Application

The Type 32R is a sensitive reverse power relay used for anti-motor protection of generators to prevent damage to the prime mover in the event of loss of input, or other abnormal system conditions. The Type 32R can be applied to the protection of diesel powered generators, gas turbines, steam turbines and hydro units.

Only one Type 32R is required in most 3 phase applications, since the power flow is usually the same in all phases.

The Type 32R provides a wide sensitivity range, adjustable from 0.025A to 0.7A. The 10 Ampere continuous rating allows full use of the relay's sensitivity. An adjustable definite time delay characteristic with a range of 1-30 seconds is provided to prevent unnecessary operation on temporary self-correcting power reversals.

For applications requiring Reverse VAR detection, or for True Directional Power Measurement type connections refer to Instruction Book.

Features

- Adjustable sensitivity
- Adjustable time delay
- Low burden
- Built-in test
- Seismic capability to 6g ZPA
- Transient immunity
- 2 year warranty

Figure 1. Connections for Reverse Power Protection of Generators
Specifications

Input Circuit Ratings:
- Potential: 120 Vac, 50 or 60 Hz nominal
- 160 Vac, maximum continuous
- 10A, maximum continuous
- 390A, one second

Burden:
- Potential: 0.3VA at 120V
- Current: 0.9VA at 5A

Sensitivity:
- Adjustable 0.025 to 0.7A at unity power factor

Operating Time:
- Adjustable Delay
- 1 to 30 seconds

Control Power:
- 48/125 Vdc at .05 Adc max.
- 24/32 Vdc at .05 Adc max.
- 120 Vac at .05 Ac max.

Output Circuit:
- 1-Form C Contact

Output Circuit Rating:
- Each Contact, at 125 Vdc:
  - 30 amps, Tripping Duty
  - 5 amps, Continuous
  - 1 amp, Opening Resistive
  - 0.3 amp, Opening Inductive

Operating Temperature:
- Minus 20°C to plus 70°C

Seismic Capability:
- More than 6g ZPA biaxial multi-frequency vibration without damage or malfunction
  (ANSI/IEEE C37.96)

Transient Immunity:
- More than 2500V, 1MHz bursts at 400 Hz repetition rate, continuous (ANSI C37.90.1 SWC); Fast Transient Test; EMI Test

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

Weight:
- Unboxed - 3.8 lbs. (1.7 kg)
- Boxed - 4.5 lbs. (2.0 kg)
- Volume - 0.26 cubic feet

How To Specify

Relay shall be Asea Brown Boveri Type 32R or equal. Relay shall be capable of withstanding up to 6g seismic stress without malfunction. An operation indicator shall be provided. Built-in means shall be provided to allow operational tests without additional equipment.

How To Order

For complete listing of available reverse power and directional relays, see TD 41-025.

To place an order or for further information, contact your nearest District Office.

Further Information

List Prices: PL 41-020
Technical Data: TD 41-025
Instruction Book: IB 7.8.1.7-1(1)
Generator Protection Paper: TP 18.6-3(1)
Other Protective Relays: Application Selector Guide, TD 41-016

January, 1991
Type 32R Current Directional Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Application</th>
<th>Maximum Torque Angle</th>
<th>Time Delay</th>
<th>Sensitivity</th>
<th>Frequency</th>
<th>Control Voltage</th>
<th>Catalog Number</th>
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</thead>
<tbody>
<tr>
<td>32R</td>
<td>Reverse Power</td>
<td>30 deg.</td>
<td>1-30 sec.</td>
<td>0.025-0.7A adjustable</td>
<td>60 Hz</td>
<td>48/125 Vdc</td>
<td>437P4671</td>
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<td>Φlag V&lt;sub&gt;Φ&lt;/sub&gt;</td>
<td></td>
<td></td>
<td></td>
<td>24/32 Vdc</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>120 Vac</td>
<td>437P4661</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50 Hz</td>
<td>48/125 Vdc</td>
<td>437F4671</td>
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<td></td>
<td></td>
<td></td>
<td>24/32 Vdc</td>
<td>437F4691</td>
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<td></td>
<td></td>
<td></td>
<td>48/110 Vdc</td>
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<td>120 Vac</td>
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</table>

Internal Connections: 16D437A

Note: For Applications requiring Reverse VAR Detection, refer to Instruction Book.

Type 32R Power Measurement Type

<table>
<thead>
<tr>
<th>Type</th>
<th>Application</th>
<th>Max. Cont. Current</th>
<th>Pickup Range</th>
<th>Nominal Rated Voltage</th>
<th>Time Delay</th>
<th>60 Hz</th>
<th>50 Hz</th>
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<tbody>
<tr>
<td>32R</td>
<td>Reverse Power</td>
<td>10A</td>
<td>5-60 Watts</td>
<td>120 V</td>
<td>1-30 sec.</td>
<td>437W48x0</td>
<td>437G48x0</td>
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<td>9-104 Watts</td>
<td>208 V</td>
<td></td>
<td>437W78x0</td>
<td>437G78x0</td>
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<td>13-150 Watts</td>
<td>120 V</td>
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<td>437W47x0</td>
<td>437G47x0</td>
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<td>22-260 Watts</td>
<td>208 V</td>
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<td>437W77x0</td>
<td>437G77x0</td>
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<td>6A</td>
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<td>1.7-20 Watts</td>
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<td>3-35 Watts</td>
<td>208 V</td>
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<td>437W76x0</td>
<td>437G76x0</td>
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</table>

Internal Connections: 16D437B® and 16D437C®

Notes:
1. Max torque angle internally adjustable 0° Φ lag V<sub>Φ</sub> or 30° Φ lag V<sub>Φ</sub> with selector link. Watts are line-to-neutral value (see Instruction Book).
2. Definite-time; internal selector link provided for inverse delay.

© Each of the listed catalog numbers contains an x for the control voltage designation. To complete the catalog number, replace the x with the proper control voltage digit:
- 24 Vdc                        9
- 32 Vdc                        8
- 48/125 Vdc                   7
- 48/110 Vdc                   0
- 220 Vdc                      2
- 250 Vdc                      5
- 120 Vac                      6

© Diagram 16D437B applies to relays with control voltages 24 Vdc, 32 Vdc and 120 Vac.
© Diagram 16D437C applies to relays with control voltages 48/125 Vdc, 48/110 Vdc, 220 Vdc and 250 Vdc.
Internal Connection Diagrams

16D437A Type 32R
Reverse Power Relay
Drawout Test Case

16D437B Type 32R
Reverse Power Relay
Drawout Test Case

16D437C Type 32R
Reverse Power Relay
Drawout Test Case

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