

199 Power Relays

GENERAL SPECIFICATIONS



DPDT



SPDT



SPST-DM

PART NUMBERS		199AX, 199X, 199AMX ¹ , 199MX ¹ , 199ABX ² , 199BX ²	199ADX, 199DX, 199ADYX, 199DYX, 199ADBX ² , 199DBX ²	199P ^{3,4} , 199AP ^{3,4}	199ADE, 199DE, 199ADBE ² , 199DBE ²
CONTACT CHARACTERISTICS					
Number and type of contacts		SPST, SPDT, DPST, DPDT	SPST-DM, SPST-DB	DPDT, SPDT	SPST-DM
Contact material		AgSnO			
Thermal (carrying) current rating		40 A		50 A	
Maximum switching voltage		600 V(rms)			
Rated Switching current at voltage	Resistive	40 A at 300 VAC; 5 A at 480 VAC; 5 A at 600 VAC; 40 A at 28 VDC	40 A at 300 VAC; 12 A at 480 VAC; 10 A at 600 VAC; 40 A at 28 VDC	50 A at 300 VAC; 5 A at 480 VAC; 5 A at 600 VAC; 50 A at 28 VDC	50 A at 300 VAC; 12 A at 480 VAC; 10 A at 600 VAC; 50 A at 28 VDC
	Motor	2 HP at 120 to 600 VAC			
	Tungsten	15 A at 120 VAC			
	Pilot duty	A600			
Minimum switching requirement		1 A at 5 VAC/VDC			
COIL CHARACTERISTICS					
Voltage range		6 to 600 VAC; 6 to 250 VDC			
Operating range (% of Nominal)		85% to 110% (AC); 80% to 110% (DC) ^a			
Average power consumption (Maximum)		10 VA; 4 W			
Drop-out voltage threshold		10% (AC/DC)			
PERFORMANCE CHARACTERISTICS					
Electrical life (IEC 60947-1)	Rated resistive load	Please refer to Table 3			
Operating time (response time)		30 ms			
Dielectric strength	Between coil and contact	2200 V	2200 V	2200 V	2200 V
	Between poles	2200 V	N/A	2200 V	N/A
	Between open contacts	1600 V	2200 V	1600 V	2200 V
ENVIRONMENT					
Product certifications		UL, CSA, CE, RoHS			
Ambient temperature range (around the device)		-55 to +100 °C (Storage)			
		-55 to +55 °C (Operation)			
Termination ³		10 (5.3) AWG (mm²)			
Terminal tightening torque		11 to 15 in-lb (1.2 to 1.7 Nm)			
Weight		227 to 312 g (8 to 11 oz)			

¹ For auxiliary switch ratings, please refer to Table 1.

² For ratings with blowout magnet, please refer to Table 2.

³ For UL listed installations, proper wire rating and terminations required.

⁴ Recommended ring, fork, or box wire termination.

⁵ Recommended mounting positions: horizontal or vertical (not upside down).

AUXILIARY SWITCH RATINGS	
Resistive Load 120/250 VAC (50/60 Hz)	10 A
Motor Load 125/250 VAC (50/60 Hz)	0.25 HP
Tungsten Load 125 VAC (50/60 Hz)	3 A

RELAY VOLTAGE	RATING W/BLOWOUT MAGNET
110 VDC	20 A
220 VDC	8 A
325 VDC	4 A
500 VDC	2 A

CURRENT/HORSEPOWER RATINGS	LOAD VOLTAGE	FREQUENCY	LOAD TYPE	ESTIMATED ELECTRICAL ENDURANCE	SEE NOTE(S)
AC LOAD					
50 A	300 V	50/60 Hz	Resistive	25,000 cycles	1, 4
40 A				50,000 cycles	2, 4
2 HP	120 to 600 V		Motor	50,000 cycles	3, 4
15 A			Tungsten	20,000 cycles	4, 5
A600	---	---	Pilot Duty	100,000 cycles	4
DC LOAD					
40 A	28 V	DC	Resistive	100,000 cycles	4
20 A	110 V				
8 A	220 V				
4 A	325 V				
2 A	500 V				

shown in inches (millimeters)

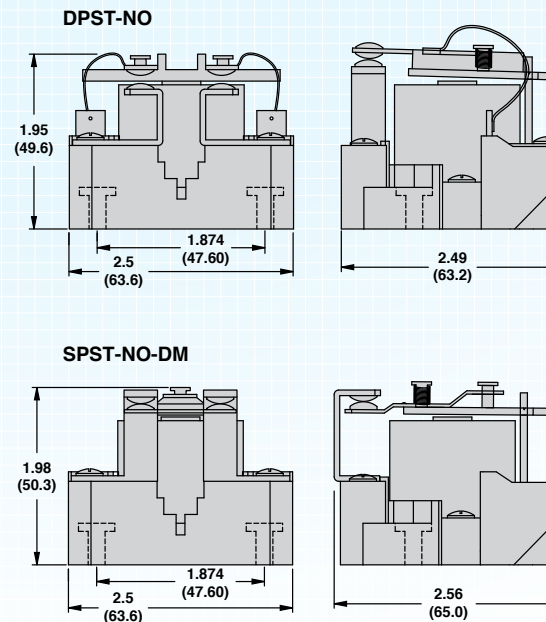


Figure 1 displays schematic diagrams of various optical switch architectures, organized into two columns and three rows. Each diagram shows the internal structure of the switch, including waveguides, switches, and input/output ports.

- SPDT (Single-Port Double-Throw):** Shows a single input port (14) and two output ports (12, 11). The switch is controlled by a signal (A1) and has a feedback path (A2).
- DPDT (Double-Port Double-Throw):** Shows two input ports (22, 24) and two output ports (12, 11). The switch is controlled by a signal (A1) and has a feedback path (A2).
- SPST-NO-DM (Single-Port Single-Throw No-Double-Multiplexing):** Shows a single input port (14) and one output port (13). The switch is controlled by a signal (A1) and has a feedback path (A2).
- DPST-NC (Double-Port Single-Throw No-Double-Multiplexing):** Shows two input ports (22, 24) and one output port (12). The switch is controlled by a signal (A1) and has a feedback path (A2).
- SPST-NC-DB (Single-Port Single-Throw No-Double-Multiplexing Double-Balanced):** Shows a single input port (12) and one output port (13). The switch is controlled by a signal (A1) and has a feedback path (A2).
- DPST-NO (Double-Port Single-Throw No-Double-Multiplexing):** Shows two input ports (24, 21) and one output port (14). The switch is controlled by a signal (A1) and has a feedback path (A2).

1. 50 A rating refer to models with pressure wire connectors only.
2. Resistive AC load ratings are based on a power factor of 0.85 to 1.0.
3. Motor horsepower ratings are based on a power factor of 0.4 to 0.5, and an initial inrush current not in excess of six times the full load current.
4. All ratings are based on applying the rated nominal power to the relay coil in such a manner as to provide a "clean" make and break, and does not result in any contact chatter or multiple actuation of the contacts.
5. The tungsten rating is based on cold filament inrush current not exceeding 15 times the rated steady state lamp current.