INSTRUCTIONS

DLP3****C0001

DLP WITH PROGRAMMABLE OUT-OF-STEP FUNCTION AND ADDITIONAL CONFIGURABLE OUTPUT INPUTS

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

INTRODUCTION

These instructions, GEK-100659, together with GEK-100623, constitute the complete instructions for the DLP3***AC0001 and DLP3***CC0001.

DESCRIPTION

This relay has the following differences from the standard DLP relay described in GEK-100623.

Each zone for an out-of-step condition can be set to trip or for blocking. The out-of-step pickup timer has been changed to a setting with a range of 30 to 80 milliseconds. The pilot signal and carrier-start signals have been added to the list of inputs to the configurable outputs.

Attachments (if you place these sheets in their appropriate places in GEK-100623, be sure to keep the original pages, for the information on their reverse sides).

1. In the CALCULATION OF SETTINGS section, change setting 803 in Table CS-1 to reflect the zone programmability for the Out-of-Step condition. Add the setting, 804 OSBPUT, for the Out-of-Step pickup timer.
2. In the PRODUCT DESCRIPTION section, update the Out-of-Step logic diagram to show TL1 as programmable from 30 to 80 ms for the pickup time of the first slip cycle.
3. In INTERFACE, change setting 803 to reflect the zone programmability for the Out-of-Step condition. Add the setting, 804 OSBPUT, for the Out-of-Step pickup timer. Add two new items to the list of inputs for the configurable outputs.

Three phase TOC functions have been added. These functions use the phase currents IA, IB, and IC. These functions are implemented in the same manner as to the ground TOC, except for the range. All three have common pickup and time curve settings. One of four curves may be selected: Inverse, Very Inverse, Extremely Inverse, and Definite time. The curve shapes are the same as for the Ground TOC. There is no option for a custom curve. Optional directional control is provided by the over-reaching Zone 2 phase distance units. Operation of any of the Zone 2 phase mho functions will permit all of the phase TOC functions to time. Optional directional supervision has also been added to the instantaneous phase over current function, PH4.

CALCULATION OF SETTINGS

Settings that have been modified from GEK-100623 are indicated in *Italics*.

TABLE 2–1: SETTINGS AND RANGES

SETTING NO.	SETTING	5 A UNIT RANGE	1 A UNIT RANGE	UNITS	DEFAULT (5A / 1A)
0801	SELPTZ	0 [Zone 2], 1 [Zone 3], 2 [Zone 4]		N/A	0 [Zone 2]
0802	MOBANG	0 to 130°		degrees	70°
0803	*SELOSB*	*0 [BLKALL], 1 [BLKDIST], 2 [BLKNONE]*		*N/A*	*0 [BLKALL]*

For 0 [BLKALL] or 1 [BLKDIST], add the following values to enable that Zone for tripping:

- *Add 16 to enable Zone 1 to trip*
- *Add 32 to enable Zone 2 to trip*
- *Add 64 to enable Zone 3 to trip*
- *Add 128 to enable Zone 4 to trip*

0804	*OSBPUT*	*30 to 80°*	*degrees*	*30°*

OUT-OF-STEP BLOCKING (OSB), OUTOFSTEP

Select Block Trip Actions, SELOSB [0803]

This setting determines which trip functions are blocked from tripping when the Out-of-Step function operates. SELOSB can be set to:

- 0 (BLKALL) Block all tripping
- 1 (BLKDIST) Block all distance functions and channel tripping
- 2 (BLKNONE) No tripping functions are blocked

To enable one or more zones to trip, the following values can be added to 0 (BLKALL) or 1 (BLKDIST):

- *Add 16 to enable Zone 1 to trip*
- *Add 32 to enable Zone 2 to trip*
- *Add 64 to enable Zone 3 to trip*
- *Add 128 to enable Zone 4 to trip*

When SELOSB = 1, only the instantaneous overcurrent and time overcurrent functions can produce a trip, unless one of the above values is added to the setting which will also enable that Zone for tripping.

Example Settings (based on Figure 2-1):

It is assumed that the swing impedance locus information for the out-of-step condition is not available. Zone 2 will be selected as the coordinating function, and Zone 2 will have a 90° circular characteristic.

SELPTZ = 0 (ZONE 2)
MOBANG = 90° – 20° = 70°
SELOSB = 1 (BLKDIST) + 16 (Enable Zone 1) + 32 (Enable Zone 2) = 49
OSBPUT = 32 (2 cycles)

BLOCK RECLOSING, BLK RECLOS

These settings determine which function or logic outputs are used to block the Reclose Initiate (RI) output or operate the Reclose Cancel (RC) output in addition to Line Pickup. Refer to the OR9 input labeled “BLOCK RECLOSING” in Figures 1-1 to 1-5.

Select All (of the below)	**SELALL**	**(0701)**
Out-of-Step Block	**RBOSB**	**(0702)**
3-Phase Faults	**RB3PH**	**(0703)**
Ground Time Overcurrent	**RBTOC**	**(0704)**
Zone 2 Timers	**RBZ2T**	**(0705)**
Zone 3 Timers	**RBZ3T**	**(0706)**
Zone 4 Timers	**RBZ4T**	**(0707)**
Any Zone 1 Phase Distance	**RBZ1PH**	**(0708)**
Any Zone 2 Phase Distance	**RBZ2PH**	**(0709)**

All of the above can be set to either YES or NO. YES means that the signal blocks RI and operates RC. NO means that the signal has no effect on RI or RC operation.

Example settings (based on Figure 2-1):

SELALL = YES (this setting value will override all other settings in this category)

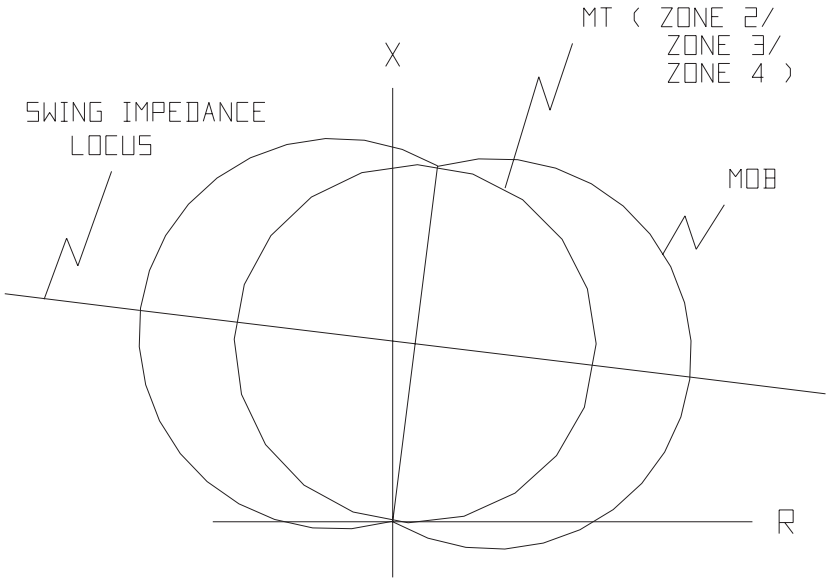

Figure 2-8: Out-of-Step Block R-X diagram [0286A4816]

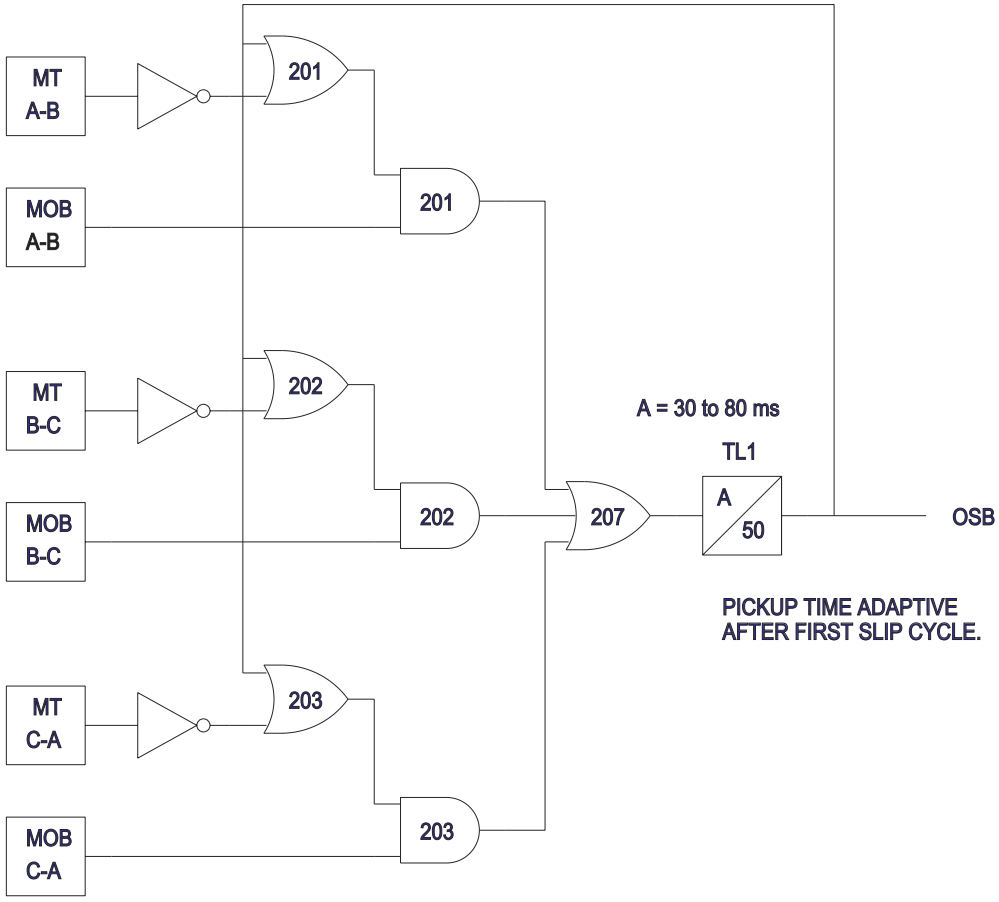

Figure A: Out-of-Step Block Logic diagram [0215B8670]

INTERFACE

Table 9-7: DLP SETTINGS

SETT#	DESCRIPTION	ABBREV.	UNITS	RANGE	FORMAT
801	Select phase trip unit to coordinate with:	SELPTZ	N/A	0 to 2	x
	• Zone 2	ZONE2		0	
	• Zone 3	ZONE3		1	
	• Zone 4	ZONE4		2	
802	Characteristic Angle	MOBANG	Degrees	30 to 130	xxx
803	*Select block trip actions*	*SELOSB*	*N/A*	*0 to 2*	*X*
	• *Block all tripping*	*BLKALL*		*0*	
	• *Block channel tripping and Zones 1 to 4 tripping* *Add 16 to enable Zone 1 tripping* *Add 32 to enable Zone 2 tripping* *Add 64 to enable Zone 3 tripping* *Add 128 to enable Zone 4 tripping*	*BLKDIST*		*1*	
	• *Block None*	*BLKNONE*		*2*	
804	*Out-of-step pickup timer*	*OSBPUT*	*ms*	*30 to 80*	*xx*

Table 9-8: INPUT CONDITION CODE TABLE

INPUT SIGNAL	RELAY TEST NUMBER	INPUT NUMBER	MMI MNEMONIC
ZONE 1 AG	2	1	Z1 AB
ZONE 1 BG	3	2	Z1 BG
ZONE 1 CG	4	3	Z1 CG
ZONE 2 AG	5	4	Z2 AB
ZONE 2 BG	6	5	Z2 BG
ZONE 2 CG	7	6	Z2 CG
ZONE 3 AG	8	7	Z3 AB
ZONE 3 BG	9	8	Z3 BG
ZONE 3 CG	10	9	Z3 CG
ZONE 4 AG	11	10	Z4 AB
ZONE 4 BG	12	11	Z4 BG
ZONE 4 CG	13	12	Z4 CG
ANY ZONE1 GRND	14	13	Z1 GRN
Z2 GRND TIMR, TL2G	15	14	Z2GTMR
Z3 GRND TIMR, TL3G	16	15	Z3GTMR
Z4 GRND TIMR, TL4G	17	16	Z4GTMR
ZONE 1 AB	18	17	Z1 AB
ZONE 1 BC	19	18	Z1 BC
ZONE 1 CA	20	19	Z1 CA
ZONE 2 AB	21	20	Z2 AB
ZONE 2 BC	22	21	Z2 BC
ZONE 2 CA	23	22	Z2 CA
ZONE 3 AB	24	23	Z3 AB
ZONE 3 BC	25	24	Z3 BC
ZONE 3 CA	26	25	Z3 CA
ZONE 4 AB	27	26	Z4 AB
ZONE 4 BC	28	27	Z4 BC
ZONE 4 CA	29	28	Z4 CA
ANY ZONE1 PHASE	30	29	Z1 PHS
Z2 PHASE TIMER, TL2P	31	30	Z2PTMR
Z3 PHASE TIMER, TL3P	32	31	Z3PTMR
Z4 PHASE TIMER, TL4P	33	32	Z4PTMR
IT DETECTOR	34	33	IT DET
IB DETECTOR	35	34	IB DET
GRD DIR TRIP (IPT + NT)	36	35	GRDTRP
GRD DIR BLOCK (IPB + NB)	37	36	GRDBLK
FAULT DETECTOR (FD)	38	37	FLTDET
REM OP DETECT (ROD)	39	38	REMOPN
OUT OF STEP (OSB)	40	39	OUTSTP
V1 DETECTOR	41	40	V1 DET
LINE OVERLOAD	42	41	LNOVLD
INST PHS OVRC, PH4 (50P)	43	42	INPOVR
INST GND OVRC (IDT)	44	43	INGOVR
TIM DLY GD OC (TOC)	45	44	TMGOVR
LINE PICKUP	46	45	LPCKUP
FUSE FAILURE		46	FUSEFL
GRND FORWARD (NT)		47	GR FWR
GRND REVERSE (NB)		48	GR RVR
RCLOSE CANCL (RC)		49	RECCAN
CNFG INPUT 1		50	CNFIN1
CNFG INPUT 2		51	CNFIN2
CNFG INPUT 3		52	CNFIN3
NON-CRITICAL ALARM		53	NOCALM
ANY Z2 PH OR GND		54	ANY Z2
ANY Z3 PH OR GND		55	ANY Z3
ANY Z4 PH OR GND		56	ANY Z4
TRIP BUS/BFI		57	TRPBFI
MAN CLOSE (BRKR 1)		58	BKCLS1
MAN CLOSE (BRKR 2)		59	BKCLS2
RECLOSE INIT 3P		60	*RECIN3*
PILOT SIGNAL		61	*PLTPU*
CARRIER START		62	*CHSTRT*

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