



T/S Support Services BREA Westinghouse I.L. 40-360
INSTALLATION • OPERATION • MAINTENANCE
I N S T R U C T I O N S

UNIFLEX SOLID STATE RELAY SYSTEM TBM-1 TRANSIENT BLOCK OPTION

INTRODUCTION

1. The TBM-1 transient block option provides a means to enhance the security of a Uniflex blocking pilot relay system where external faults present a coordination problem.

APPLICATION

1. The TBM-1 transient block option may be applied to any Uniflex blocking system. The channel normally is type TC-10 power line carrier, or type DIT-3U audio tones usually via microwave. The TBM-1 normally is applied where a power reversal problem exists due to the existence of a parallel line or its equivalent and:

A. The protected line has two terminals and a non distance ground relay.

or

B. The protected line has three terminals.

OPERATION

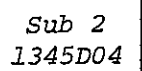
1. The overall schematic for the TBM-1 transient block option is shown in Figure 1. (For the operation of the blocking pilot system refer to I.L. 40-312).
2. An external fault beyond the remote terminal(s) is detected by "AND 1" and timer "T2" delays transient block to allow positive identification of the external fault.
3. An external fault behind the local terminal is detected by "AND 2" and timer "T1" delays transient block to allow positive identification of the external fault.
4. Upon identification of an external fault the block pilot trip output "BPT" changes state via "OR 1", "0/1000" timer, "AND 4", "AND 5" and "OR 4", to disable "AND 8" in the DBL pilot logic relay and block pilot trip.
5. The "0/1000" timer maintains the block pilot trip state to override the multiple power reversals in the protected line due to sequential tripping and reclosing of the circuit breakers on the parallel line.
6. Should an internal fault occur while the TBM-1 is in the transient block state it will be detected by "AND 3" to start the transient unblock timer "T3" which times out to change the state of the output "BPT" to enable "AND 8" of the DBL relay to enable pilot trip.
7. The "0/1000" timer is reset by the pilot trip output PT via the "0/100" fast reset timer.
8. The "20/20" timer in the carrier start circuit provides two functions:
 - A. Prevents premature pulse stretch of the carrier start output for an internal fault.
 - B. Provides pulse stretch of the carrier start output for an external fault to maintain the carrier blocking signal to allow reset of the relays following fault clearing.

All possible contingencies which may arise during installation, operation, or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding his particular installation, operation or maintenance of his equipment, the local Westinghouse Electric Corporation representative should be contacted.

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9. The pilot trip cutout switch (PTCO) on the IFM-1 interface module controls pilot trip via "AND 5" on the TBM-1.

FUNCTIONAL TESTING

1. The functional tests described in I.L. 40-313 apply to the blocking system with or without the TBM-1 transient block option. In addition:
 - A. The operation of the TBM-1 transient block function is indicated by the "BPTI" LED on during external fault simulation.
 - B. The operation of the TBM-1 transient unblock function may be tested by first applying an external fault (fault applicator switch (FA) in "REV" position) and observing that the "BPTI" LED lights on the LTI test indicator. Then turn the FA switch rapidly from "REV" to "FWD" position and observe that the "BPTI" LED goes out without delay. A delay of 1 second would indicate a failure of the transient unblock function.



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WESTINGHOUSE ELECTRIC CORPORATION
RELAY-INSTRUMENT DIVISION

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