

SW-50

Two-Setpoint Speed Switch

**2-Year
Warranty**

Reliable engine overspeed protection. Overspeed relay plus a second setpoint for crank disconnect, generator field-flashing, or other alarm. Full field-programming capability.

FEATURES

- **Various signal sources:** Senses signal frequency from magnetic pickup or ac signal generator.
- **Field-programmable:** Two 25-turn trim potentiometers provide adjustment for setpoints over 3–100% of full-scale frequency range.
- **Test circuit:** Permits on-line testing without overspeeding the protected device.
- **Rugged:** Sealed, gasketed, reinforced case.

Environmental Specifications

Temperature (storage & operation):
–40°C to +85°C (–40°F to +185°F).

Vibration:

- MIL STD 810C, Method 514.2, Curve P, Procedure V.
- MIL STD 202F, Method 201A (10–55Hz, continuous displacement of 0.06 inches P-P).

Screws on all access holes are predrilled for safety wire.

Humidity: SAE J1211, paragraph 4.2.3., fig. 3A (95% relative humidity at +66°C (+150°F)).

Dust: MIL STD 810C, Method 510.1, Procedure 1, Steps 1, 4, 5, and 6. (1750 ft/min velocity;

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0.3g/ft³ density; <176 microM average particle size).

Sealing: Case can easily be opened and resealed without damaging watertight integrity. O-ring sealed access holes for setpoint adjustments. Complies with NEMA Standard 250, types 4, 12, and 13.

Moisture protection: Component board entirely dip-coated with moisture-repellent sealant.

Functional Specifications

Input signal: Two input frequency ranges: 0–5,000 Hz, standard; or 0–10,000 Hz. *Minimum signal requirement:* 0.15 Vrms (150 mVrms) for all frequencies. *Maximum signal:* 70 Vrms. *Minimum input resistance:* 10 KΩ.

Input power: 8–32 Vdc. (Operates with 12 or 24 Vdc systems.) *Maximum current consumption:* 95 mA. Can withstand 800 volts peak reverse; 80 volts peak forward for 0.1 second maximum duration; and 350 volts peak forward for 1 millisecond duration.

Relays: SPDT for Overspeed; SPST N.O. contacts for Auxiliary relay. Contact rating of 5 amperes at 30 Vdc/300 Vac, resistive. Setpoint adjustment range for both relays: 3–100% of full-scale frequency range. Integral 25-turn trim potentiometer for each relay setpoint. Response time for both relay setpoints is 50 milliseconds, maximum.

Functional specifications (Relays), continued

At stand-still (zero speed), power on, the standard relay configuration is:

1. Overspeed relay: SPDT, normally energized. Relay de-energizes and latches on overspeed. Latching may be inhibited by jumpering Terminal 4 to Terminal 2; resetting is then automatic.

2. Auxiliary relay: Normally de-energized. Relay energizes above the setpoint, nonlatching (automatic reset).

Resetting relays:

a. The latched Overspeed relay is reset (after speed is reduced by at least 2% below setpoint value) by momentarily jumpering Terminal 4 to Terminal 2 or by momentarily removing power.

b. The Auxiliary relay will automatically reset when speed is reduced by at least 2% below setpoint value.

Power up considerations: No relay flicker on power up. At stand-still or speeds below setpoints, applying dc power causes no flicker or change in the normally de-energized Auxiliary relay. Power application resets the Overspeed relay to the normally energized (no alarm) condition.

Grounding, phase referencing: All circuits are isolated from earth ground. The input circuit is referenced to the negative side of the power supply so that the magnetic pickup can be paralleled with electrical governors and other similarly constructed devices.

Signal cable shield: can be grounded directly or taken to any designated electrical terminal on the governor. (No shield terminal is provided in the speed switch.)

Test: Jumpering Terminal 5 to Terminal 2 lowers the setpoints to 90% \pm 2% of the actual value to permit verifying the alarm setpoints without overspeeding the engine.

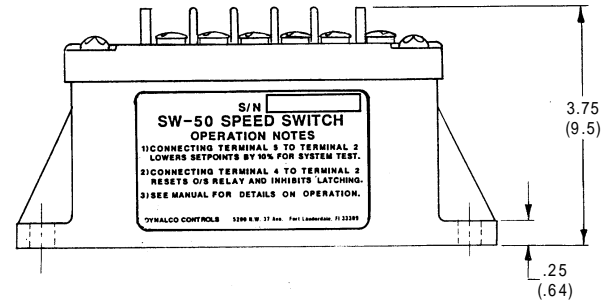
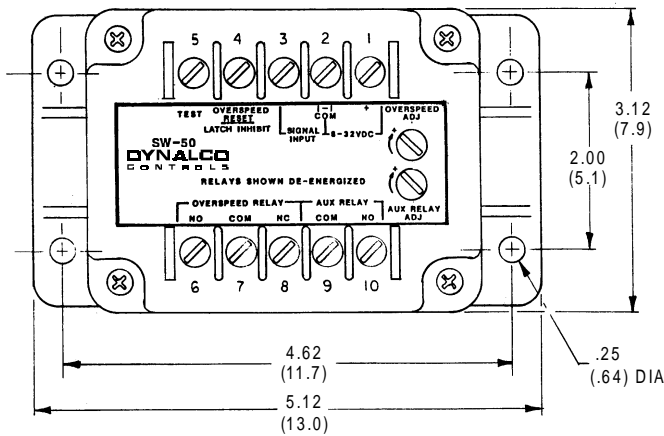
Stability of setpoints:

a. Signal amplitude effect: \pm 0.5% full-scale from 150 mVrms to 100 Vrms.

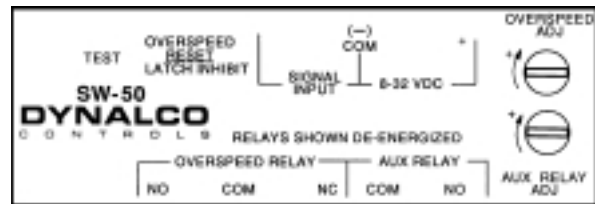
b. Power supply voltage effect: \pm 0.1% of full-scale with 25% supply fluctuation.

c. Temperature effect: \pm 2.5% of full-scale maximum with change in environmental temperature from -40°C to $+85^{\circ}\text{C}$ (-40°F to $+185^{\circ}\text{F}$).

Hysteresis: 2% of full-scale frequency, nominal.



Enlargement of label on top of SW-50



HOW TO ORDER

1. Full-scale frequency range required:

- A. 0–5,000 Hz (standard)
- B. 0–10,000 Hz

2. For factory setup, specify:

- A. Overspeed setpoint frequency

B. Auxiliary setpoint frequency

C. Auxiliary setpoint logic

- i. Normally open (standard)
- ii. Normally closed

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