Type 25S and 25V Synchronism Check Relays

Application

These relays are used to verify that the voltages on either side of a circuit breaker are synchronized, and in the proper phase and magnitude relationship to allow automatic closing.

Type 25S allows closing when both bus and line voltages are approximately normal, equal, in phase, and of approximately the same frequency.

Type 25V provides the same functions, but also includes options to allow closing when either the line or the bus is dead. A switch is provided on the front panel of the relay to allow easy selection of the option most suitable to system operating conditions. The options provided are: sync check only; high bus-dead line; high line-dead bus; high bus-dead line or high line-dead bus. The sync check function is active on all positions of the function switch. Both types include precise solid state measuring circuitry and time delay circuitry with calibrated, adjustable controls.

Features

- Flexible settings
- Low burden
- Continuously rated coils
- Seismic capability to 6g ZPA
- Built-in test
- Drawout construction
- 2 year warranty
- UL recognized

Figure 1. Connections for a Typical Application
Specifications
Input Voltage: 120 Vac, 50/60 Hz nominal
140 Vac maximum continuous
Burden: 2 VA, 1.0 P.F.
Output: 2 Form C Contacts
Output Rating: Each contact, at 125 Vdc:
30 amps, closing
5 amps, Continuous
1 amp, Open, Resistive
0.3 amp, Opening, Inductive
Magnitude of Vector Difference Voltage: Adjustment range: 0 to 80 volts.
Time Delay: Pickup-adjustable 0.1-1.5 seconds
1-15 second
Dropout - 1 cycle
Operating Temperature: Minus 20° to Plus 70°C
Seismic Capability: More than 6g ZPA either AXIS Biaxial
broadhead multifrequency vibration without
damage or malfunction. (ANSI/IEEE) C37.98
Transient Immunity: More than 2500V, 1 MHz bursts at 400 Hz
repetition rate, continuous. (ANSI C37.90.1
SWC); Fast Transient Test; EMI Test
Dead Bus, Dead Line Levels: Adjustable 0 to 120 volts.
(Type 25V only) Factory set at 30 volts.
Dielectric: 2000 Vac RMS, 60 seconds all circuits to
ground.

How to Specify
Relay shall be Asca Brown Boveri Type 25 or
equal. Relay shall be capable of withstanding
up to 6g ZPA seismic stress without malfunc-
tion. An operation indicator shall be provided.
Built-in means shall be provided to allow oper-
ational tests without additional equipment.

How to Order
For a complete listing of available synchronism
check relays, see TD 41-025.
To place an order, or for further information,
contact the nearest ABB Representative.

Further Information
List Prices: PL 41-020
Technical Data: TD 41-025
Instruction Book: IB 7.3.1-71
Other Protective Relays:
Application Selector Guide, TD 41-016

Figure 2. Typical Voltage Difference Closing Characteristic for a 120 Volt 50/60 Hz Relay with Rated Voltage on one Circuit

Figure 3. Slip Frequency as a Function of Delay Time for Two 120 Volt Sources
Example: delay time is the time the two sources will be in synchronism. Assume the vector difference volt-
age is set at 40 volts and it is desired to operate the
relay contacts when the slip frequency reaches .015
Hz. Setting the delay time to 7 seconds will cause the
relay contacts to close just before the voltages
become unsynchronized.

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<table>
<thead>
<tr>
<th>Type</th>
<th>Function</th>
<th>Max. Cont. Rating</th>
<th>Output Contacts</th>
<th>Time Delay</th>
<th>Catalog Numbers Drawout Test Case</th>
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</thead>
<tbody>
<tr>
<td>25S</td>
<td>Synchronism Check</td>
<td>140 Vac. 50/60 Hz.</td>
<td>2 form C</td>
<td>0.1-1.5 s.</td>
<td>424J2105</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-15 s.</td>
<td>424J1105</td>
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<td>25V</td>
<td>Synchronism Check with</td>
<td></td>
<td></td>
<td>0.1-1.5 s.</td>
<td>424K2105</td>
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<tr>
<td></td>
<td>Dead bus, Dead-line options</td>
<td></td>
<td></td>
<td>1-15 s.</td>
<td>424K1105</td>
</tr>
</tbody>
</table>

### Internal Connection Diagram

16D324A Types 25S, 25V Synchronism Check Relay

Drawout Test Case

![Diagram](image-url)