



## Single-Phase Solid State Relays (SSRs)

**Tempco's Solid State Relays** are a highly reliable alternative to mechanical or mercury contactors in high amperage or harsh environments. They offer years of trouble-free service and millions of cycles with no moving parts to wear out.

- \* 1-phase normally open models current ratings from 10 Amp through 75 Amp
- \* Zero-cross outputs for general applications
- \* UL/cUL Recognized, CE Compliant
- \* Back-to-back SCR output stage
- \* AC or DC control inputs
- **\* 240 or 480 Volt Outputs**

- > Select a **DC control** input relay to work with a temperature control having an SSR drive output.
- Choose an **AC** control input relay to work with a temperature control having a *mechanical relay output*.





# All Items Available from Stock

	Standard Stock Single-Phase Relays					
Ordoning	Nominal Output Voltage	240 VAC		480 VAC		Load
Ordering	Control Input	DC	AC	DC	AC	Current
Information		RLS02110	RLS02210	RLS04110	RLS04210	10A
Choose the <b>Part Number</b> of	Part	RLS02125	RLS02225	RLS04125	RLS04225	25A
the relay from the table that	Number	RLS02145	RLS02245	RLS04150	RLS04250	50A
metabas the meeds for your		RLS02175	RLS02275	RLS04175	RLS04275	75A
application We also offer	Min. Control Input Current (mA)	7	5	7	5	
application. we also other	Max. Line Voltage (VAC, rms)	280	280	660	660	
other styles of Solid State	Min. Line Voltage (VAC, rms)	24	24	48	48	
Relays, such as random turn	Max. Off-State Voltage (Vpeak)	±600	±600	±1200	±1200	
on; consult Tempco with your requirements. <b>Standard lead</b> <i>time is stock to 3 weeks.</i>	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $					



### Notes:

**2.** AC control input = 90-280 VAC

**3.** Adequate heat sinking, including consideration of air temperature and flow, is essential to the proper operation of a solid state relay.

### Accessories

For solid state relays Tempco offers a snap-on cover made of high impact, flame retardant polycarbonate that will provide "finger-safe" operation.

### Snap-on Cover

For 1-phase SSR: RLS90001

### Thermal Compound: RLS90003

2-ounce container

### **Thermal Heat Transfer Pads:**

For 1-Phase SSR: RLS90004 For 3-Phase SSR: RLS90005

## **De-Rating Curves for Single Phase Solid State Relays**

Solid state relay de-rating curves are used to determine the actual CAUTION current the relay is capable of carrying vs. the ambient temperature in the enclosure. It also indicates the heat sink required to



dissipate the heat the relay produces at the ambient temperature. Failure to dissipate the internally generated heat will result in solid state relay failure.



WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.





## De-Rating Curves for Single-Phase Solid State Relays (continued)

Since 1972



## Standard Stock Heat Sinks for Solid State Relays



Part Number: RLS90017 Size: 1.77"W × 3.19"L × 3.15"H Rating: 2.0°C/W Pre-drilled for 1-phase SSR (8-32) DIN rail or panel mount



Part Number: RLS90018 Size: 1.77"W × 3.19"L × 3.74"H Rating: 1.5°C/W Pre-drilled for 1-phase SSR (8-32) DIN rail or panel mount



**Part Number: RLS90019 Size:** 4.75"W × 5.50"L × 2.63"H **Rating:** 0.70°C/W Pre-drilled for one or two 1-phase SSR (8-32) Panel mount 4.50" × 4.42" centers

1.40" (35.65 mm)

3.14" (79.74 mm)



Part Number: RLS90020 Size: 3.00"W × 5.20"L × 2.37"H Rating: 1.0°C/W Pre-drilled for one 3-phase SSR (8-32) DIN rail mount

All Items Available from Stock

## Three-Phase Solid State Relays (SSRs)

3.99" (101.28 mm)

Ø 3/L2

4/T2 2/T1

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3.62" (92.00 mm)

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+A1이

-A20

Ø 5/L3

6/T3

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81

**Tempco's Three-phase Solid State Relays** are a highly reliable alternative to mechanical or mercury contactors in high amperage or harsh environments. They offer years of trouble-free service and millions of cycles with no moving parts to wear out.

- \* 3-phase normally open models—current ratings 25 Amp and 50 Amp
- \* Zero-cross outputs for general applications
- \* UL recognized, CSA certified and CE compliant
- **\*** Back-to-back SCR output stages
- \* AC or DC control inputs
- \* Single output type for 48 through 530 VAC
- Select a DC control input relay to work with a temperature control having an SSR drive output.
- Choose an AC control input relay to work with a temperature control having a mechanical relay output.



1.87" (47.60 mm)



*Note:* Adequate heat sinking, including consideration of air temperature and flow, is essential to the proper operation of a solid state relay.



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## **De-Rating Curves for 3-Phase Solid State Relays**



Solid state relay de-rating curves are used to determine the AUTION actual current the relay is capable of carrying vs. the ambient temperature in the enclosure. It also indicates the heat sink required to dissipate the heat the relay produces at the ambient temperature. Failure to dissipate the internally generated heat will result in solid state relay failure.





## "Power Pack" DIN Rail Mount Solid State Relay Modules

The **Power Pack** combines in one easy-to-use compact package the traditional hockey puck style solid state relay and required heat sink. This combination eliminates having to mount the SSR to a separate heat sink. It also incorporates the finger-safe cover into the housing's design. Each Power Pack takes up much less room than the standard SSR and heat sink combination.

### **Design Features**

- \* Self-Contained Solid State Relay and Heat Sink
- \* Standard 35mm DIN Rail or Panel Mount
- \* 1-phase Units with Zero-Cross Firing Output
- \* 3-Phase Units Control All 3 Phases
- \* Current Ratings from 12 through 45 Amp
- \* 3 Compact Sizes: 22.5mm, 45.0mm, and 90.0mm
- \* Triac or Back-to-Back SCR Outputs
- \* UL, cUL Recognized



Standard Stock DIN Rail Relays

Size	Output Current	Output Voltage	Control Input	Output Type	Max. Turn On Time	Max. Turn Off Time	Min. On State Cur.	Peak On Vol. drop	Part Number
One-Pha	ase Mode	ls							
	10A	24-280 VAC	4-32 VDC 90-140 VAC 180-280 VAC	Triac	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.5 Vpk	RLS80001 RLS80005 RLS80006
22.5 mm	20A	48-600 VAC	4-32 VDC 90-140 VAC 180-280 VAC	B/B SCR	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.35 Vpk	RLS80003 RLS80007 RLS80008
	30A	48-600 VAC	4-32 VDC 90-140 VAC 180-280 VAC	B/B SCR	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.35 Vpk	RLS80009 RLS80010 RLS80011
45.0 mm	35A	48-660 VAC	4-32 VDC 90-140 VAC 180-280 VAC	B/B SCR	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.35 Vpk	RLS80101 RLS80103 RLS80104
43.0 mm	45A	48-660 VAC	4-32 VDC 90-140 VAC 180-280 VAC	B/B SCR	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.35 Vpk	RLS80105 RLS80106 RLS80107
Three-P	hase Mod	lels							
90.0 mm	25A	48-660 VAC	4-32 VDC 90-140 VAC 180-280 VAC	B/B SCR	8.33 mS 20 mS 20 mS	8.33 mS 30 mS 30 mS	19 mA 23 mA 23 mA	1.35 Vpk	RLS80201 RLS80203 RLS80204

13-90 Rev 1 (7-9-18)



Power Pack DIN Rail Relay Modules

## Specifications and De-Rating Curves for Power Pack DIN Rail Relay Modules

**Dimensional Specifications mm (inches)** 



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**Mercury Relays** 



## Mercury Displacement Relays — 35 & 60 Amp Resistive Loads





Tempco's Mercury Displacement Relays are specifically designed for resistive loads typical of heating and process equipment. These mercury relays are available in 35 and 60 amp models with single, double and triple pole configurations. Coil voltages range from 24 to 480 Volts AC at 50/60 Hz and 24 Volts DC.

### **Features**

Mercury contact action relays are superior to open contact electro-mechanical relays. Mercury relays do not contain springs or button contacts, which tend to wear, weld and burn out. Mercury contacts are capable of rapid on-off cycling in excess of 6 times per minute under resistive loads. This provides more precise process temperature control, and eliminates the noise from the on-off operating cycles of electro-mechanical relays and contactors.

### **Typical Applications**

•• Industrial Process Equipment Utilizing Resistive Loads Plastic Injection and Extrusion Machinery





### **••** Industrial Ovens •• Food Processing Equipment



➡ Duct Heaters

### Standard (Non-Stock) and Stock Mercury Relay Specifications Stock Items Are Shown In RED

$\left( \right)$		35 AMP	RELAYS	TEMPCO	Coil	60 AMP RELAYS		TEMPCO
_	Coil	Coil	Cross Reference	Part	Resistance	Coil	Cross Reference	Part
Туре	Volts	Current	MDI	Number	(ohms)	Current	MDI	Number
	24 VDC	136 mA	35NO-24D	RLY01355	176	136 mA	60NO-24D	<b>RLY01605</b>
1 Polo	24 VAC	242 mA	35NO-24A	<b>RLY01353</b>	50	259 mA	60NO-24A	<b>RLY01603</b>
Normally	120 VAC	53 mA	35NO-120A	<b>RLY01351</b>	1250	48 mA	60NO-120A	<b>RLY01601</b>
Opon	220 VAC	28 mA	35NO-220A	<b>RLY01352</b>	4800	27 mA	60NO-220A	<b>RLY01602</b>
Open	277 VAC	20 mA	35NO-277A	<b>RLY01356</b>	7900	19 mA	60NO-277A	<b>RLY01606</b>
	480 VAC	12 mA	35NO-480A	RLY01354	20000	12 mA	60NO-480A	<b>RLY01604</b>
	24 VDC	272 mA	235NO-24D-18	<b>RLY02355</b>	88	272 mA	260NO-24D-18	<b>RLY02605</b>
2 Poles	24 VAC	484 mA	235NO-24A-18	<b>RLY02353</b>	25	518 mA	260NO-24A-18	<b>RLY02603</b>
Normally	120 VAC	106 mA	235NO-120A-18	<b>RLY02351</b>	625	96 mA	260NO-120A-18	<b>RLY02601</b>
Open	220 VAC	56 mA	235NO-220A-18	RLY02352	2400	54 mA	260NO-220A-18	<b>RLY02602</b>
Open	277 VAC	40 mA	235NO-277A-18	RLY02356	3950	38 mA	260NO-277A-18	<b>RLY02606</b>
	480 VAC	24 mA	235NO-480A-18	<b>RLY02354</b>	10000	24 mA	260NO-480A-18	<b>RLY02604</b>
	24 VDC	408 mA	335NO-24D-18	<b>RLY03355</b>	59	408 mA	360NO-24D-18	<b>RLY03605</b>
3 Poles	24 VAC	726 mA	335NO-24A-18	RLY03353	17	777 mA	360NO-24A-18	<b>RLY03603</b>
Normally	120 VAC	159 mA	335NO-120A-18	RLY03351	417	144 mA	360NO-120A-18	<b>RLY03601</b>
Open	220 VAC	84 mA	335NO-220A-18	RLY03352	1600	81 mA	360NO-220A-18	<b>RLY03602</b>
Open	277 VAC	60 mA	335NO-277A-18	<b>RLY03356</b>	2633	57 mA	360NO-277A-18	<b>RLY03606</b>
	480 VAC	36 mA	335NO-480A-18	RLY03354	6667	36 mA	360NO-480A-18	RLY03604

NOTE: The 220 VAC coil is used from 208 to 240 VAC.

### **Specifications**

Operate Time: 50 mSec Release Time: 80 mSec Contact Rating: 35 Amp - 600 VAC, 60 Amp - 480 VAC **Contact Resistance:** 35 Amp –  $.003\Omega$ , 60 Amp –  $.002\Omega$ **Temperature Range:** -31 to 185°F (-35 to 85°C) Dielectric Strength: 2500 VAC RMS Agency Approvals: UL, CSA

## **Ordering Information**

Choose the **Part Number** of the relay from the table above that matches the needs for your application. We also offer other styles of Mercury Relays-consult Tempco with your requirements.

Standard lead time is stock to 5 days.



**WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.



**Mercury Relays** 

## Mercury Displacement Relays — 100 Amp Resistive Loads

2

2-25/32'

(4) .205" Dia. Holes

Depth 2-9/16"

0

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4-23/32"

5**-**3/4"



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5-1/4

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### **Specifications**

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2-1/8"

2-1/2"

0

1-7/8"

<sup>|</sup>Depth 2-9/16"

Operate Time: 50 mSec Release Time: 80 mSec Contact Rating: 240 VAC – 100 Amp 480 VAC – 80 Amp Contact Resistance: .001 $\Omega$ Temperature Range: -31 to 185°F (-35 to 85°C)

Dielectric Strength: 2500 VAC RMS Agency Approvals: UL, CSA

## **Ordering Information**

Choose the **Part Number** of the relay from the table above that matches the needs for your application. We also offer other styles of Mercury Relays—consult Tempco with your requirements.

Standard lead time is stock to 5 days.

### Standard (Non-Stock) and Stock Mercury Displacement Relay Specifications Stock Items Are Shown In RED

Туре	Coil Volts	100 AMP RELAYS Coil Cross Reference Current MDI		Coil Resistance (ohms)	TEMPCO Part Number
	24 VDC	369 mA	100NO-24D	65	RLY90030
1 Pole	24 VAC	646 mA	100NO-24A	16	RLY90031
Normally	120 VAC	137 mA	100NO-120A	380	<b>RLY90032</b>
Open	220 VAC	73 mA	100NO-220A	1400	RLY90033
Open	277 VAC	55 mA	100NO-277A	2400	RLY90034
	480 VAC	35 mA	100NO-480A	6300	RLY90035
	24 VDC	738 mA	2100NO-24D-18	33	RLY90036
2 Poles	24 VAC	1292 mA	2100NO-24A-18	8	RLY90037
Normally	120 VAC	274 mA	2100NO-120A-18	190	<b>RLY90023</b>
Open	220 VAC	146 mA	2100NO-220A-18	700	RLY90038
Open	277 VAC	110 mA	2100NO-277A-18	1200	RLY90039
	480 VAC	70 mA	2100NO-480A-18	3150	<b>RLY90040</b>
	24 VDC	1107 mA	3100NO-24D-18	22	RLY90041
3 Poles	24 VAC	1938 mA	3100NO-24A-18	5.3	RLY90042
Normally	120 VAC	411 mA	3100NO-120A-18	127	<b>RLY90019</b>
Open	220 VAC	219 mA	3100NO-220A-18	467	RLY90013
Open	277 VAC	165 mA	3100NO-277A-18	800	RLY90043
	480 VAC	105 mA	3100NO-480A-18	2100	RLY90044 /

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## **Mercury Relays**

## *High Performance Economical Mercury Relays — 30 Amp Resistive Loads*

The 30 Amp model is designed to save space and simplify mounting methods. It is also extremely economical due to the use of a single coil for 1-, 2- or 3-pole relays. The universal mounting bracket used on the 2- and 3-pole relays has various mounting holes and keyhole slots to meet a variety of mounting centers.

The 30 Amp Series is a more compact line with a well-proven switch, which is the heart of mercury relays. It is the same switch design that drives our 35 and 60 Amp encapsulated **Mercury Displacement Relays**, which have withstood the test of time and millions of cycles in many different applications.

#### Standard (Non-Stock) and Stock High Performance Mercury Displacement Relay Specifications Stock Items Are Shown In RED

	30 AMP RELAYS			Cross	TEMPCO
Туре	CoilCoilCoil Resist.TypeVoltsCurrent(ohms)		Reference MDI	Part Number	
1 Pole	24 VDC 24 VAC 120 VAC	113 mA 216 mA 65 mA	213 55 725	30NO-24DU 30NO-24AU 30NO-120AU	RLY11305 RLY11303 RLY11301
	220 VAC	$\frac{28 \text{ mA}}{260 \text{ mA}}$	3380	30NO-220AU 230NO-24DU	RLY11302
2 Poles N.O.	24 VAC 120 VAC	580 mA 115 mA	15 367	230NO-24AU 230NO-24AU 230NO-120AU	RLY12303 RLY12303 RLY12301
	220 VAC 24 VDC	53 mA 217 mA	1550 110	230NO-220AU 330NO-24DU	RLY12302 RLY13305
N.O.	24 VAC 120 VAC 220 VAC	815 mA 140 mA 66 mA	7.6 215 766	330NO-24AU 330NO-120AU 330NO-220AU	RLY13303 RLY13301 RLY13302



**Note:** The 220 VAC coil is used from 208 to 240 VAC.

## **Ordering Information**

Choose the **Part Number** of the relay from the table above that matches the needs for your application. *Standard lead time is stock to 5 days.* 





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### **Specifications**

Pull In Voltage: 90% of nominal (Min. AC) Operate (pull in) Time: 50 mSec Release Time: 80 mSec Operating Ambient Temperature Range: -35 to 85°C (-31 to 185°F)

**Typical Contact Resistance:** 3 mΩ **Contact Rating:** 30 Amps **Dielectric Breakdown:** 2500 VAC RMS **Mount:** Vertical ±10° **Coil terminals:** #6 binding head screws

Load terminals: #8 binding head screws Agency Approvals: UL, CSA



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13-94 Rev 2 (7-2020)



## **DIN Rail Mechanical Relays**

## **DIN Rail Mounted Mechanical Relays**



### **Design Features**

- \* 10 and 15 Amp Models with 24 VDC, 120 and 240 VAC Coils
- \* Sockets Mount on Standard 35 mm DIN Track
- \* Silver-Cadmium Oxide Contacts
- \* Socket and Relay Separation Fast and Easy
- \* UL and CSA Component Recognition
- \* Compact for Easy DIN Rail Installation
- \* Contact Arrangement Up to 3PDT
- \* Enclosed to Prevent Contamination



# DIN Rail Mountea Mechanical Relay Accessories

## al Rail Mounted Socket

Universal socket for mounting 1- to 3-pole relays to a 35mm DIN rail track or surface mounted directly to a panel. A spring-loaded latch allows for easy installation or removal from a DIN mounting track. High strength, durable plastic body with 3/16" quick connect/solder; silver-cadmium oxide terminals for relay mounting.

Dimensions with Relay (approximate): 3" × 1-1/2" × 3" **Part Number: RLM90001** 



Part Number: RLM90004 — Relay Hold Down Spring

**Ordering Information** 

Choose the **Part Number** of the Relays and accessories that best fit the needs of your application. *Standard lead time is stock to 5 days.* 

Universal 35 mm DIN Rail Track

Made out of extruded aluminum with holes on 6" centers. Holes accept #8 screws and the rail accepts the offered socket as a simple clip-on mount.

Dimensions: 36" (914mm) long **Part Number: EHD-134-102** 

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## **Contactors**

## IEC Style Enclosed Contactors - 3 pole, 25A to 100A

### **Design Features**

- \* Regular and alternate coil termination locations
- \* Contactors supplied with auxillary contacts as standard
- \* Mounting DIN rail or back panel
- \* Coil Voltage Limits: Pick up 85% to 110% Drop-out - 30% to 60%
- \* Operating Time: Closing 12 to 22 mSec Opening - 4 to 19 mSec



3-Pole, 25 & 40 Amp

**Maximum Voltage:** 690VAC 2.89 x 1.77 x 3.39" / 73.5 x 45 x 86 mm (H x W x D)

- \* Contactors listed have screw clamp wiring terminals
- \* Approvals: UL, cUL, CE

SIONS

\* Auxiliary Switch Rating: 120VAC/6A, 240VAC/3A





2-NO, 2-NC 2-NO, 2-NC

2-NO, 2-NC 2-NO, 2-NC

CC50SA220

CC65SA24

CC65SA120

CC65SA220

n-Stock) an	d Stock Con	tactors	
Auxiliary Contacts	Carlo Gavassi Part Number	TEMPCO Part Number	
1-NO, 1-NC 1-NO, 1-NC 1-NO, 1-NC	CC12SA24 CC12SA120 CC12SA220 CC12SA220	RLM30001 RLM30002 RLM30003	
1-NO, 1-NC 1-NO, 1-NC 1-NO, 1-NC 2-NO, 2-NC	CC22SA24 CC22SA120 CC22SA220 CC50SA24 CC50SA120	RLM30004 RLM30005 RLM30006 RLM30007 RLM30007	Ore



dering Information Order by Part Number. Standard lead time is stock to 2 weeks.

WARNING: Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

RLM30009

RLM30010

**RLM30011** 

RLM30012

Resistive

Amperage

25

25

25

40

40

40

70

70

70

100

100

100

Coil

Voltage

24 VAC

120 VAC

220 VAC

24 VAC

120 VAC

220 VAC

24 VAC

120 VAC

220 VAC

24 VAC

120 VAC

220 VAC