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Protection  
Devices

## 7PG223 - TEC

Surgeproof Intertrip Send Relay

Answers for energy

# 7PG223 TEC

Surgeproof Intertrip Send Relay



## Description

The type TEC relay comply with British Generating Board Engineering recommendation M16/2 class EB2. They consist of three elements:

- (a) Type F relay.
- (b) Type B34 relay delayed on energisation.
- (c) Type TCD static timing relay.

## Application

Intertrip Send Relay for use where the pilots are prone to high induced voltages. Under fault conditions an interconnected power system may feed fault current from several sources, and in order to isolate a fault it becomes necessary to initiate the tripping of one or more remote circuit breakers. Remote intertripping of circuit breakers requires a fast, multi-contact, intertrip relay capable of withstanding the high voltages which may be induced in the pilots.

## Model Range

Four type TEC relays are available:  
5kV insulation contacts for pulse or sustained Intertrip.  
15kV insulated contacts for pulse or sustained Intertrip.  
5kV insulated contacts for 2 stage intertrip.  
15kV insulated contacts for 2 stage intertrip.

## Pulse Intertrip

The F relay is energised and within 10ms the intertrip contacts are closed. They are then maintained for a period of two seconds. When the initiating contact IC closes, the operating coils of the types F and B relays are both energised, their operating times are 10 and 100ms respectively. The type F relay contacts complete the intertrip circuits and the series contact F1 open circuits the operating coil to prevent battery drain. Contact F2 Initiates the time delay relay for the reset operation.

The type B34 relay contacts then "pick-up" open-circuiting the type F relay operating coil, contact B1, prevent a repeat

operation upon reset. After the time delay elapses contact T1 is closed and the Type F relay resets.

## Sustained Intertrip

Within 10ms the intertrip circuits are closed, this condition being maintained for two seconds after the initiating contact opens. The operation of the circuit is similar to that described in the pulse intertrip arrangement, with the exception that contact B2 is used to ensure that the time delay relay is not energised until the type B34 relay is de-energised, i.e. when the initiating contact IC is opened.

## 2 Stage Intertrip

Where the intertrip signal applied to the pilots is derived from a DC/AC inverter or DC/DC converter, such devices may be damaged if energised unloaded for long periods. Another small attracted armature element is incorporated in the TEC relay so that the inverter or converter is only energised for 2 seconds in the 'pulse intertrip' scheme, or for the duration of 'sustained intertrip'. For the latter the signal can be held at full level for 2 seconds then reduced to a 'hold on' level provided that the design of the inverter or converter permits an economy resistor to be switched into the drive circuit to its output transformer.

## Technical Information

### Ratings:

5kV versions, 30V, 50V, 60V, 125V and 240V d.c.  
15kV versions, 24V, 30V, 60V, 125V and 240V d.c.  
Type F relay  
BURDEN: 15W  
OPERATING TIME: 10ms

### Output Contact Arrangement:

2 normally open with standard 2kV insulation,  
2 normally open and 2 normally closed with 5kV or 15kV insulation to earth and 2 normally closed with 2kV insulation between contacts.

### Output Contact Rating:

Make 30A, make and carry continuously 20A.  
Break, a.c. (inductive), 2A at 550V.  
a.c. (non-inductive), 50A at 12V, 5A at 660V.  
d.c. (inductive), 2A at 110V, 0.5A at 240V  
d.c. (non-inductive), 4A at 110V, 1A at 240V

INDICATION: Hand-reset flag.

Type B34 Element  
BURDEN: 3W  
OPERATING TIME: 100ms. (delayed on pick-up)  
Type TCD Element  
BURDEN: 12W  
DELAY: 2seconds

## Case

All models, Vedette size 1½V case.  
Information required when ordering:  
Model and rated d.c. voltage.

**Table 1.**

This table only applies for flush mounting relays  
Terminal numbers for 5kV and 15kV pulse or sustained  
intertrip relays.

MODEL			MODEL		
	5kV	15kV		5kV	15kV
A	10	25	J	9	28
B	21	26	K	16	30
C	22	27	L	12	32
D	15	29	M	2	18
E	11	31	N	4	22
F	1	16	O	6	5
G	3	20	P	8	9
H	5	3	Q	-	-
I	7	7	R	-	-

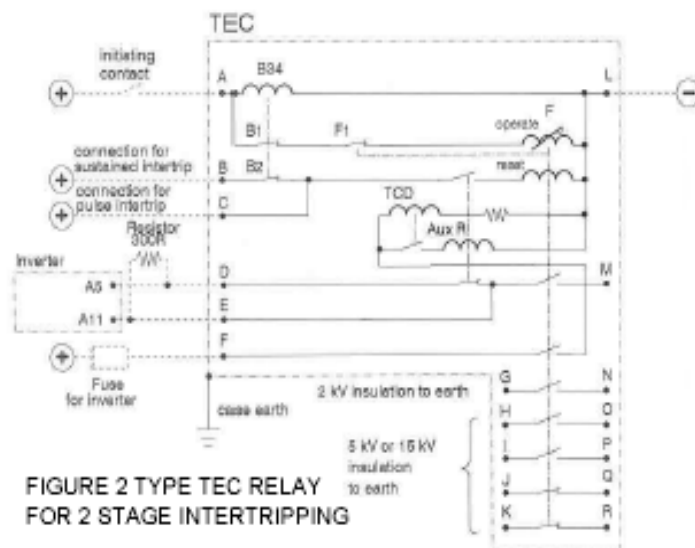
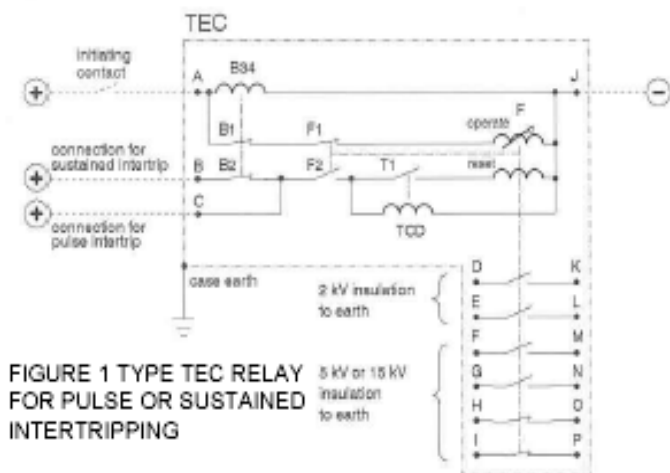
**Table 2.**

This table only applies for flush mounting relays.  
Terminal numbers for 5kV and 15kV 2 stage intertrip  
relays.

MODEL			MODEL		
	5kV	15kV		5kV	15kV
A	10	25	J	5	16
B	21	26	K	7	20
C	22	27	L	9	28
D	23	33	M	11	31
E	12	32	N	16	30
F	24	34	O	2	5
G	15	29	P	4	9
H	1	3	Q	6	18
I	3	7	R	9	22

### NOTE

Where an insulation level of 15kV is required we recommend that relays are flush mounted. 15kV insulation level relays can be supplied for front connection, surface mounting, however customers are reminded of the need to maintain the 15kV insulation level on all wiring to the relay.



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The information in this document contains general descriptions of the technical options available, which may not apply in all cases. The required technical options should therefore be specified in the contract.