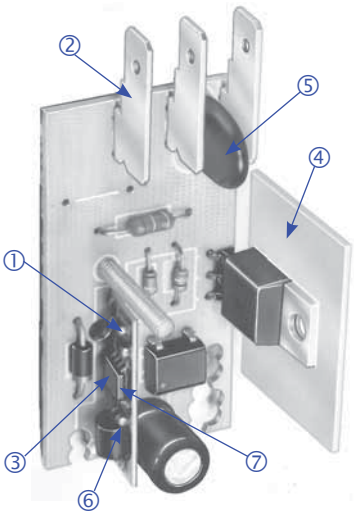
PV and 2PV Series for 115 Vac, 230 Vac or 115/230 Vac Dual Voltage Split Phase Motors

Basic Operation

The PV Series SINPAC uses a pulse sampling technique to monitor RPM-sensitive information (induced voltage) across the motor start winding. After the initial timing period, solid-state logic will sample the induced voltage across the start winding and will repeat this sequence until the voltage across the start winding is above the cut-in reference value. The SINPAC logic circuit continues to monitor the RPM-sensitive information (induced voltage) on the start winding. If the SINPAC logic detects that the motor RPM drops below a certain point, it automatically recloses the solid-state switch reconnecting the start winding. Both the initial timing period and cut-in reference value can be modified to meet specific applications.

The PV Series SINPAC is available in three current ratings: 16, 25 and 40 amps.



① ***Electrically Protected.*** Designed to filter out electrical noise, so there is no concern of random switch malfunction.

② ***Reduced Installation Time.*** Easily accessible 1/4 inch terminals and mounting, reduce the amount of time required to install SINPAC Switches or to change out mechanical switches.

③ ***Restart Capability.*** When motor speed drops below 50% of synchronous speed, the start winding is brought back into the circuit to reinitiate starting torque.

④ ***Soldered Heat Sink.*** High cycling.

⑤ ***Transient Protection.*** Transient protection tested per IEEE C62.41 - 1991 Category A3.

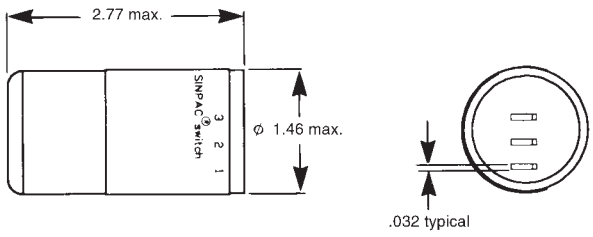
⑥ ***Universal Design.*** 50/60 Hz operation. Will work on 2, 4 or 6 pole motors of any manufacturer. Reduced inventory.

⑦ ***Line Voltage Compensation.*** No modifications or changes are required for line voltage variations. SINPAC Switches will operate in areas susceptible to *brown-outs* or low voltage due to long wiring runs.

ADDITIONAL FEATURES

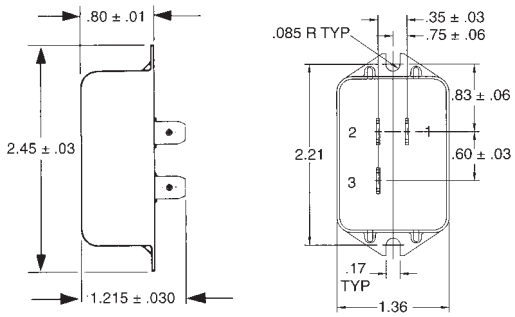
- **Capacitor Shape.** Allows for easy mounting under a motor doghouse (20 package style).
- **UL E71115 and Canadian UL Recognition**.
- **Operating Temperature:** -40°C to 65 °C (-40 °F to 149°F) [for operation between 65°C and 85°C (149°F and 185°F), consult factory.]
- **Environmentally Protected.** Immune to moisture, dust, dirt, shock and vibration.
- **Operating Voltage:** 115 Vac SINPAC Switch: 90-130 Vac. For dual voltage motor equipped with center-tapped main winding: 90-130 Vac or 180-265 Vac.

-20 Enclosure

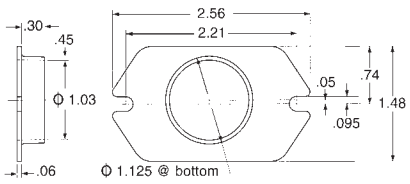


Dimensions are for estimating only. Drawings for customer reference are available upon request.

-11 Enclosure



Gasket



Typical Maximum Motor hp	Typical Full Load Motor Nameplate Current Rating (amps)		Switch Rating and Permissible Maximum Start Winding Current (amps)	Start Circuit Voltage	Catalog Number	Part Number	Timing Interval* (sec.)	Cut In Voltage Typical	Package Style
	115 Volts	115/230 Volts							
1/3	8	8/4	16	115	PV-16-10	4-7-11016-11-UF1	.4	10	11
1/3	8	8/4	16	115	–	4-7-11016-20-UF1	.4	10	20
1/3	8	8/4	16	115	PV-16-30	4-7-11016-11-UO1	.4	30	11
1/3	8	8/4	16	115	–	4-7-11016-20-UO1	.4	30	20
1/2	–	8	16	230	2PV-16-60	4-7-12016-11-NH1	.4	60	11
1/2	12	12/6	25	115	PV-25-10	4-7-11025-11-UF1	.4	10	11
1/2	12	12/6	25	115	–	4-7-11025-20-UF1	.4	10	20
1/2	12	12/6	25	115	PV-25-30	4-7-11025-11-UO1	.4	30	11
1/2	12	12/6	25	115	–	4-7-11025-20-UO1	.4	30	20
3/4	20	20/10	40	115	PV-40-30	4-7-11040-11-UO1	.4	30	11
3/4	20	20/10	40	115	–	4-7-11040-20-UO1	.4	30	20

*NOTE FOR PV SWITCH APPLICATIONS: Please contact the factory for special sampling time intervals or cut in voltage. Standard sample time interval is .4 seconds.

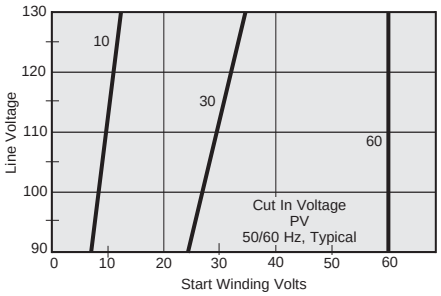
Selection

Motor hp ratings are typical. For an accurate selection procedure, measure start winding current during a normal start or at locked rotor and select a SINPAC Switch with higher maximum current rating than that measured.

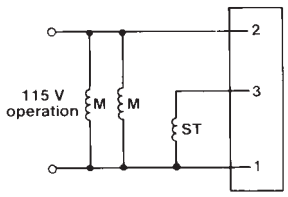
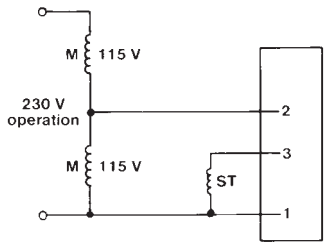
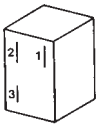
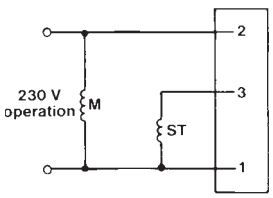
1. Be sure switch series matches motor type.
2. Be sure switch voltage rating matches (start) circuit voltage rating.
3. Selection can be based on actual measurement of start winding current or two times the motor nameplate FLA rating.
4. Switch current rating must match or exceed the motor start winding current requirements. Always select a SINPAC Switch with the next higher current rating for:
   a) High cycling applications.
   b) Long acceleration time.
   c) High ambients: Greater than 55° C.
5. To assure proper motor operation, the voltage across the start winding must reach the SINPAC Switch cut in reference voltage between 70% to 85% of motors synchronous speed.
   Caution: SINPAC Switches are line voltage compensated. Changes in the line voltage will not effect system operation unless an overload condition causes reduced running speed, along with reduced voltage across the start winding.
6. Higher current switches can be used in place of lower rated switches of the same series.

Line Voltage Compensation Chart

Induced voltage across the start winding is directly proportional to motor speed and line voltage. All SINPAC Switches use this voltage to switch the start winding out of the circuit. Your motor with a SINPAC Switch must generate a voltage that is 20% greater than the switch cut in reference voltage to assure cut out of the start winding. Refer to charts below.



Wiring Diagram

Catalog Number	SINPAC Switch Rating	115 Volt 50/60 Hz Motor Operation	230 Volt 50/60 Hz Motor Operation
PV-16 PV-25 PV-40 *Connect to Split Phase Motors*			
2PV-16 *Connect to Split Phase Motors*		*Not Applicable*	

M – Motor main winding, **ST** – Motor start winding