Type SSV-T Voltage Relay

Application

The solid state Type SSV-T voltage relay is a high seismic relay, suitable for nuclear power station relaying protection. The relay is adjustable over a wide range of voltage and has a calibrated scale plate which indicates the pick-up setting. The output unit is a telephone relay and an ICS (Indicating Contactor Switch) seal-in device.

The Type SSV-T relay has a high ratio of dropout and is particularly suitable for use in applications requiring an accurate voltage level detector.

Class 1E Application

The SSV-T relay has been specially designed and tested to establish its suitability for Class 1E applications. Materials have been selected and tested to ensure that the relay will perform its intended function for its design life when operated in a normal environment as defined by ANSI standard C37.90 – 1971, when exposed to radiation levels up to 10⁶ rads, and when subjected to seismic events producing a Shock Response Spectrum within the limits of the relay setting.

“Class 1E” is the safety classification of the electric equipment and systems in nuclear power generating stations that are essential to emergency shutdown of the reactor, containment isolation, cooling of the reactor, and heat removal from the containment and reactor, or otherwise are essential in preventing significant release of radioactive material to the environment.

Design Features

1. Indicating Control Switch
2. Circuit Board Module
3. Calibrated Scale Plate
4. Potentiometer (R2) Dial
5. Output Telephone Relay (SSV)
6. Transformer
7. Potentiometer (R2)

July, 1991
Supersedes DB 41-764, pages 1-4,
dated August, 1978
Mailed to: E, D, C/41-200B
Characteristics SSV-T

Range: 60 – 140 Volts
      140 – 320 Volts
      280 – 640 Volts

Continuous Rating: Highest voltage of range setting

Operating Frequency: 50/60 Hz

Temperature Error: 2% between -20°C and +65°C

Drop-out Ratio: 92% to 99%

Response Time: Pickup Time = 7 – 10 ms
               Dropout Time = 14 – 40 ms (Fig. 1)

Burden: 1 VA at 120 volts
         60 hertz

Frequency Response: (Fig. 2)

Trip Circuit

The main contacts will safely close 30 amperes at 250 volts dc and the seal in contacts of the indicating contactor switch (when supplied) will safely carry this current long enough to trip a circuit breaker. The indicating contactor switch (when supplied) has a pickup of approximately 1 ampere. Its dc resistance is 0.37 ohms.

Further Information

List Prices: PL 41-020
Technical Data: TD 41-025
Instructions: IL 41-766.5
Other Protective Relays:
   Application Selector Guide, TD 41-016

Fig. 1 Typical Operating and Reset Time Curves of the Type SSV-T Relay (60-140 V)

Fig. 2 Typical Frequency Response Curve of the Type SSV-T Relay (60-140 V)
## Type SSV-T Voltage Relay

### Over or Undervoltage Relays, Instantaneous, 50/60 Hertz (Device Number: 27 or 59)

<table>
<thead>
<tr>
<th>Type</th>
<th>Indicating Contactor</th>
<th>Adjustable Range (AC)</th>
<th>Drop Out Ratio</th>
<th>Contacts (Each Unit)</th>
<th>Relay Data</th>
<th>Case Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSV-T</td>
<td>1 amp dc</td>
<td>60-140 Volts</td>
<td>90.98%</td>
<td>1M1B</td>
<td>3516A14</td>
<td>FT-11</td>
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<tr>
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<td>0.2 amps dc</td>
<td>60-140</td>
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<td>1M1B</td>
<td>3516A14</td>
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<tr>
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<td>None</td>
<td>60-140</td>
<td></td>
<td>2M○</td>
<td>3527A97</td>
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<tr>
<td></td>
<td>1 amp dc</td>
<td>140-320</td>
<td></td>
<td>1M1B</td>
<td>3516A14</td>
<td></td>
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<tr>
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<td>None</td>
<td>60-140</td>
<td></td>
<td>1M1B○</td>
<td>3533A36</td>
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</tbody>
</table>

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<thead>
<tr>
<th>Type</th>
<th>Indicating Contactor</th>
<th>Adjustable Range (AC)</th>
<th>Drop Out Ratio</th>
<th>Contacts (Each Unit)</th>
<th>Relay Data</th>
<th>Case Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSV-T</td>
<td>3 – 1 amp</td>
<td>60-140 Volts</td>
<td>92.99%</td>
<td>1M1B○</td>
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<td></td>
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<td>1M1B○</td>
<td>3525A81</td>
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</table>

○ Contacts are electrically independent – refer to block diagram reference.