

November, 1990
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Mailed to: E, D, C/41-700B

Two Circuits
Device Number: 60

CIRCUIT SHIELD[®] Type 60 Voltage Balance Relay



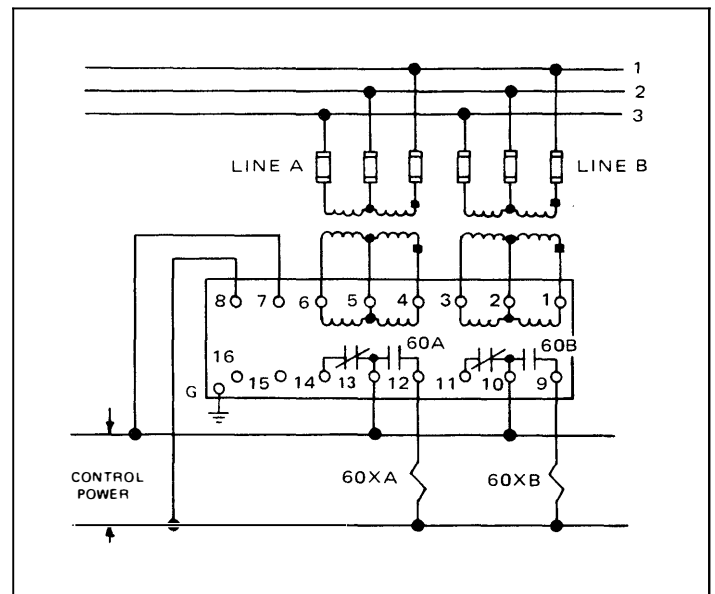
Application

The Type 60 Voltage Balance Relay provides fast differential voltage detection for three-phase systems. A typical application is that of detecting a blown fuse in a potential transformer circuit, and to prevent improper tripping or malfunction of other devices as a result of loss of voltage.

The relay is used in conjunction with auxiliary relays to open trip circuits of voltage controlled overcurrent relays, block regulating equipment, sound alarms, or other functions as required by the installation. The relay has two form C contacts: 60A transfers when line A is low, compared to line B, and 60B transfers when line B is low, compared to line A.

Features

- Seismic capability to 6g ZPA
- Transient immunity
- Fast operation
- Drawout construction
- Memory, shockproof target
- Built-in-test
- 2 year warranty



Typical Circuit Shield Voltage Balance Relay Application

Specifications

Differential Sensitivity: 12, 24, 36, 48 Volts
Operating Time: Less than 1 cycle for a blown fuse.
Reset Time: 1.0 Second
Input Circuit Rating: 160V continuous, 50/60 Hz
Burden: 0.2 VA, 1.0 P.F. at 120 Volts
Control Power: 48/125 Vdc, 24/32 Vdc
Output Circuit: 2 form C contacts
Output Rating: Each Contact:
 30 Amps, Tripping Duty
 5 Amps, Continuous
 1 Amp, Opening Resistive
 0.3 Amp, Opening Inductive

Operating Temperature: Minus 20° to plus 70°C
Transient Immunity: More than 2500V, 1 MHz bursts at 400 Hz repetition rate, continuous (ANSI C37 90.1 SWC);
 Fast Transient Test;
 EMI Test

Seismic Capability: More than 6g ZPA biaxial broadband multi-frequency vibration without damage or malfunction (ANSI/IEEE C37.98)

Dielectric: 2000 Vac RMS, 60 seconds all circuits to ground

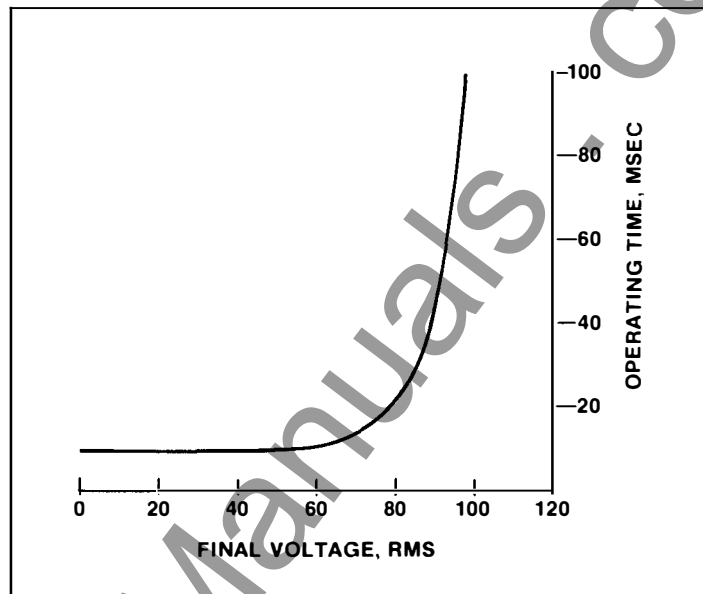


Figure 1. Typical Operating Time

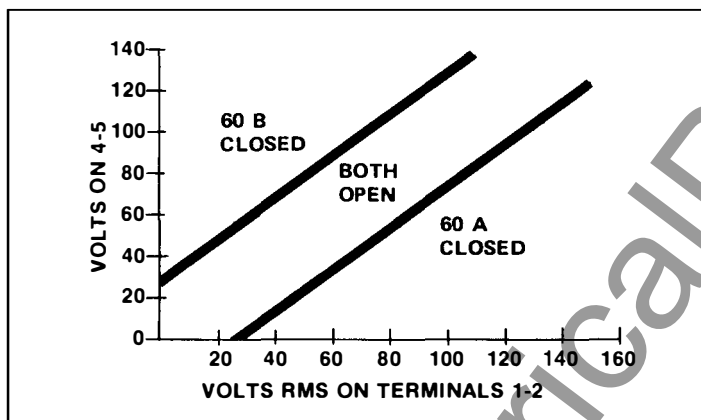


Figure 2. Differential Voltage Characteristics

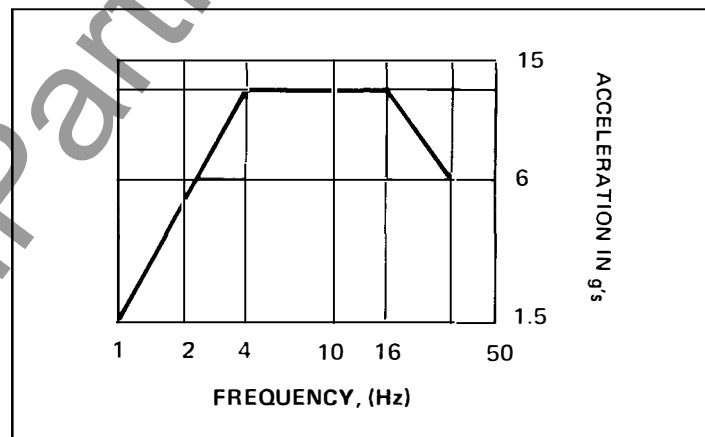


Figure 3. Typical Seismic Testing Results

How To Specify

The Voltage Balance Relay shall provide protection against blown potential transformer fuses by means of voltage differential between two three-phase lines. Relay shall be Asea Brown Boveri Type 60 or approved equal, capable of withstanding up to 6g ZPA seismic stress without damage or malfunction. Relay shall have a magnetic operation indicator which retains position on loss of control power. Built-in means shall be provided to allow operational tests without additional equipment. Operating

time shall be less than .016 seconds in response to a blown fuse.

Further Information

List Prices: PL 41-020
 Technical Data: TD 41-025
 Instruction Book: IB 7.4.1.7-4①
 Generator Protection Paper: TP 18.6-3①
 Other Protective Relays:
 Application Selector Guide, TD 41-016

① Available upon request, only from Allentown Plant.

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Two Circuits

CIRCUIT SHIELD[®] Type 60 Voltage Balance Relay

Type	Maximum Voltage Rating	Tap Range Pickup	Pickup Curve	Dropout Curve	Time	Output Contacts	Internal Connections	① Control Voltage	Catalog Number
60	160V 50/60 Hz	12-48V Unbalanced	High Speed	Definite	1 sec.	2-C	16D211E	48/125 Vdc	412A1175
								48/110 Vdc	412A1105
								24/32 Vdc	412A1195
							16D412C	220 Vdc	412A1125
								250 Vdc	412A1155

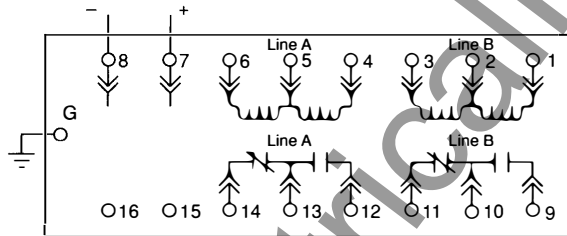
① For other control voltages contact the nearest ABB Representative.

To place an order, or for further information, contact the nearest ABB Representative.

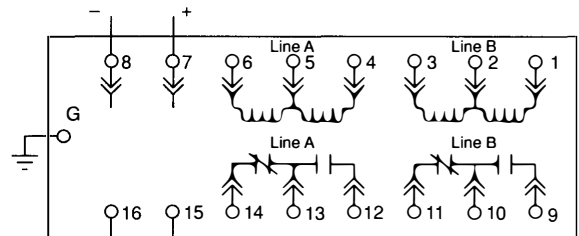
Internal Connection Diagrams

Note: Refer to Instruction Book IB 7.4.1.7-4 for contact logic data.

**16D211E Type 60
 Voltage Balance Relay
 Drawout Test Case**



**16D412C Type 60
 Voltage Balance Relay
 Drawout Test Case**



External resistor supplied with relay.