INSTRUCTIONS

DLP3***DC0408

DLP WITH MODIFIED CS22/ CS28 BLOCKING INTERFACE

Introduction

These instructions, GEK 105583 together with GEK 100624C, constitute the complete instructions for the DLP3***DC0408.

Product Description

This relay has the following differences from the standard relay described in GEK 100624C :

Hardware Modification

1. Reverse Sense Carrier Start Contact

The Carrier start (KT-1) contact is normally closed (NC) instead of normally open (NO). In the Product Description section of GEK 100624C, replace the Elementary Diagram with the attached drawing (Figure 1).

Firmware Modifications (Firmware Version: VA02.530CC)

2. Re-defined Line Overload (CONOUT #4) Contact
The Line Overload contact has been redefined to operate solely from the Critical Alarm signal in the DLP and is no longer configurable. In normal operating conditions, the Critical Alarm signal will energize the Line Overload relay and the contact will be closed.

(contd.)

These instructions do not purport to cover all details or variations in equipment nor 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.

If the DLP detects a critical failure, the Critical Alarm signal will reset to a logic zero, and the Line Overload contact will open. If the dc power to the relay is removed, the Line Overload contact will open; if the dc voltage to the output relays fails, the Line Overload contact will open; if the dc voltage to the microprocessors fails, the Critical Alarm signal will drop to a logic zero, and the Line Overload contact will open. Note that while the Line Overload output relay has been redefined, the Line Overload function can still be used, but must be redirected to another configurable output.

C. Three new Blocking schemes with modified reciever logic

Three new blocking schemes have been added to the DLP scheme selection. The new schemes, BLK4, BLK5 and BLK6 are the "Untripping" blocking schemes for use with the CS22 channel. Figure 1-4 in GEK 100624 is the basic logic diagram for the six available Blocking schemes. The ground carrier start logic for the new BLK4 logic is the same as for the standard BLK1 scheme, that for the new BLK5 scheme is the same as for the standard BLK2 scheme and that for the new BLK6 logic is the same as for the standard BLK3 scheme.. Figures 2-a, 2-b, and 2-c (replacing Figures 1-4a, 1-4b and 1-4c in GEK 100624) show the ground carrier start options for the six available Blocking schemes, the six Blocking schemes each use a different logic for starting carrier for groundfaults. Ground-distance,ground -directional-overcurrent, or both functions acting in parallel, may be selected for ground-fault protection. Ground-distance and ground-directional-overcurrent each have separate trip and block functions as well as separate transient blocking circuits. The BLK1 and BLK4 schemes use the IPB function ANDed with the NB function to start carrier in the GDOC or MGDOC schemes. The BLK2, BLK3, BLK5 and BLK6 schemes use a non-directional carrier start function. BLK2 and BLK5 use the detector (FD) function; BLK3 and BLK6 use the IPB function. In the BLK3 and BLK6 schemes, the IPB function operates on the zero sequence current without positive sequence current restraint; in the BLK1 and the BLK4 schemes, the IPB function operates on zero sequence current with positive sequence current restraint.

The receiver logic for BLK4, BLK5 and BLK6 has been modified to remove NOT 3 input from AND-407 and replace OR-21 with an AND for three terminal line applications. This will allow the schemes to be applied on three terminal lines with each receiver connected to its own contact converter. the standard DLP blocking schemes BLK1, BLK2 and BLK3 may be used with the CS28 channel. Figure 3-a and Figure 3-b show the receiver logic diagram for the six blocking schjemes.

D. NT Supervision of Over-reaching Zones (Zone 2 and Zone 3)

The DLP logic has been modified such that the negative sequence trip directional function (NT) supervises the operation of the forward looking overreaching ground distance functions (Zone 2 and Zone 3). Zone 4 is not supervised by a directional unit. This modification is intended to preclude any operation of the ground distance tripping functions for reverse LLG faults. Supervision of Zone 1 is not required because the reach settings of Zone 1 will never allow it to operate for a reverse LLG fault.

Calculation of Settings

SCHEME SELECTION, SCHEMESEL

Select Scheme, SELSCM (1201)

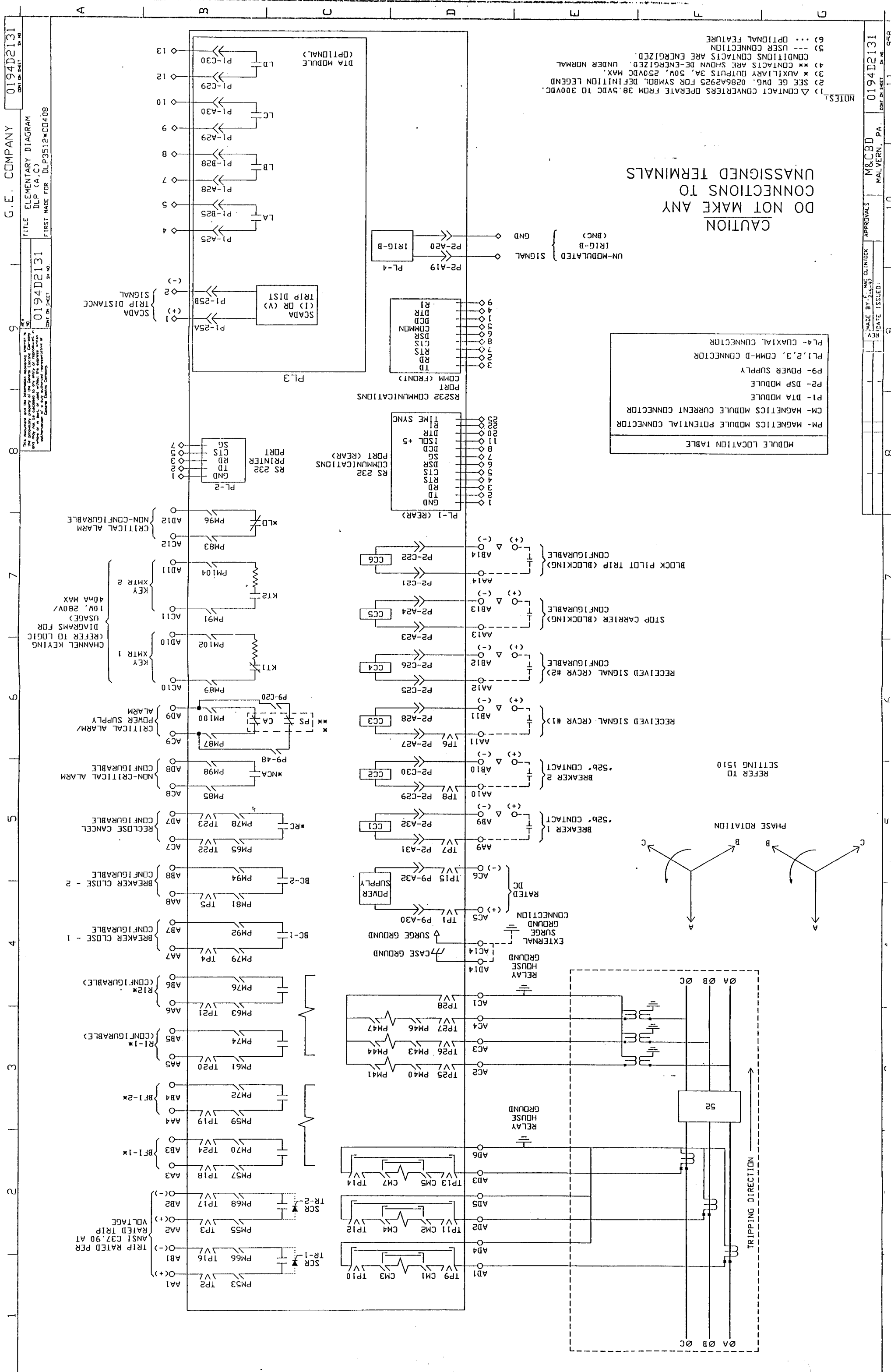| SETTING VALUE	MNEMONIC	DESCRIPTION
0	STEPDST	Step Distance
1	POTT	Permissive Over-reaching Transfer Trip
2	PUTT	Permissive Under-reaching Transfer Trip
3	HYBRID	Hybrid
4	BLK1	Standard Blocking scheme with Directional carrier start using IPB with positive sequence current restraint.
5	ZN1EXT	Zone 1 Extension
6	BLK2	Standard Blocking scheme with non-directional carrier start using the fault detector
7	BLK3	Standard Blocking scheme with non-directional carrier start using IPB without positive sequence current restraint
8	BLK4	Same as BLK1 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.
9	BLK5	Same as BLK2 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.
10	BLK6	Same as BLK3 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.

Figure 1 (0194D2131) DLP3512DC0408 Elementary diagram

Figure 2 (a), 2(b) , 2(c) (0358A1411 Sh. 1) Ground Carrier Start Options for the Blocking Schemes

Figure 3(a), 3(b) (0358A1411 Sh-2) Reciever Logic for the Blocking Scemes

G.E. COMPANY

TITLE ELEMENTARY DIAGRAM
DLP (A,C)

FIRST MADE FOR DLP3512*C0408

0194D2131

NOTES:
1) ▽ CONTACT CONVERTERS OPERATE FROM 38.5VDC TO 300VDC.
2) SEE GE DWG. 0286A9595 FOR SYMBOL DEFINITION LEGEND
3) * AUXILIARY OUTPUTS 3A, 50W, 250VDC MAX.
   ** AUXILIARY OUTPUTS 3A, 50W, 250VDC MAX.
4) ** CONTACTS ARE SHOWN DE-ENERGIZED.
   CONDITIONS CONTACTS ARE ENERGIZED.
   UNDER NORMAL
5) --- USER CONNECTION
6) ••• OPTIONAL FEATURE

CAUTION
DO NOT MAKE ANY
CONNECTIONS TO
UNASSIGNED TERMINALS

MODULE LOCATION TABLE

PM- MAGNETICS MODULE POTENTIAL CONNECTOR
CM- MAGNETICS MODULE CURRENT CONNECTOR
P1- DTA MODULE
P2- DSP MODULE
P9- POWER SUPPLY
PL1,2,3 COMM-D CONNECTOR
PL4- COAXIAL CONNECTOR

DTA MODULE (OPTIONAL)
P1-C30 LD 13
P1-C29 12
P1-A30 LC 10
P1-A29 9
P1-B28 LB 8
P1-A28 7
P1-B25 LA 5
P1-A25 4

SCADA
TRIP DIST
P1-25B SIGNAL (-) 2
P1-25A TRIP DISTANCE (+) 1
SCADA (I) OR (V)

IRIG-B
P2-A20 GND
P2-A19 SIGNAL
IRIG-B (BNC)
UN-MODULATED
PL-4

RS232 COMMUNICATIONS
PORT (FRONT)
PL3
TD 3
RD 2
RTS 7
CTS 8
DSR 6
COMMON 5
DCD 1
DTR 4
RI 9

PRINTER PORT
PL-2
RS 232
GND 1
TD 2
RD 3
CTS 5
SG 7

RS232 COMMUNICATIONS
PORT (REAR)
PL-1 (REAR)
GND 1
TD 2
RD 3
RTS 4
CTS 5
DSR 6
SG 7
DCD 8
ISDL +5 11
DTR 20
RI 22
TIME SYNC 25

CRITICAL ALARM { AD12 / AC12 } NON-CONFIGURABLE
PM96 LD*
PM83

KEY XMTR 2 { AD11 / AC11 }
PM104 K12
PM91

CHANNEL KEYING
(REFER TO LOGIC DIAGRAMS FOR USAGE)
10W, 280V/ 40mA MAX
KEY XMTR 1 { AD10 / AC10 }
PM102 K11
PM89

CRITICAL ALARM/ POWER SUPPLY ALARM { AD9 / AC9 }
P9-C20 PM100 CA PS
P9-48 PM87

NON-CRITICAL ALARM { AD8 / AC8 } CONFIGURABLE
PM98 NCA*
PM85

RECLOSE CANCEL { AD7 / AC7 } CONFIGURABLE
TP23 PM78 RC*
TP22 PM65

BREAKER CLOSE - 2 { AB8 / AB8 } CONFIGURABLE
TP5 PM94 BC-2
PM81

BREAKER CLOSE - 1 { AB7 / AA7 } CONFIGURABLE
TP4 PM92 BC-1
TP4 PM79

RI2* { AB6 / AA6 } (CONFIGURABLE)
PM76
TP21 PM63

RI-1* { AB5 / AA5 } (CONFIGURABLE)
PM74
TP20 PM61

BFI-2* { AB4 / AA4 }
PM72
TP19 PM59

BFI-1* { AB3 / AA3 }
TP24 PM70
TP18 PM57

RATED TRIP VOLTAGE
TRIP RATED PER ANSI C37.90 AT RATED TRIP
{ AB2 (-) / AA2 (+) }
TP17 PM68 SCR TR-2
TP3 PM55

{ AB1 (-) / AA1 (+) }
TP16 PM66 SCR TR-1
TP2 PM53

PHASE ROTATION

BLOCK PILOT TRIP (BLOCKING) CONFIGURABLE
AB14 (-) / AA14 (+)
P2-C22 CC6
P2-C21

STOP CARRIER (BLOCKING) CONFIGURABLE
AB13 (-) / AA13 (+)
P2-A24 CC5
P2-A23

RECEIVED SIGNAL (RCVR #2) CONFIGURABLE
AB12 (-) / AA12 (+)
P2-C26 CC4
P2-C25

RECEIVED SIGNAL (RCVR #1) CONFIGURABLE
AB11 (-) / AA11 (+)
P2-A28 CC3
P2-A27 TP6

BREAKER 2 .52b. CONTACT
AB10 (-) / AA10 (+)
P2-C30 CC2
P2-C29 TP8

BREAKER 1 .52b. CONTACT
AB9 (-) / AA9 (+)
P2-A32 CC1
P2-A31 TP7

REFER TO SETTING 1510

RATED DC
AC6 (-)
1P15 P9-C32 POWER SUPPLY
AC5 (+)
1P1 P9-A30

CASE GROUND EXTERNAL SURGE GROUND
AC14 / AD14
SURGE GROUND CONNECTION

RELAY HOUSE GROUND
AC1 TP2B
AC4 PM47 PM46 TP27
AC3 PM43 PM44 TP26
AC2 PM40 PM41 TP25

RELAY HOUSE GROUND

AD6 CM5 CM6 TP13 TP14
AD3
AD5 CM4 TP11 TP12
AD4
AD2 CM1 CM2 TP9 TP10
AD1 CM3 TP10

52

TRIPPING DIRECTION

ØA ØB ØC

GENERAL ELECTRIC (AC)

0358A1411
CONT'D ON SHEET 2   SHEET NO. 1

REV NO.

0358A1411
CONT'D ON SHEET 2   SHEET NO.1

TITLE

LOGIC

FIRST MADE FOR

NB

IPB

NT

TL24

25/30

BLK1, BLK4

508

FD

NT

TL24

25/30

BLK2, BLK5

508

IPB

NT

TL24

25/30

BLK3, BLK6

508

MADE BY: F. MAC CLINTOCK
2-6-97

DATE ISSUED:

APPROVALS

POWER MGMT.
MALVERN, PA.

0358A1411
CONT'D ON SHEET 2 SHEET NO.1

CODE
812

GENERAL ELECTRIC (AC)

0358A1411

CONT'D ON SHEET F   SHEET NO. 2

REV NO.

0358A1411

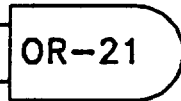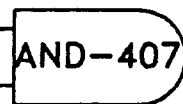CONT'D ON SHEET F   SHEET NO. 2

TITLE

LOGIC

FIRST MADE FOR

RCVR1

AND-21

AND-407
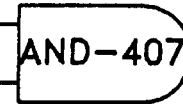
TRIP

RCVR2

MODIFIED RECEIVER LOGIC FOR CS22 APPLICATIONS (BLK4, BLK5 AND BLK6 SCHEMES)

RCVR1

OR-21

3

AND-407

TRIP

RCVR2

STANDARD RECEIVER LOGIC FOR CS28 (BLK1, BLK2 AND BLK3 SCHEMES)

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APPROVALS

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0358A1411

CONT'D ON SHEET F   SHEET NO. 2

CODE 812