219 Series - Industrial and Nuclear Relays
Up to 4PDT and 6PST, Up to 10 Amp Contacts

File No. E13224

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225G

Versatile. Rugged. Proven. These are but a few words used by customers to describe the 219 series. When long life and cost of down time / service are important, the 219 Series of relays solves the problem. It's the standard throughout Electrical, Industrial controls, switchgear, Light Rail and Nuclear applications that other relays are measured against. Capable of various contact combinations and switching loads in the same relay! The 219 is also the base relay used in the Timer Series 236/237, 246/247, 266/267 and Latching 255 Relay series. All 219 Series relays are built with materials that meet the UL 94-V0 requirements.

Nuclear versions, manufactured in the US, utilize special plating and materials to minimize wear and withstand exposure to radiation, severe temperature variations, shock and vibrations.

US made relays continue to be built to the standards that have passed Nuclear testing over the years. However, by the choice of our customers, they may still need to be tested by an outside testing agency to confirm meeting the qualifications.

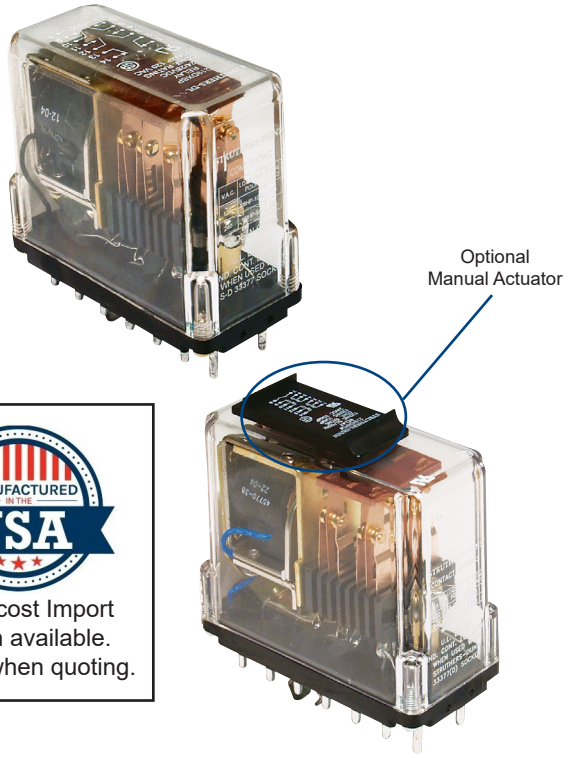
GENERAL SPECIFICATIONS (@ 25° C)

Contacts:	
Contact Configuration	Up to 4PDT or 6PST
Contact Material	Silver Alloy-Gold Diffused
Contact Rating	
120 / 240VAC Resistive	10 Amp / 5 Amp
28VDC Resistive	10 Amp
Contact Resistance, Initial	50 milliohms max @ 6vdc Min Contact Load 50mA
Coil:	
Coils Available	AC and DC
Nominal Coil Power	AC 5VA DC 1.8-2.5W
Input Voltage Tolerance - AC	85% to 110% of nominal
Input Voltage Tolerance - DC	80% to 110% of nominal
Drop-out voltage	10% of nominal
Duty	Continuous
Timing:	
Operate Time (max)	25 mS
Release Time (max)	20 mS
Release Time for relays incorporating Coil Arc suppression Suffix "V" or "V1" (max)	30 mS
Dielectric Strength:	
Across Open Contacts	1500Vrms
Between mutually insulated point	1500Vrms
Insulation resistance	1,000 Mohms min @ 500VDC

See page 4 for additional options

See page 2 for Other UL Ratings

See page 2 for for Specs



MANUFACTURED IN THE USA

Lower cost Import version available. Specify when quoting.

Temperature:	
Operating	AC = -20 to 60°C (-4 to 140°F) DC = -20 to 70°C (-4 to 158°F)
Storage	-40 to 105°C (-40 to 221°F)
Life Expectancy:	
Electrical (full load)	100,000
Mechanical (no load)	10,000,000

Miscellaneous:	
Mounting Position	Any
Enclosure	Clear Polycarbonate
Weight	8.5oz (241 grams)
Mating socket (UL Listed when used)	12 PIN: 27390 (D) 14 PIN: 33377 (D) (D) is option for DIN Rail Mount - Not UL Listed

Sockets are Purchased Separately

STRUTHERS-DUNN
LEADERS IN RELAYS & CONTROLS • SINCE 1923
A 100% Employee Owned Company

UL Standard Contact Load Ratings

Contact Configuration	Current / HP	Load Voltage	Load Frequency	Type of Load
All Styles EXCEPT Code 33	10 Amp 5 Amp 10 Amp 0.5 Amp 1/6HP 1/3HP	120 VAC 240 VAC 28 VDC 125 VDC 120 VAC 240 VAC	50/60Hz 50/60Hz DC DC 50/60Hz 50/60Hz	Resistive Resistive Resistive Resistive Motor Motor
Code 33	5 Amp 2.5 Amp	120 VAC 240 VAC	50/60Hz 50/60Hz	General Purpose General Purpose

Additional UL Ratings for code "69" relays incorporating a Blowout Magnet.

Contact Configuration	Current / HP	Load Voltage	Load Frequency	Type of Load
All Styles EXCEPT Code 33	3 Amp 1Amp	125 VDC 250 VDC	DC DC	Resistive Resistive

See Page 3 for Additional Contact Ratings tested for Specific Contact Current/Voltages as a Reference Guide on the flexibilty of the 219 Relays Contact usage.

Use Code "33" for Bifurcated Contacts when Switching or carrying low-level current below 50mA.

"Make and Carry Loads" are when the contacts are closed on the load but the load and/or power is disconnected from the circuit before the relay contacts are opened.

"Switching Loads" are when the contacts make, carry and break the actual loads - these are conditions that cause the most wear from arcing in contacts.

DC "Break Loads" are more destructive to contacts. The use of Blowout Magnets helps to quench the arc during DC Switching which can help prolong the life of the contacts.

For contact ratings designated for code "69" a blowout magnet is required to quench the arc created when the contacts are opened.

219 Standard Coil Specifications

AC Coils, 50/60HZ					DC Coils			
Nominal voltage	Resistance ohms ±10%	Milliamperes Cold	Hot	Impedance ohms	Nominal voltage	Resistance ohms ±10%	Milliamperes Cold	Hot
6	1.1	1500	840	7.2	6	15.5	385	304
12	4.2	750	410	27	12	63.5	189	147
24	15.5	375	200	120	24 /28*	250	96	77
120	540	75	40	2,700	32	375	86	62
240	2100	32	17	13,400	37.5	375	100	80
					48	975	49	39
					115/125*	6200	20	16
					250	27777	9	7

NOTE: Other special coil voltages may be available, contact *info@struthers-dunn.com* with specific needs.

Note: Stock 24VDC and 115VDC relays may have part numbers with 24/28VDC or 115/125VDC respectively. These relays operate at 80% of the lower voltages and operate within allowable temperature rises at higher voltages.

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Below are lab-tested contact load ratings based on switching configurations and various Voltage/Current loads that are for reference only. (Not official UL ratings)

Highest Load for Standard Contacts

*Current - A, Resistive unless otherwise noted

Voltage	Current, A	Switching Type
28 VDC, "69"	10A	Make & Break
48 VDC, "69"	10A	Make & Carry
	5A	Make & Break
125 VDC, "69"	10A	Make & Carry
	4A	Carry & Break
	3A	Make & Break
	0.5A, Inductive	Make & Break
125 VDC, "69" DOUBLE MAKE	4A	Make & Break
	1.1A, Inductive	Make & Break
250 VDC, "69"	4A	Make & Carry
	2A	Carry & Break
	1A	Make & Break
	0.15, Inductive	Make & Break
250 VDC, "69" DOUBLE MAKE	1.5A	Make & Break
	0.55A, Inductive	Make & Break
120 VAC	10A, 3A Inductive, 1/6 HP	Make & Break
240 VAC	10A, 1/3 HP	Make & Break
277 VAC	10A	Make & Carry
	7A	Carry & Break
	4.5A	Make & Break

Lowest Load for Standard Contacts

*Current - A, Resistive unless otherwise noted

Voltage	Current, A	Switching Type
5 VDC	1A	Make & Break
12 VDC	0.75A	Make & Break
28 VDC	0.050A	Make & Break
48 VDC	0.050A	Make & Break
125VDC	0.050 A	Make & Break
250 VDC	0.050A	Make & Break
120 VAC	0.050A	Make & Break
240 VAC	0.050A	Make & Break
480 VAC	0.050A	Make & Break

Use Code "69" for blowout magnet when switching voltages above 40VDC.

Bifurcated Contacts - Explanation

What are the advantages of Bifurcated contacts?
Bifurcated contacts are a set of contacts that are on a blade that is split into two parts. (See Photo)

Advantages: Bifurcated contacts are used specifically for low-level switching of current and voltages that are not reliably possible with standard contacts. The bifurcated contacts provide an increased amount of contact surface to transfer low-current signals with greater reliability.

The contacts can be set up like regular contacts **in any combination** with Normally Closed and/or Open contacts. The blades with the "dual contacts" move simultaneously to make contact with the Open and Closed set of contacts - just like Standard contacts.

Bifurcated contacts can be in a separate relay by themselves using the **Code 33** in the part number (See Pg. 2 for Ordering Codes) or combined in a relay alongside standard contacts. Relays with dual-type contacts are given special part numbers that would need to be assigned to ensure future compliance if replacements are needed.

Highest Load for Bifurcated Contacts

*Current - A, Resistive unless otherwise noted

Voltage	Current, A	Switching Type
28 VDC	5A	Make & Carry
	3A	Carry & Break
	2.5	Make & Break
48 VDC	3A	Make & Carry
	2A	Carry & Break
	1.5A	Make & Break
125VDC	1A	Make & Carry
	0.5	Carry & Break
	0.25	Make & Break
250 VDC	0.5A	Make & Carry
	0.25A	Carry & Break
	0.1A	Make & Break
120 VAC	5A	Make & Carry
	5A	Carry & Break
	5A	Make & Break
240 VAC	2.5A	Make & Carry
	2.5A	Carry & Break
	2.5 A	Make & Break
277 VAC	2.5A	Make & Carry
	1.5A	Carry & Break
	1.0A	Make & Break
480 VAC	0.5A	Make & Carry
	0.2A	Make & Break

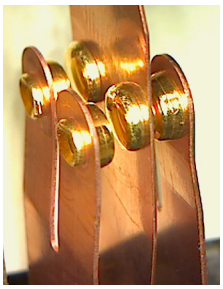
Lowest Load for Bifurcated Contacts

*Current - A, Resistive unless otherwise noted

Voltage	Current, A	Switching Type
5 VDC	0.1A	Make & Break
12 VDC	0.075A	Make & Break
28 VDC	0.01A	Make & Break
48 VDC	0.005A	Make & Break
125VDC	0.005A	Make & Break
250 VDC	0.001A	Make & Break
120 VAC	0.01A	Make & Break
240 VAC	0.005A	Make & Break
480 VAC	0.001A	Make & Break

Use Code "33" for bifurcated contacts when switching low level current below 50mA.

Example of what Bifucated contacts look like.



Outline Dimensions
Dimensions Shown in inches & (millimeters)

Ordering Code **219** **XBX** **69PLM33VN** **-24VDC** **(Ref. Only)**

Series
219

Contact Arrangement
ABA (SPST-NO & DPDT&SPST-NC) (1 Form A & 2 Form C & 1 Form B) 12 Pin Plug
ABX (SPST- NO & DPDT) (1 Form A & 2 Form C) 12-pin Plug
BBX (DPST-NO & DPDT) (2 Form A & 2 Form C) 12-pin Plug
BXB (DPST- NO & DPST- NC) (2 Form A & 2 Form B) 12-pin Plug
BXD (DPST- NO & 4PST-NC) (2 Form A & 4 Form B) 14-pin Plug
DXB (4PST- NO & DPST- NC) (4 Form A & 2 Form B) 14-pin Plug
FXX (6PST- NO) (6 Form A) 14-pin Plug
JXH (DPST-NO-DM & SPST-NC-DB) (2 Form X & 1 Form Y) 14-pin Plug
XBX (DPDT) (2 Form C) 12-pin Plug
XCX (3PDT) (3 Form C) 12-pin Plug
XDX (4PDT) (4 Form C) 14-pin Plug

Optional Features **Part Numbering Sequence**
Permanent Magnet Blowout - CODE 69
Polycarbonate Cover - CODE P (Standard)
Indicator Lamp - CODE L
Manual Actuator - CODE M
Bifurcated Contacts - CODE 33
Coil Suppression Diode - CODE V
Coil ARC Suppressor & Snubber Network - Code V1 (VAC Coils)
Cover Gasket - CODE N

Coil Voltage
AC: 12, 24, 120, 240, (Add VAC)
DC: 6, 12, 24/28, 32, 48, 115/125, 250 (Add VDC)

Note: Coil voltages and Frequency must be specified when ordering.

See the 219 Webpage for additional contact configurations and other information.

219 Series Website Configurator

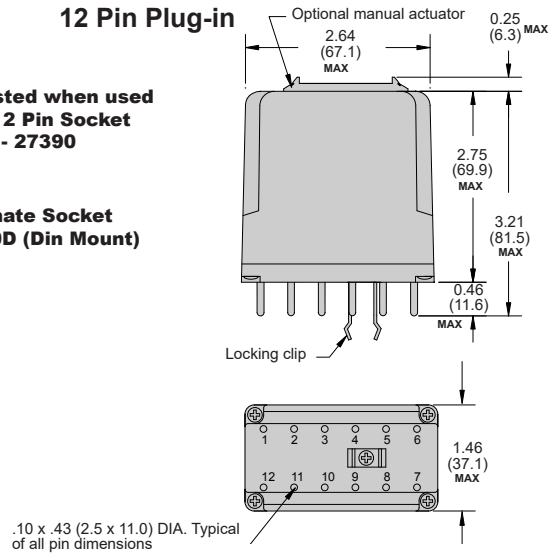
Scan this QR Code to Access 219 Configurator

Select options you need to build your part number for the 219 Series. The "Configurator" will provide a Part number and a Specification page for you after your selections that can be saved or printed.

12 Pin Plug-in

UL Listed when used with 12 Pin Socket Part# - 27390

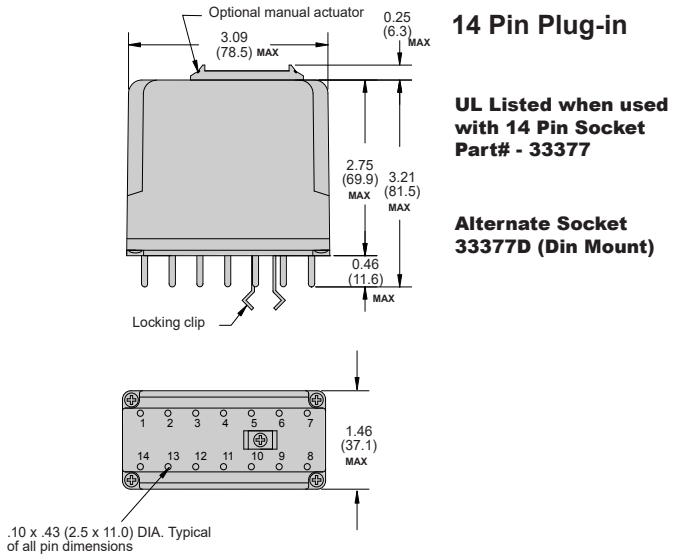
Alternate Socket 27390D (Din Mount)



14 Pin Plug-in

UL Listed when used with 14 Pin Socket Part# - 33377

Alternate Socket 33377D (Din Mount)



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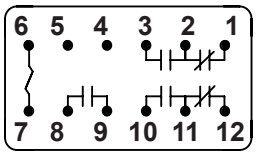
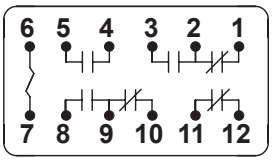
NOTE: The most popular wiring schematics are below. Additional Options can be found using the 219 Configurator on our website.

219 Wire Diagram 12-Pin (Top View/ Socket Terminal Wiring)

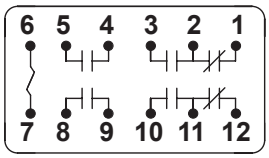
219ABX
(SPST-N.O. + DPDT)



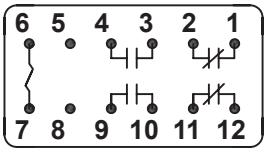
219ABA
(DPDT+SP-NO+1P-NC)



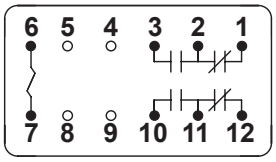
219BBX
(DPDT+2P- N.O.)



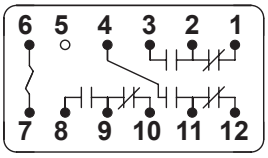
219BXB
(DPDT+2P- N.O.)



219XBX
(DPDT)



219XCX
(3PDT)



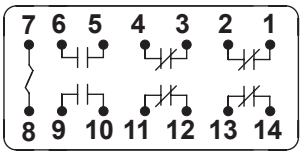
Standard Diode Suppression Wiring
Polarity applies to relays with the option "V"
Alternative polarity/wiring is available as a special part number.

(12-Pin) +6 ▶|— 7-

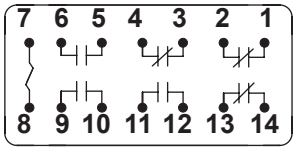
(14-Pin) +7 ▶|— 8-

219 Wire Diagram 14-Pin (Top View/ Socket Terminal Wiring)

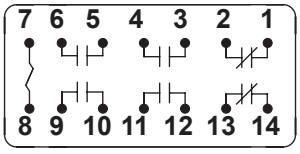
219BXD
(2P-NO+4P-NC)



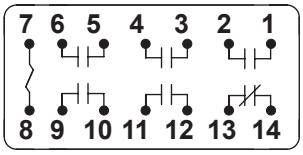
219CXC
(3P-NO+3P-NC)



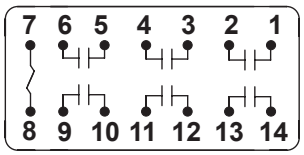
219DXB
(4P-NO+2P-NC)



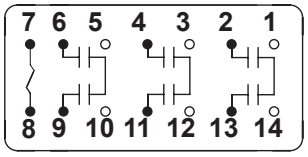
219EXA
(5P-NO+1P-NC)



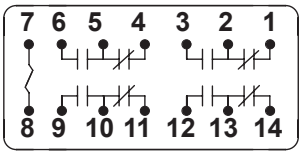
219FXX
(6P-NO)



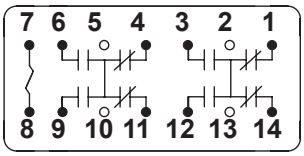
219KXX
(3PST-DM)



219XDX
(4PDT)



219XJX
(DPDT-DM/DB)



UL LISTED when used with mating sockets, 27390 (12 pin) or 33377 (14 pin)