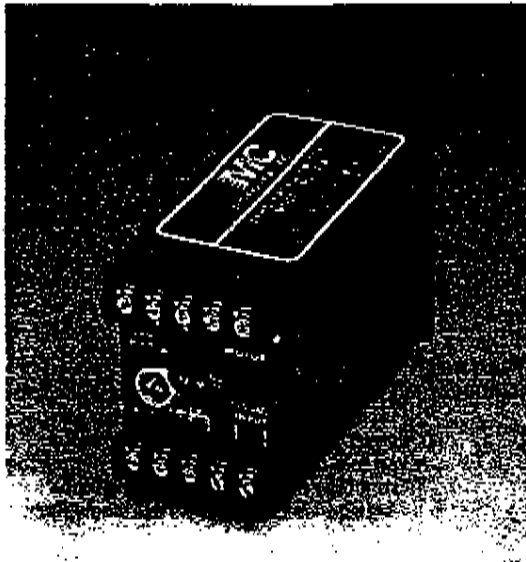


The PS127A Voltage Sensor (Zero Speed Switch)



- 20 to 400 mv AC or DC adjustable range
- 600 Volts continuous over voltage capacity at sensing input
- Takes the space of only one A-B track mount relay
- 10 Amp relay contacts
- Visual LED Indicator
- Low Cost

Unique Voltage Sensor

The PS127A is a unique voltage sensing device since even though the sensitivity is in millivolt range, the sensing terminals will accept up to 600 volts overvoltage. This feature lends the PS127A to be used as a Zero Speed Switch monitoring the back EMF generated by a coasting motor.

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Easy Installation as Zero Speed Switch

As a Zero Speed Switch the PS127A is designed to replace motor mounted mechanical speed switches. The installation of this completely solid-state device is fast and simple, right into the control panel with no changes in control circuit wiring. There are no gears or sensors to mount onto the motor shaft. Also the size of the motor is immaterial, it can be up to 480 AC or DC motor from fractional horsepower to hundreds of horsepower.

Operating Logic

The PS127A Voltage Sensor requires 115 VAC, 50/60 Hz for its operation. The output relay is energized when the voltage at the sensing input falls below the set point adjusted by a locking bushing potentiometer. An LED indicator lights up when the relay is energized. The indicator and the relay turn off when the input exceeds the set point. The PS127A has approximately 5% differential between turn on and off set points to avoid continuous output tripping when the input voltage is close to the switching point.

PS127A Specifications

Input Power: 105 to 135 VAC, 50-60 Hz, 2w exclusive of load.

Output Power:

Two Form C contacts

Rating: 10 Amp resistive at 115 VAC

Life Mechanical: 10,000,000 operations

Under Full Load: 200,000 operations minimum

Under Half Load: 1,000,000 operations minimum

Sensing Circuit:

Range: 20 to 400 mv RMS for AC and corresponding value of DC

Differential: Approximately 5% of set point

Calibration: $\pm 10\%$ of 400 mv RMS at fully CW position of pot

Overvoltage: 600 volts

Signal Impedance: 400 K ohms minimum

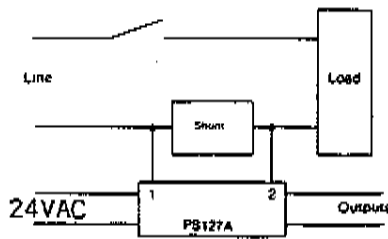
Repeatability: $\pm 1\%$

Accuracy: $\pm 10\%$ over the full input power voltage and temperature range.

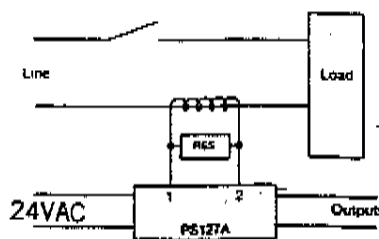
Operating Temperature: -10°F to 135°F

Transient Protection: Input power terminals are protected against 1000 volt 8 ms wide transients with 1% duty cycle

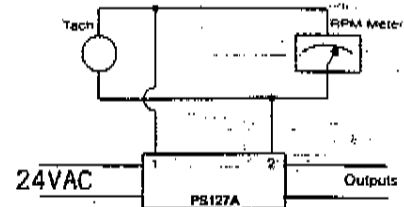
PS127A Applications



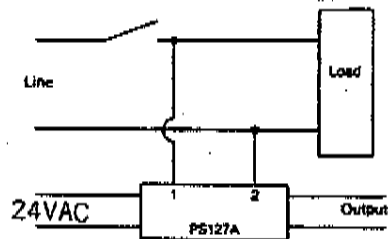
Current Sensor:
The value of shunt resistor determines the current sense set point, e.g. 1mohm shunt would give 1 mv per Amp.



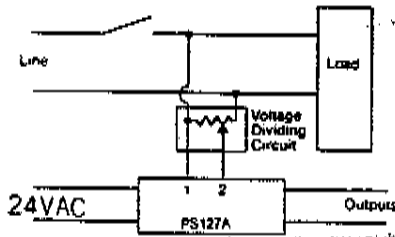
A current transformer or simply a wire loop around the current carrying conductor would produce voltage which can be sensed by the PS127A. A load resistor should be used with the C/T to permit current flow thru the C/T since the input impedance of PS127A is extremely high.



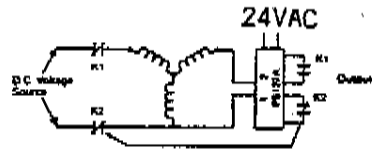
Motor Speed Switch:
Since the input impedance of the PS127A is extremely high, it does not affect the RPM meter readings and can accurately activate the outputs at a predetermined speed.



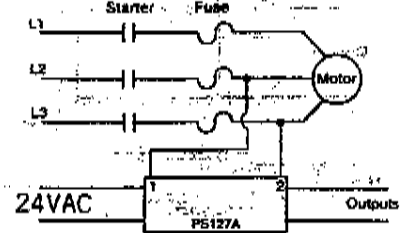
Voltage Sensor
In this straight connection the sensitivity will be 20 to 400 mv.



A voltage dividing network can increase the voltage sensitivity by the division factor.



Dynamic D.C. Braking:
IN D.C. Electronic braking of an AC motor, upon removal of AC line voltage DC is applied across two windings of the motor for a fixed time duration. Due to changes in motor load or incorrect time setting, the motor may stop too early in which case the DC voltage source sees a stall current which can destroy the motor windings & the DC source. Or the DC may be applied for too short of a time period which is inadequate to stop the motor. The PS127 can sense the voltage across the third winding to detect when the motor has stopped and then turn off the DC source, thus eliminating time setting adjustments.



Zero Speed Switch or Anti-plugging Switch:
When the line voltage is applied to the motor, the outputs of PS127A stay de-energized. As the line voltage is removed, the motor starts to coast and generates a back EMF as long as the motor is rotating. At a predetermined speed or when the motor has come to a complete stop, depending upon the sensitivity adjustment, the relay energizes. The normally open relay contacts can be wired in series with the motor start circuit to prevent re-starting the motor (possibly in the wrong direction) before it has come to a complete stop.

