

CLASS 2 TRANSFORMERS AND FAN CENTERS

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90-T40F1

90-T40S1 THRU 90-T75C3 24 VOLT SECONDARY CLASS 2 TRANSFORMERS ENERGY LIMITING

For Industrial, Heating and Air Conditioning Controls Applications

FEATURES

- Color coded primary leads.
- Multi-mount styles available.

SPECIFICATIONS

Agency U.L. file number **UL** E33334

MULTI-MOUNT (CLOSED CONSTRUCTION) UNIVERSAL MOUNTING WITH PLATE

Model Number	Mars Part No.	Jard Part No.	VA	Hz	Primary	Connections	Sec.	Connections
90-T40M1	50302	4011M	40	50/60	120V	Leads	24V	Leads
90-T40M2	50303	4021M	40	50 / 60	208 / 240V	Leads	24V	Leads
90-T40M3	50304	4031M	40	60	120 / 208 / 240V	Leads	24V	Leads
90-T50M3	50314	5031M	50	60	120 / 208 / 240V	Leads	24V	Leads

FOOT-MOUNT (OPEN CONSTRUCTION)

Model Number	Mars Part No.	Jard Part No.	VA	Hz	Primary	Connections	Sec.	Connections
90-T40F1	50352	4011F	40	50/60	120V	Leads	24V	Leads
90-T40F2	50353	4021F	40	50 / 60	208 / 240V	Leads	24V	Leads
90-T40F3	50354	4031F	40	60	120 / 208 / 240V	Leads	24V	Leads
90-T50F3	50308*	5031F	50	60	120 / 208 / 240V	Leads	24V	Leads

* 50308 is 50/60 Hz

FOOT-MOUNT (MANUAL RESET, OPEN CONSTRUCTION)

Model Number	Mars Part No.	Jard Part No.	VA	Hz	Primary	Connections	Sec.	Connections
90-T50C3	50327	5041C	50	50 / 60	120 / 208 / 240V	Leads	24V	Leads
90-T60C3	50327	6041C	60	50 / 60	120 / 208 / 240V	Leads	24V	Leads
90-T75C3	50321	7541C	75	50 / 60	120 / 208 / 240V	Leads	24V	Leads
90-T100C4	50540	10041C	100	50/60	120 / 208 / 240 / 480	Leads	24V	Leads

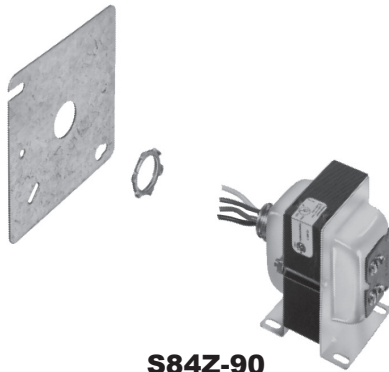
TRANSFORMER LEAD COLOR CODING

Primary Side				Secondary Side	
Common	120V	208V	240V	Common	24V
* Black	White	Red	Orange	Blue	Yellow

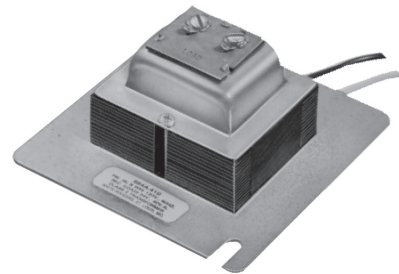
* Black is common with respect to the transformer winding, not the external circuit.



90-T75C3



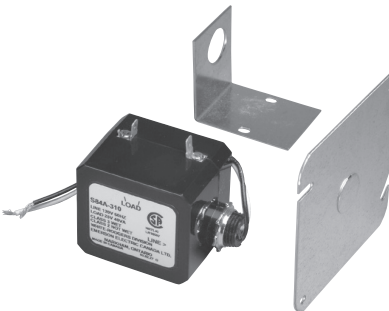
S84Z-90



S84A-410



S82A-310



S84A-310

CLASS 2 TRANSFORMERS – ENERGY LIMITING

Various Standard Configurations of Step Down Transformers
Designed to Power 24 VAC Control Systems

FEATURES

- Energy limiting design, unaffected by momentary short circuit.
- Continued short circuit of secondary will cause primary winding to open in 1 to 2 minutes without creating a fire hazard.
- Maximum ambient temperature is 150°F.

SPECIFICATIONS

Agency U.L. file number E33334

UNIVERSAL MOUNTED TYPES (Plate, Foot or Hub Mount)

Model Number	Primary to Secondary Voltages	Output Rating	Terminations	
			Line	Load
S84-11	120v to 25v 60Hz	40 VA	10" leads	Screw terminals
S84Z-90	120 / 208 / 240v to 25v 60Hz	40 VA	10" leads	Screw terminals

PLATE MOUNTED TYPE

Model Number	Primary to Secondary Voltages	Output Rating	Terminations	
			Line	Load
S84A-410	120v to 25v 60Hz	40 VA	10" leads	Screw terminals

HUB MOUNT Class 2 Not Wet / Class 3 Wet (C.S.A. Certified and U.L. Listed)

Model Number	Primary to Secondary Voltages	Output Rating	Terminations	
			Line	Load
S82A-310	120v to 25v	20 VA	10" leads	Screw / spade terminals

UNIVERSAL MOUNTED TYPES (Plate, Foot or Hub Mount)

Class 2 Not Wet / Class 3 Wet (C.S.A. Certified and U.L. Listed)

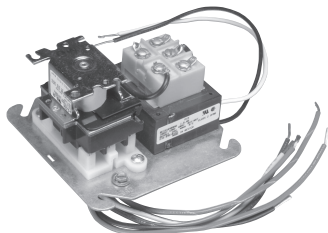
Model Number	Primary to Secondary Voltages	Output Rating	Terminations	
			Line	Load
S84A-310	120v to 25v	40 VA	10" leads	Screw / spade terminals

✻ Indicates Canadian Model Number: call 1-800-305-6953 to order

FAN CONTROL CENTER

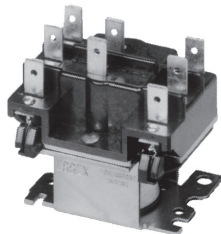
RELAY & TRANSFORMER

White-Rodgers®



90-112 THRU 90-130

U.L. Recognized



90-340

Approximate Overall Dimensions
2 1⁄8" x 1 7⁄8" x 2 1⁄4"

90-112 THRU 90-130

FAN CONTROL CENTER

Transformer and Relay Combination for Easy Installation on a 4"x 4" Junction Box

FEATURES

- Line voltage connections pre-wired.
- Energy limiting class II transformer design.
- Color coded pre-stripped leads.
- Low voltage connections on terminal board.

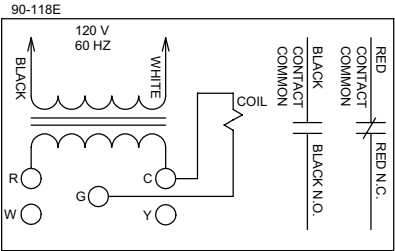
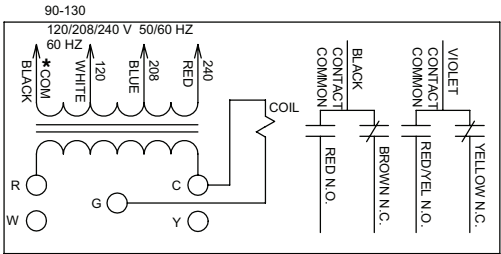
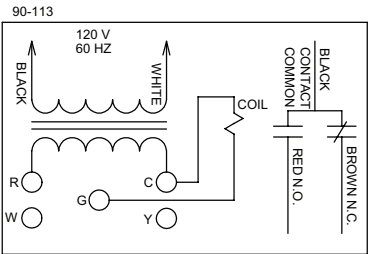
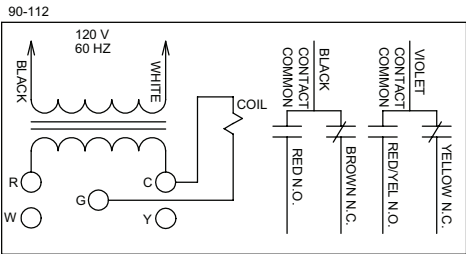
SPECIFICATIONS

Agency U.L. file fan center E73641

REPLACEMENT RELAY FOR FAN CONTROL CENTER

Model Number	Replaces Relay On	Description
90-340	90-112, 90-113, 90-117 90-118E, 90-119, 90-130	DPDT Universal Plug-in Relay

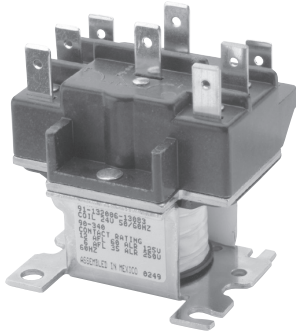
Model Number	Mars Number	Transformer						Relay	Contact Ratings			
		Primary			Secondary				120 VAC (amps)		240 VAC (amps)	
		Voltage	Hz	Connections	Voltage	VA	Connections		Full Load	Locked Rotor	Full Load	Locked Rotor
90-112	24010	120	60	Color coded leads, pre-stripped	24V	40	Terminal board with 5 screw terminals	DPDT	13.8	82.8	6.9	41.4
90-113	24013	120	60	Color coded leads, pre-stripped	24V	40	Terminal board with 5 screw terminals	SPDT	13.8	82.8	6.9	41.4
90-118E	24012	120	60	Color coded leads, pre-stripped	24V	40	Terminal board with 5 screw terminals	SPNO / SPNC	13.8	82.8	6.9	41.4
90-130	24010	120 / 208 / 240	50 / 60	Color coded leads, pre-stripped	24V	40	Terminal board with 5 screw terminals	DPDT	13.8	82.8	6.9	41.4



When the fan relay transformer is energized and the thermostat completes the connection from R to G the fan relay coil energizes. Line voltage power applied to contact common path travels to selected blower speed tap. Additional terminal Y and W are isolated tie point terminals to connect thermostat wiring to compressor and furnace (if required).

Note: Record the lead wire color with it's corresponding terminal for future reference. Unused transformer input leads must be insulated.

* Black is common with respect to transformer winding, not external circuit.



90-340

Approximate Overall Dimensions
2 1/8" x 1 7/8" x 2 1/4"



90-340 THRU 90-342 RELAYS – WR/RBM TYPE 91

A Two Pole Double Throw Semi-Enclosed Relay

90-340 Fits Fan Control Centers 90-112, 90-113, 90-118E and 90-119

FEATURES

- Easy to install.
- Suited for use in vending machines, appliances, heating and air conditioning applications and general purpose switching.

SPECIFICATIONS

Temperature Range	-40°F to 130°F
Mechanical Life (no load)	1,000,000 operations, 120 operations/min.
Electrical Life (rated load)	100,000 operations, 6 operations/min.
	Load test making inrush ratings (0.4 to 0.5 P.F.); breaking 100% continuous rating (0.65 to 0.8 P.F.)
Weight (approximate)	6 oz
Agency	U.L. file number E12139 C.S.A. file number LR13360
Coils, Frequency	50 / 60 Hz
Coils, Insulation	Class B
Coils, Termination	1/4" Quick Connect
Coils, Operate	85% of nominal coil voltage; 110% maximum safe operate
Coils, Duty Cycle	Continuous

TWO POLE DOUBLE THROW (2PDT) Fits Fan Control Center Receptacles

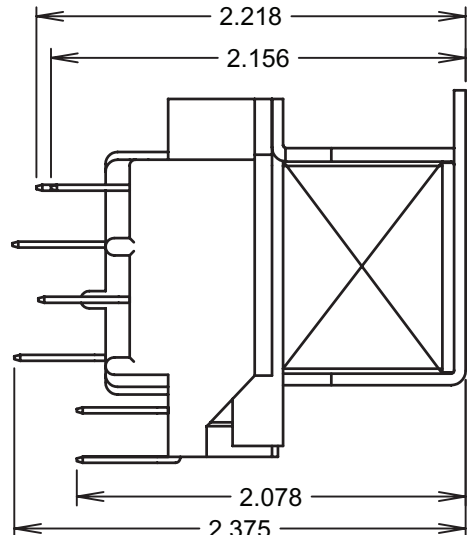
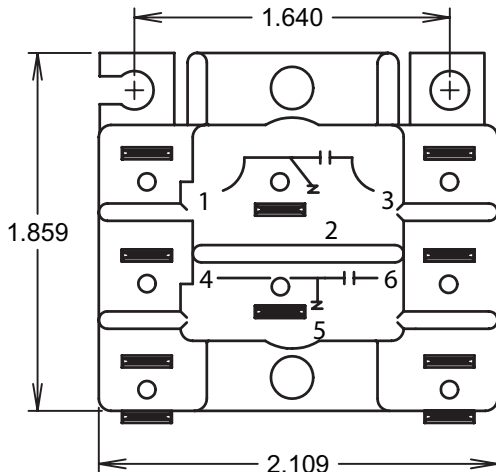
Model Number	Coil Voltage (50 / 60 Hz)	Terminals 1-2-3	Terminals 4-5-6	COIL DATA			
				DC Res.	MA	Nom. VA	Inrush VA
90-340	24	Power	Power	17.5	334	9.5	22
90-341	115 / 120	Power	Power	420	66	9.5	22
90-342	208 / 240	Power	Power	1600	38	9.5	22

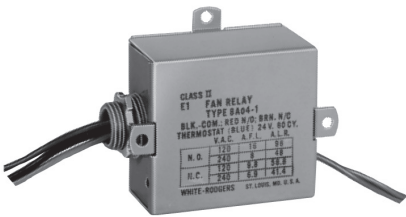
COIL RATING

Voltage: 24 VAC
Cycle: 50 / 60 Hz
Volt: Amps
Inrush: 21.5
Sealed: 9.5
Resistance: 17.5Ω ± 10%

CONTACT RATINGS

12FLA / 60LRA
125 VAC
6FLA 35LRA
250 / 277 VAC
15A 277 VAC RES
1/2HP 125 / 250 VAC





8A04-1

FAN RELAYS SPDT

For 24V AC Control of Blowers and Other Line Voltage Loads on Heating, Cooling or Heating/Cooling Systems where 24V Power Supply is Already Available

FEATURES

- Compact size – 1/2" conduit hub permits mounting to standard junction box.
- Provisions for mounting to flat surface.
- Permits control of single or two speed fan motor.
- 5 color coded, end stripped leads for easy wiring.

SPECIFICATIONS

Dimensions	2 ¹¹ / ₁₆ " H x 2 ¹⁵ / ₁₆ " W x 1 ¹ / ₂ " D
Finish	Grey
Mounting	Mounting tabs or 1/2" conduit hub
Agency	U.L. listed and C.S.A. approved

Model Number	Coil Input Voltage	Switch Action	Coil Current	Contact Ratings			
				N.O. (Black-Red)		N.C. (Black-Brown)	
				120 VAC	240 VAC	120 VAC	240 VAC
8A04-1	24 VAC, 60 Hz	SPDT	0.28A	16.0 FLA/96.0 LRA	8.0 FLA/48.0 LRA	9.8 FLA/58.8 LRA	6.9 FLA/41.4 LRA

TRANSFORMERS / RELAYS



RELAY/TRANSFORMER COMBINATIONS

DPST Relay Models Enclosed with a Transformer Capable of Powering External Loads up to 35VA. Ideal for Use on Boilers without Domestic Coil. Equally Adaptable for Zoned and Unzoned Systems

FEATURES

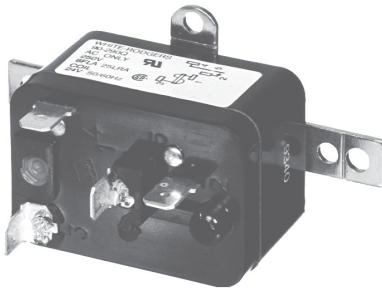
- Low voltage screw terminals – color coded, end stripped line voltage leads.
- Internal transformer can power up to 35VA external loads.
- Mounts to 4" x 4" junction box.
- Dustproof steel case.

SPECIFICATIONS

Dimensions	4 ¹ / ₄ " H x 2 ³ / ₄ " W x 2 ³ / ₄ " D
Finish	Grey
Mounting	To 4" x 4" junction box
Transformer	35 VA maximum connected external load
Agency	U.L. recognized and C.S.A. approved

Model Number	Input Voltage	Switch Action	Thermostat Current	Contact Ratings			
				Motor Rating		Valves & Relays	
				120 VAC		Terminals V1 & V2	
				Full Load	Locked Rotor	30 VAC	0.3-12v DC
8A05A-4	120 VAC, 60 Hz	DPST	0.28A	10.0A/16.0A	60.0A/96.0A	—	—
8A05A-101	120 VAC, 60 Hz	DPST	0.13A	8.0A/14.0A	48.0/84.0A	—	—

Indicates Canadian Model Number: call 1-800-305-6953 to order



Approximate Overall Dimensions
2³/₈" x 1⁵/₈" x 1¹/₂"

90-290Q THRU 90-295Q RELAYS – WR/RBM TYPE 84

Used for Switching Single or Two Speed Fan Motors, Solenoids, Relays, Resistive Loads and General Purpose Switching

FEATURES

- Compact, totally enclosed design.
- For heating and cooling applications and general switching.
- Quiet, reliable and economical.

SPECIFICATIONS

Temperature Range	-40°F to 150°F
Mechanical Life (no load)	1,000,000 operations, 60 operations/min.
Electrical Life (rated load)	100,000 operations, 6 operations/min.
	Load test making inrush rating (0.4 to 0.5 P.F.); breaking 100% continuous rating (0.64 to 0.8 P.F.)
Weight (approximate)	2.5 oz.
Agency	U.L. file number E12139 or E22381 C.S.A. file number LR13360
Coils, Frequency	50 / 60 Hz
Coils, Insulation	Class B
Coils, Termination	1/4" Quick Connect
Coils, Operate	85% of nominal coil voltage; 110% maximum safe operate
Coils, Duty Cycle	Continuous

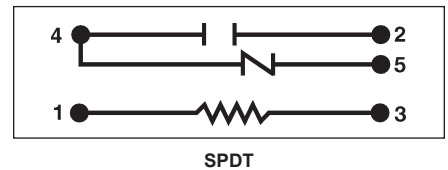
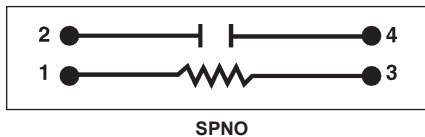
SINGLE POLE NORMALLY OPEN (SPNO), SINGLE POLE DOUBLE THROW (SPDT)

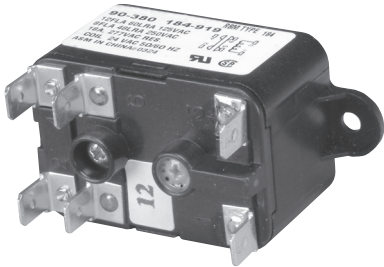
Model Number		Coil Voltage AC (50/60 Hz)	Res DC OHMS	Coil Data		Inrush VA
SPNO	SPDT			Nom. Current MA	Nominal VA Sealed	
90-290Q	90-293Q	24	90	125	3	4
90-291Q	90-294Q	120	2,000	25	3	4
90-292Q	90-295Q	240	7,000	12.5	3	4

CONTACT RATING 125 / 250 VAC

Inductive	Resistive
8 Amps Continuous 25 Amps. Inrush	16 Amps Continuous

WIRING DIAGRAMS





Totally Enclosed Relay
Operates in Any Position
Isolated Coil and Mounting Bracket

90-360 THRU 90-486 RELAYS – WR/RBM TYPE 184
Heavy-Duty General Purpose Relay Operates in Any Position

FEATURES

- Compact, totally enclosed design.
- For heating and cooling applications and general switching.
- Quiet, reliable and economical.

SPECIFICATIONS

Temperature Range	–40°F to 150°F
Mechanical Life (no load)	1,000,000 operations, 120 operations/min.
Electrical Life (rated load)	100,000 operations, 6 operations/min.
	Load test making inrush rating (0.4 to 0.5 P.F.); breaking 100% continuous rating (0.65 to 0.8 P.F.)
Weight (approximate)	2.3 oz.
Agency	U.L. file number E12139 or E22381 C.S.A. file number LR13360
Coils, Frequency	50 / 60 Hz
Coils, Insulation	Class B
Coils, Termination	1/4" Quick Connect
Coils, Operate	85% of nominal coil voltage; 110% maximum safe operate
Coils, Duty Cycle	Continuous

SINGLE POLE NORMALLY OPEN, SINGLE POLE DOUBLE THROW (SPDT) ISOLATED CONTACTS (SPNO / SPNC)

Model Number			Coil Voltage AC (50/60 Hz)	Res DC OHMS	Coil Data		Inrush VA
SPNO	SPDT	SPNO/SPNC			Nom. Current MA	Nominal VA Sealed	
90-360	90-370	90-380	24	77	125	3	4
90-362	90-372	90-382	120	2,000	25	3	4
—	90-374	90-384	240	6,050	12.5	3	4
90-466	90-476	90-486	277	10,300	10.8	3	4

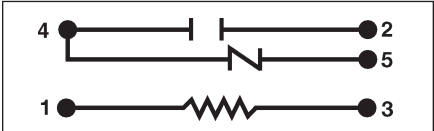
CONTACT RATING

Inductive	Resistive
12 Amps. Continuous 60 Amps. Inrush @ 125 VAC	18 Amps. Continuous @ 277 VAC
8 Amps. Continuous 48 Amps. Inrush @ 250 VAC	

WIRING DIAGRAMS



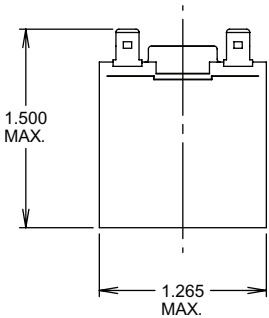
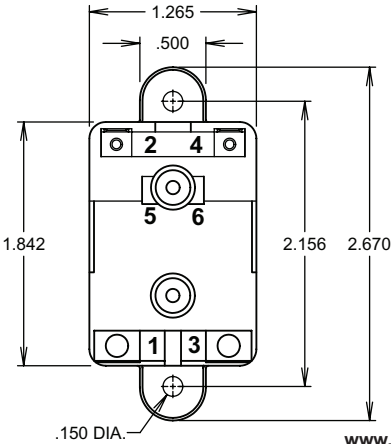
SPNO

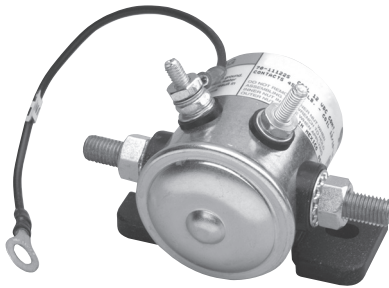


SPDT



SPNO / SPNC



**Type 70 SPNO****WARNING – FIRE HAZARD**

Must be installed in a dry and protected place. Failure to protect solenoid from water and other contaminants could result in Fire, Property Damage, Serious Personal Injury, or Death.

TYPE 70 CONTACTORS – SPNO

Single Pole Normally Open Contact, Case is Dust Resistant and Isolated from Ground

SPECIFICATIONS

Dimensions	2.47" L x 3.48" W x 2.40" H
Weight	14 oz.
Temperature Range	-40° to +122°F
Terminations, Contacts	5/16"-24 UNF-2A thread
Terminations, Coil	#10-32 UNF-2A thread
Recommended Mounting	Plunger vertical with cap down
Hardware Torque, Contact Terminal	45-55 in. lbs.
Hardware Torque, Coil Terminal	12-18 in. lbs.
Caution: A back-up wrench must be used to hold the bottom nut stationary.	
Agency	U.L. 538 Recognized, File AU2138

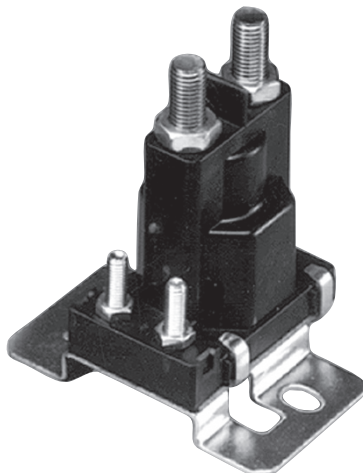
Model Number	Duty Cycle ③	Terminal Type ①	Pole Form	Bracket Style	Coil Voltage D.C.	Coil Resistance (Ohms) ②	Contact Material	Contact Rating (Amps) – Inductive Load		
								Voltage	Normally Open	
								D.C.	Continuous	Inrush
70-111225	Continuous	3A	SPNO	Standard	12	16	Copper	12	80	150
70-111224	Continuous	4	SPNO	Standard	12	16	Copper	12	80	150
70-117224	Continuous	4	SPNO	Standard	24	60	Copper	24	50	50
70-120224	Continuous	4	SPNO	Standard	36	114	Copper	36	50	50

① "3A" = Coil Grounded to Case

"4" = Isolated Coil

② Coil resistance in Ohms @ 25°C

③ Intermittent duty designs available.

**Type 120 SPNO****TYPE 120 CONTACTORS – SPNO**

Single Pole Normally Open Contact, Dust Resistant, Water Resistant and Case is Isolated from Bracket

SPECIFICATIONS

Dimensions	2.13" L x 2.88" W x 3.09" H (Std. Bracket)
Dimensions	2.50" L x 3.00" W x 3.03" H (L-Shaped Bracket)
Weight	6.0 oz.
Temperature Range, Intermittent Duty	-20° to +150°F
Temperature Range, Continuous Duty	-20° to +120°F
Terminations, Contacts	5/16"-24 studs, .495" min. length
Terminations, Coil	#10-32, .451" min. length
Recommended Mounting	Coil terminals up or horizontal
Hardware Torque, Contact Terminal	45-55 in. lbs.
Hardware Torque, Coil Terminal	12-18 in. lbs.
Caution: A back-up wrench must be used to hold the bottom nut stationary.	

Model Number	Duty Cycle ①	Terminal Type ②	Pole Form	Bracket Style	Coil Voltage D.C.	Coil Resistance (Ohms) ③	Contact Material	Contact Rating (Amps) – Inductive Load		
								Voltage	Normally Open	
								D.C.	Continuous	Inrush ④
120-105711	Continuous	4	SPNO	Standard	12	16	Silver Alloy	12	100	400
120-105851	Continuous	3A	SPNO	Standard	12 ⑤	16	Silver Alloy	12	100	400
120-106131	Intermittent	4	SPNO	Standard	12	6.0	Copper	12	80	400
120-106132	Intermittent	4	SPNO	L	12	6.0	Copper	12	80	400
120-107112	Continuous	4	SPNO	L	14	26.0	Silver Alloy	14	100	400

① Intermittent Duty Cycle = 30 seconds "ON" maximum and 6 minutes "OFF"

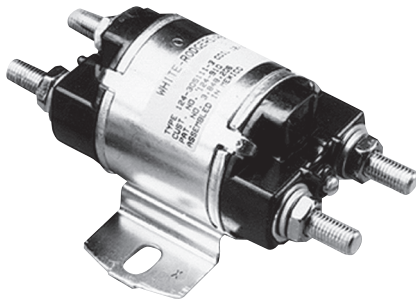
② "4" = Isolated Coil

③ Coil resistance in Ohms @ 25°C

④ Inrush Current: Current applied within the first 1/2 second of contact closure

⑤ Coil grounded to bracket

NOTE: CAUTION must be used in coil selection for use in 12 volt systems where battery charging may expose coil to continuous, higher-than-rated voltage. 14 volt coils are recommended. White-Rodgers will not be responsible for consequences of misapplied solenoids.



Type 124

TYPE 124 CONTACTORS

Single Pole Normally Open, or Single Pole Double Throw Contacts.
Dust Resistant and Endcaps are Isolated from Bracket

SPECIFICATIONS

Dimensions, 124-105111,-114111,-117111	3.56" L x 3.13" W x 2.19" H
Dimensions, 124-305111,-314111	4.69" L x 3.13" W x 2.19" H
Weight, 124-105111,-114111,-117111	16.0 oz.
Weight, 124-305111,-314111	19.0 oz.
Temperature Range	-40° to +149°F
Terminations, Contacts	5/16" -24 UNF-2A thread
Terminations, Coil	#10-32 UNF-2A thread
Recommended Mounting	Vertical plane with coil terminals up
Hardware Torque, Contact Terminal	60 in. lbs. max.
Hardware Torque, Coil Terminal	12-18 in. lbs.

Caution: A back-up wrench must be used to hold the bottom nut stationary.

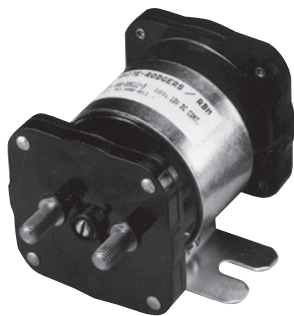
Model Number	Duty Cycle	Terminal Type ①	Bracket Style	Coil Voltage D.C.	Coil Resistance (Ohms) ②	Contact Material	Contact Rating (Amps) – Inductive Load				
							Voltage D.C.	Normally Open Continuous	Inrush ③	Normally Closed Continuous	Inrush ③
124-105111	Continuous	4	Standard	12	13.2	Silver Alloy	12	150	400	–	–
124-305111	Continuous	6	Standard	12	13.2	Silver Alloy	12	150	400	50	100
124-114111	Continuous	4	Standard	24	53.0	Silver Alloy	24	150	400	–	–
124-314111	Continuous	6	Standard	24	53.0	Silver Alloy	24	150	400	50	100
124-117111	Continuous	4	Standard	36	120.0	Silver Alloy	36	100	400	–	–
124-317111	Continuous	6	Standard	36	120.0	Silver Alloy	36	100	400	50	100

① "4" = Isolated Coil, SPNO

"6" = Isolated Coil, SPDT

② Coil resistance in Ohms @ 25°C

③ Inrush Current: Current applied within the first 1/2 second of contact closure



Type 586 SPNO

TYPE 586 CONTACTORS

Single Pole Normally Open, or Single Pole Double Throw Contacts.
Water Resistant and Case is Isolated from Bracket

SPECIFICATIONS

Dimensions, 586-114111,-117111	3.69" L x 3.30" W x 2.90" H
Dimensions, 586-317111	4.61" L x 3.30" W x 2.90" H
Weight, 586-114111,-117111	24.0 oz.
Weight, 586-317111	26.0 oz.
Temperature Range	-40° to +149°F
Terminations, Contacts	5/16" -24 UNF-2A thread
Terminations, Coil	#10-32 UNF-2A thread
Recommended Mounting	Vertical plane with coil terminals up
Hardware Torque, Contact Terminal	60 in. lbs. max.
Hardware Torque, Coil Terminal	12-18 in. lbs.

Model Number	Duty Cycle	Terminal Type ①	Bracket Style	Coil Voltage D.C.	Coil Resistance (Ohms) ②	Contact Material	Contact Rating (Amps) – Inductive Load				
							Voltage D.C.	Normally Open Continuous	Inrush ③	Normally Closed Continuous	Inrush ③
586-105111	Continuous	4	Standard	12	21.0	Silver Alloy	12	200	600	–	–
586-108111 ④	Continuous	4	Standard	15	32.8	Silver Alloy	15	200	600	–	–
586-114111	Continuous	4	Standard	24	84.0	Silver Alloy	24	200	600	–	–
586-117111	Continuous	4	Standard	36	189.0	Silver Alloy	36	200	600	–	–
586-120111	Continuous	4	Standard	48	336.0	Silver Alloy	36	200	600	–	–
586-314111	Continuous	6	Standard	24	53	Silver Alloy	24	200	600	100	200
586-317111	Continuous	6	Standard	36	120	Silver Alloy	36	200	600	100	200

① "4" = Isolated Coil, SPNO

"6" = Isolated Coil, SPDT

② Coil resistance in Ohms @ 25°C

③ Inrush Current: Current applied within the first 1/2 second of contact closure

④ Ideal for 12V charging systems

NOTE: CAUTION must be used in coil selection for use in 12 volt systems where battery charging may expose coil to continuous, higher-than-rated voltage. 15 volt coils are recommended. White-Rodgers will not be responsible for consequences of misapplied solenoids.