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 receiver 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 ground faults. 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 schemes.

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 over-reaching 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)

<table>
<thead>
<tr>
<th>SETTING VALUE</th>
<th>MNEMONIC</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>STEP_DST</td>
<td>Step Distance</td>
</tr>
<tr>
<td>1</td>
<td>POTT</td>
<td>Permissive Over-reaching Transfer Trip</td>
</tr>
<tr>
<td>2</td>
<td>PUTF</td>
<td>Permissive Under-reaching Transfer Trip</td>
</tr>
<tr>
<td>3</td>
<td>HYBRID</td>
<td>Hybrid</td>
</tr>
<tr>
<td>4</td>
<td>BLK1</td>
<td>Standard Blocking scheme with Directional carrier start using IPB with positive sequence current restraint.</td>
</tr>
<tr>
<td>5</td>
<td>ZN1_EXT</td>
<td>Zone 1 Extension</td>
</tr>
<tr>
<td>6</td>
<td>BLK2</td>
<td>Standard Blocking scheme with non-directional carrier start using the fault detector</td>
</tr>
<tr>
<td>7</td>
<td>BLK3</td>
<td>Standard Blocking scheme with non-directional carrier start using IPB without positive sequence current restraint</td>
</tr>
<tr>
<td>8</td>
<td>BLK4</td>
<td>Same as BLK1 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.</td>
</tr>
<tr>
<td>9</td>
<td>BLK5</td>
<td>Same as BLK2 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.</td>
</tr>
<tr>
<td>10</td>
<td>BLK6</td>
<td>Same as BLK3 except that OR-21 has been replaced by an AND-21 and NOT3 has been removed.</td>
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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) Receiver Logic for the Blocking Schemes
RCVR1

AND-21

TRIP

AND-407

RCVR2

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

AND-407

RCVR1

OR-21

TRIP

RCVR2

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