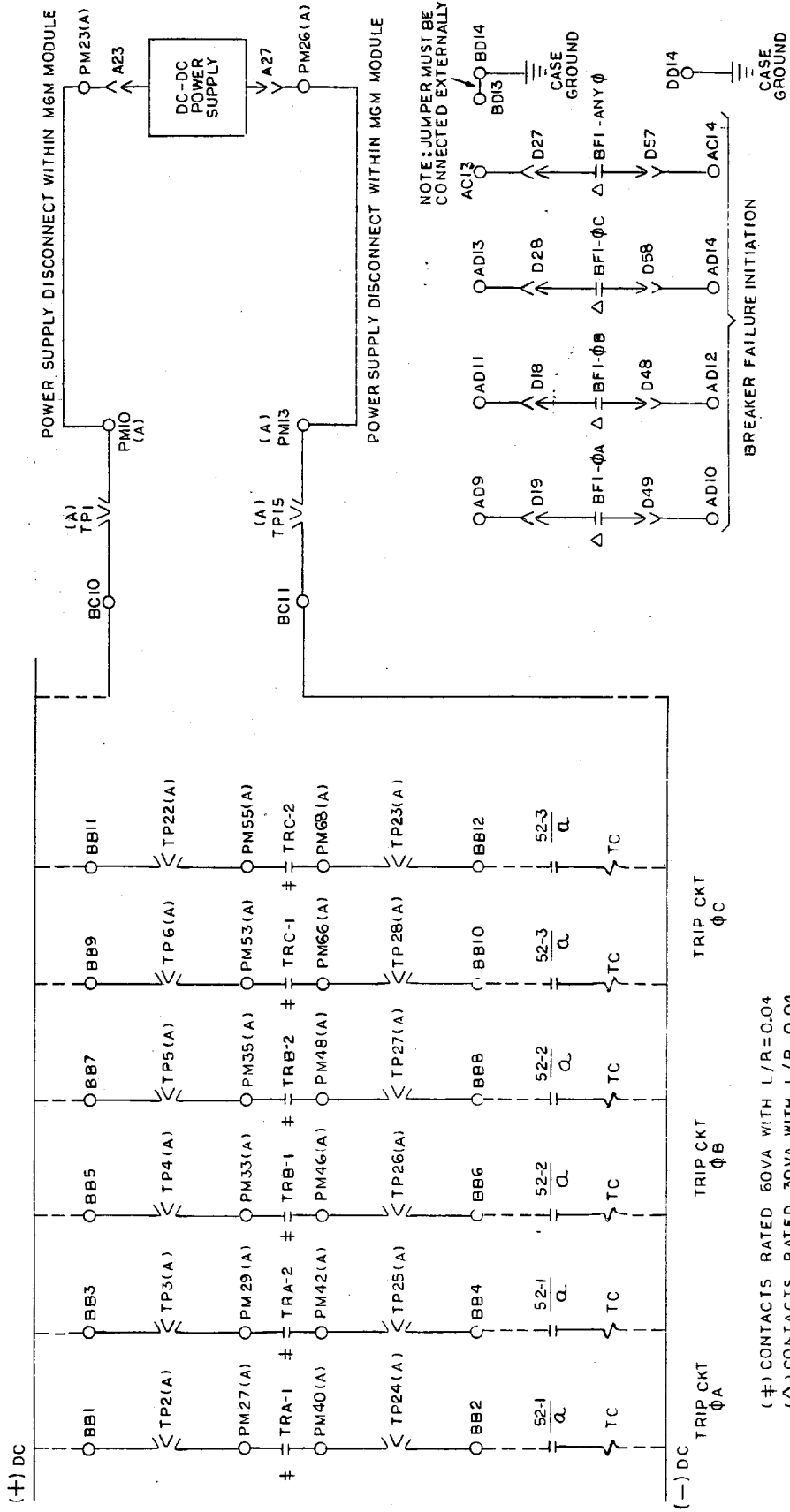
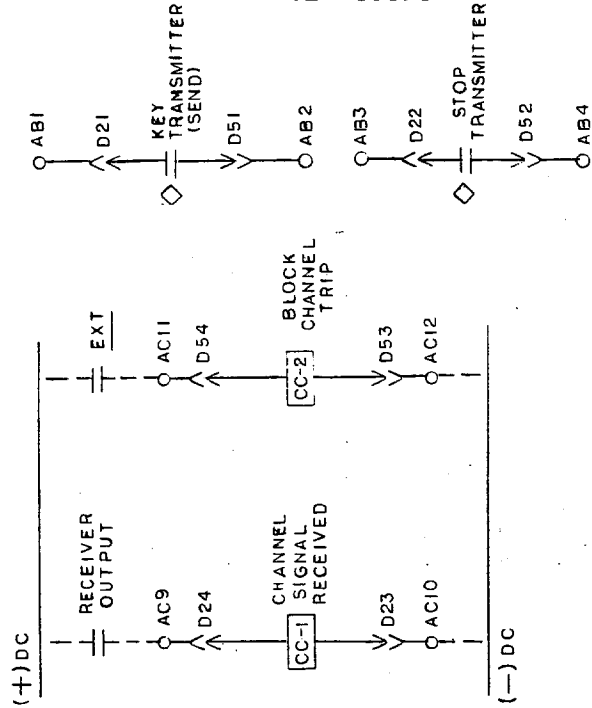


Fig. 3C (0138B7775, Sh. 3, Rev. 2) Elementary Diagram - DC Connections

CHANNEL CONTROL



(#) CONTACTS RATED 60VA WITH L/R = 0.04
 (Δ) CONTACTS RATED 30VA WITH L/R = 0.04
 (◇) CONTACTS RATED 10 WATTS

ALARM AND/OR INDICATION

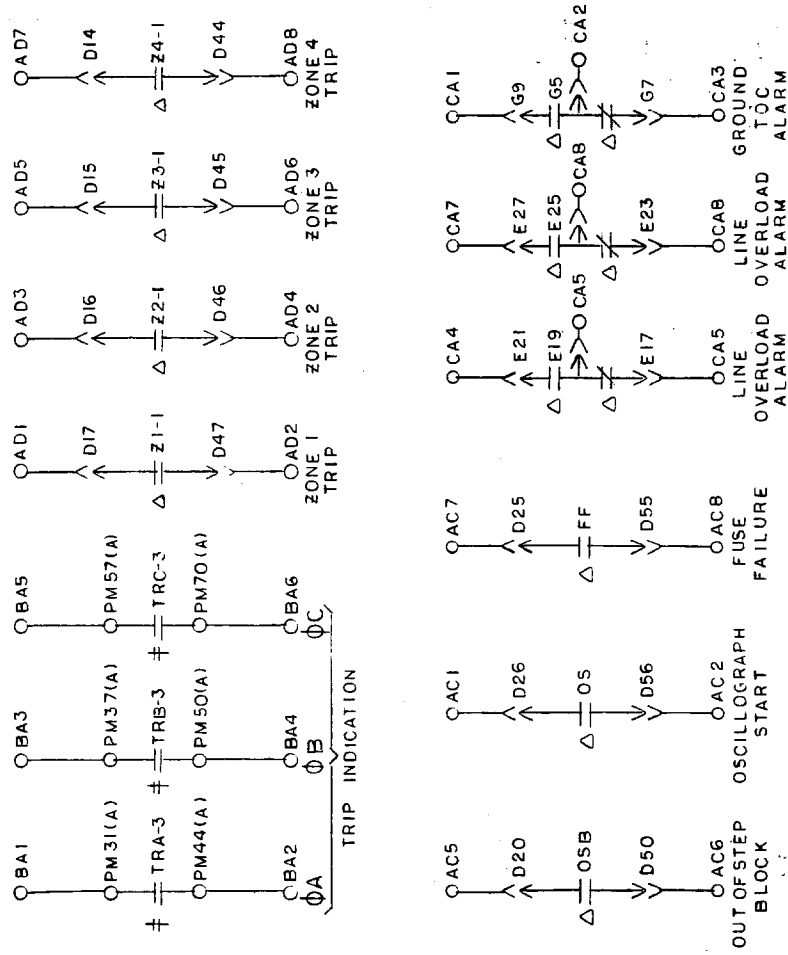


Fig. 3D (0138B7775, Sh. 4, Rev. 1) Elementary Diagram - Alarm Indication and Channel Connections

(Δ) CONTACTS RATED 30 VA
WITH L/R = 0.04

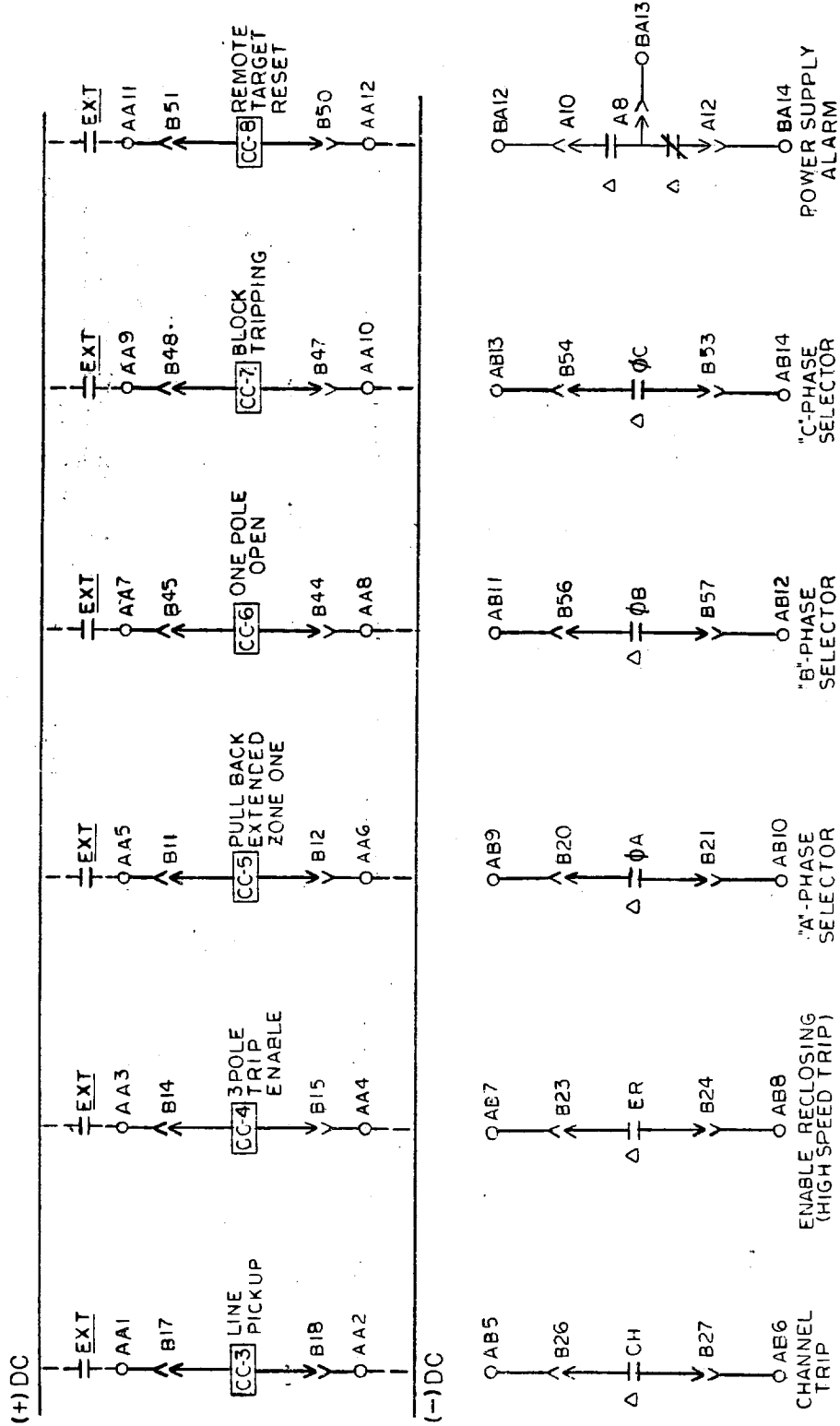


Fig. 3E (0138B7775, Sh. 5, Rev. 2) Elementary Diagram - Contact Converters and Auxiliary Contacts

