

Solid State Relays



SOLID STATE RELAY RATINGS

PART NUMBER	HPR48A25	HPR48A50	HPR48A75	3PSS60A75
	HPR48D25	HPR48D50	HPR48D75	
Rated operational current AC51 @ Ta=25°C	25 AMPS rms	50 AMPS rms	75 AMPS rms	75 AMPS rms
AC53a @ Ta=25°C	5 AMPS rms	15 AMPS rms	20 AMPS rms	20 AMPS rms
Minimum operational current	150 mA rms	250 mA rms	400 mA rms	400 mA rms
Rep. overload current t = 1 s	< 55 A rms	< 125 A rms	< 150 A rms	< 150 A rms
Non-rep. surge current t = 10 ms	325 A _p	600 A _p	1150 A _p	1150 A _p
Off-state leakage current	< 3 mA rms	< 3 mA rms	<3 mA rms	<3 mA rms
I _t for fusing t = 10 ms	525 A2s	1800 A2s	6600 A2s	6600 A2s
On-state voltage drop	1.6 V rms	1.6 V rms	1.6 V rms	1.6 V rms
Critical dV/dt off-state	1000 V/μs	1000 V/μs	1000 V/μs	500 V/μs
PART NUMBER	SS20AU	SS30AU	SS50AU	SS70AU
	SS20DU	SS30DU	SS50DU	SS70DU
Rated operational current AC51 @ Ta=25°C	20 AMPS rms	30 AMPS rms	50 AMPS rms	70 AMPS rms
AC53a @ Ta=25°C	5 AMPS rms	15 AMPS rms	30 AMPS rms	30 AMPS rms
Minimum operational current	350 mA rms	150 mA rms	150 mA rms	150 mA rms
Rep. overload current t = 1 s	< 35 A rms	< 125 A rms	< 200 A rms	< 200 A rms
Non-rep. surge current t = 10 ms	250 A _p	400 A _p	1900 A _p	1900 A _p
Off-state leakage current	<3 mA rms	<3 mA rms	<3 mA rms	<3 mA rms
I _t for fusing t = 10 ms	310 A2s	1800 A2s	1800 A2s	1800 A2s
On-state voltage drop	1.6 V rms	1.6 V rms	1.6 V rms	1.6 V rms
Critical dV/dt off-state	500 V/μs	500 V/μs	500 V/μs	500 V/μs

Solid State Relays...continued

Models: 3PSS60A75 S (Standard Din-rail)
3PSS60A75 R (Retro Fit)

Industrial, 3-Phase SS



- 3-phase Solid State Relay
- Zero switching
- Rated operational current: 3 x 75 AMPS
- Rated operational voltage: 600 VAC
- Control voltage 24-50 VDC/24-275 VAC
- Integral snubber network
- Built-in varistor
- IP 10 back-of-hand protection
- LED indication of control input
- Heat Sink and 24 VDC Fan Included



General Specifications

Operational voltage range	42-660 VAC	45 to 65 Hz
Blocking voltage	1600 V _p	
Over voltage category III	Pollution degree 3	
Operating temperature	-30° to 80°C (-22° to 158°F)	
Storage temperature	-40° to 100°C (-40° to 212°F)	
Input to output isolation voltage	>4000 VAC rms	
Output to case isolation voltage	>4000 VAC rms	
Heat Sink Fan requires	70 mA @ 24 VDC	
Markings	e _{UL} US CE	

A Solid State Relay family designed to switch various loads such as heating elements, motors and transformers. The relay is capable of switching voltages up to 600 VAC rms.

The built-in varistor is for heavy industrial applications. For higher reliability and load cycle capability three semiconductor power units are bonded directly to the substrate.

PART #	DESCRIPTION	PRICE EACH
3PSS60A75 S	Standard Din-rail	CALL
3PSS60A75 R	Retro Fit	CALL

Input Specifications

Control voltage range	24-275 VAC/24-50 VDC
Pick-up voltage	18 VAC/20 VDC
Drop-out voltage	9 VAC/DC
Input current	<15 mA
Response time pick-up (Power output = 50 Hz)	20 ms
Response time drop-out (Power output = 50 Hz)	30 ms

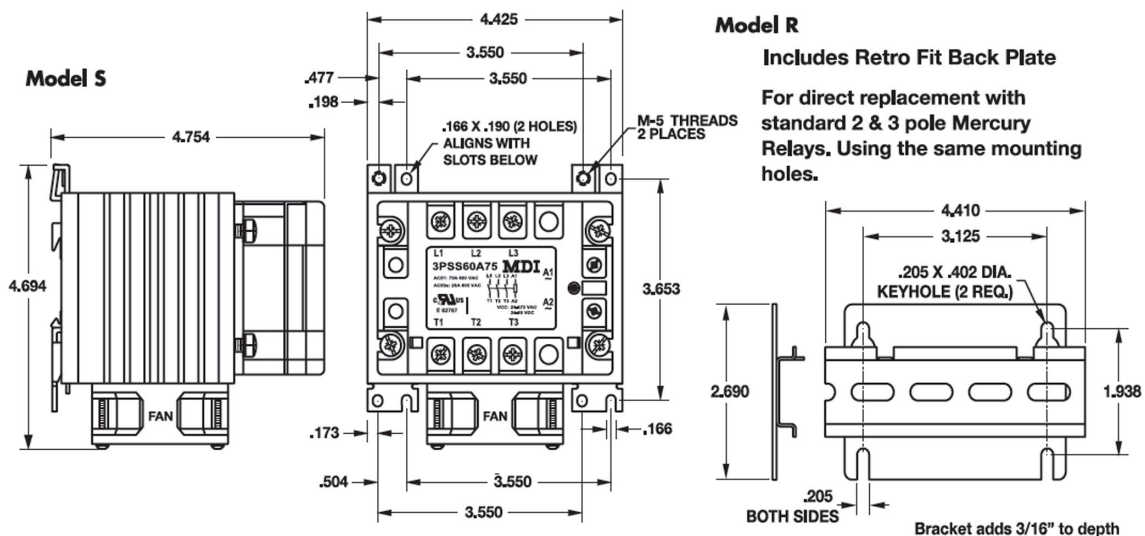
All data specified at Ta=25°C

Tested and Approved

3 Pole 50 AMPS @ 480 VAC @ -30°C to 50°C 3-Phase
 2 Pole 75 AMPS @ 480 VAC @ -30°C to 50°C 3-Phase*

51°C to 80°C derates @ 10 AMPS per decade

*For 2 Pole usage, use L1 & L3



Solid State Relays...continued

Type HPR48

Industrial, 1-Phase ZS (IO) w. LED and Built-in Varistor



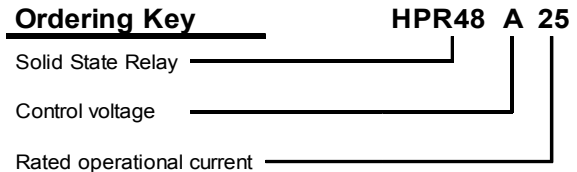
- Zero switching
- Direct-Copper Bonding (DCB) Technology
- LED indication
- Built-in varistor 480 V
- Clip-on IP 20 protection cover
- Self-lifting terminals
- Housing free of moulding mass
- Blocking voltage: 1200V_p
- Opto-isolation: >4000 VAC rms
- 2 input ranges: 4-32 VDC and 20-280 VAC/22-48 VDC
- Operational ratings: Up to 75 AMPS rms
- Rated voltage: 480 VAC rms



The industrial, 1-phase relay with anti-parallel thyristor output is the most widely used industrial SSR due to its multiple application possibilities. The relay can be used for resistive, inductive and capacitive loads. The zero switching relay switches ON when the sinusoidal curve crosses zero and switches OFF when the current crosses zero. The instant-on relay with DC control input can be used for phase control. The built-in varistor secures transient protection for the heavy industrial applications, and the LED indicates the status of the control input. The clip-on cover is securing touch protection to IP 20. Protected output terminals can handle cables up to 16mm² (6 AWG).

PART #	DESCRIPTION	PRICE EACH
HPR48A25	25 Amp	CALL
HPR48D25	25 Amp	CALL
HPR48A50	50 Amp	CALL
HPR48D50	50 Amp	CALL
HPR48A75	75 Amp	CALL
HPR48D75	75 Amp	CALL
HPR48A100	100 Amp	CALL
HPR48D100	100 Amp	CALL

Ordering Key



Type Selection

Control voltage	Rated operation current
A: 20-280 VAC/22-48 VDC	25: 25 AMPS rms
D: 4-32 VDC	50: 50 AMPS rms
	75: 75 AMPS rms

General Specifications

	HPR48...
Operational voltage range	42 to 530 VAC rms
Blocking voltage	> 1200 V _p
Zero voltage turn-on	≤ 10V
Operational frequency range	45 to 65Hz
Power Factor	>0.5 @ 480 VAC rms
Markings	

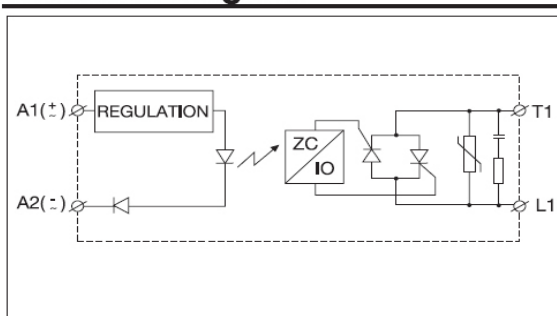
Input Specifications

	HPR..D..	HPR..A..
Control voltage range	4 - 32 VDC	20-280 VAC 22-48 VDC
Pick-up voltage @ Ta = 25°C	3.5 VDC	18 VAC/DC
Reverse voltage	32 VDC	-
Drop-out voltage	1.2 VDC	6 VAC/DC
Input current @ max voltage	≤ 12 mA	≤ 20 mA
Response time pick-up	≤ 1/2 cycle	≤ 12 ms
Response time drop-out	≤ 1/2 cycle	≤ 40 ms

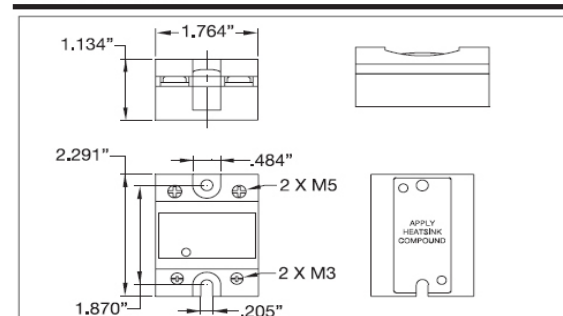
Thermal Specifications

	HPR...25	HPR...50	HPR...75
Operating temperature range	-20° TO 70°C (36° to 126°F)	-20° TO 70°C (36° to 126°F)	-20° TO 70°C (36° to 126°F)
Storage temperature range	-40° TO 100°C (72° to 180°F)	-40° TO 100°C (72° to 180°F)	-40° TO 100°C (72° to 180°F)
Junction temperature	≤ 125°C (225°F)	≤ 125°C (225°F)	≤ 125°C (225°F)
R _{th} junction to case	≤ 0.80K/W	≤ 0.50K/W	≤ 0.35K/W
R _{th} junction to ambient	≤ 20.0K/W	≤ 20.0K/W	≤ 20.0K/W

Functional Diagram



Dimensions



Solid State Relays...continued

Heatsink Data (load current versus ambient temperature)

HPR...25

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70°C	
25.0	2.70	2.34	1.98	1.61	1.25	0.89	28
22.5	3.10	2.69	2.28	1.86	1.45	1.04	24
20.0	3.61	3.13	2.65	2.18	1.70	1.23	21
17.5	4.26	3.70	3.14	2.59	2.03	1.47	18
15.0	5.14	4.47	3.80	3.14	2.47	1.80	15
12.5	6.38	5.56	4.73	3.91	3.09	2.27	12
10.0	8.25	7.19	6.14	5.08	4.02	2.97	9
7.5	11.4	9.94	8.49	7.04	5.59	4.14	7
5.0	17.7	15.4	13.2	11.0	8.74	6.51	4
2.5	-	-	-	-	18.2	13.6	2
	20	30	40	50	60	70°C	
	68	86	104	122	140	158°F	

T_A
Ambient temp.

Junction to ambient thermal resistance, R _{th j-a}	< 20.0	K/W
Junction to case thermal resistance, R _{th j-c}	< 0.80	K/W
Case to heatsink thermal resistance, R _{th c-h}	< 0.20	K/W
Maximum allowable case temperature	100 (212)	C (F)
Maximum allowable junction temperature	125 (257)	C (F)

HPR...50

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70°C	
50.0	1.03	0.86	0.70	0.53	0.37	0.20	61
45.0	1.27	1.09	0.90	0.71	0.52	0.33	53
40.0	1.54	1.32	1.10	0.89	0.67	0.45	46
35.0	1.85	1.59	1.34	1.08	0.82	0.57	39
30.0	2.26	1.95	1.65	1.34	1.03	0.72	33
25.0	2.85	2.47	2.08	1.70	1.32	0.94	26
20.0	3.73	3.24	2.75	2.26	1.77	1.27	20
15.0	5.22	4.54	3.86	3.19	2.51	1.83	15
10.0	8.21	7.16	6.11	5.05	4.00	2.95	10
5.0	17.2	15.0	12.9	10.7	8.51	6.33	5
	20	30	40	50	60	70°C	
	68	86	104	122	140	158°F	

T_A
Ambient temp.

Junction to ambient thermal resistance, R _{th j-a}	< 20.0	K/W
Junction to case thermal resistance, R _{th j-c}	< 0.50	K/W
Case to heatsink thermal resistance, R _{th c-h}	< 0.20	K/W
Maximum allowable case temperature	100 (212)	C (F)
Maximum allowable junction temperature	125 (257)	C (F)

Isolation

Rated isolation voltage 4000 VAC rms
Input to output

Rated isolation voltage 4000 VAC rms
Output to case

Heatsink Selection

Heatsink	Thermal resistance...	...for power dissipation
HS 45CD	2.70K/W	> 60W
HS 45BD	2.00K/W	> 60W
Consult MDI	> 0.25K/W	N/A

HPR...75

Load current [A]	Thermal resistance [K/W]						Power dissipation [W]
	20	30	40	50	60	70°C	
75.0	0.91	0.78	0.65	0.52	0.39	0.26	77
67.5	1.10	0.96	0.81	0.66	0.51	0.36	68
60.0	1.34	1.17	1.00	0.83	0.66	0.49	59
52.5	1.60	1.40	1.20	1.00	0.80	0.60	50
45.0	1.93	1.68	1.44	1.20	0.96	0.72	42
37.5	2.38	2.08	1.78	1.49	1.19	0.89	34
30.0	3.06	2.68	2.30	1.91	1.53	1.15	26
22.5	4.21	3.68	3.16	2.63	2.10	1.58	19
15.0	6.51	5.70	4.88	4.07	3.26	2.44	12
7.5	13.5	11.77	10.09	8.41	6.73	5.04	6
	20	30	40	50	60	70°C	
	68	86	104	122	140	158°F	

T_A
Ambient temp.

Junction to ambient thermal resistance, R _{th j-a}	< 20.0	K/W
Junction to case thermal resistance, R _{th j-c}	< 0.35	K/W
Case to heatsink thermal resistance, R _{th c-h}	< 0.10	K/W
Maximum allowable case temperature	100 (212)	C (F)
Maximum allowable junction temperature	125 (257)	C (F)

Solid State Relays...continued

The BEST choice for industrial heating applications requiring high cycle rates

20, 30, 50 & 70 AMP Relays with Integrated Heatsinks



FEATURES:

- 20, 30, 50 and 70 AMP relays available
- Integrated Heat Sink
- AC Semiconductor Contactor
- Zero Switching
- Direct-Copper Bonding (DCB) Technology
- LED Indication
- Cage Clamp Terminals

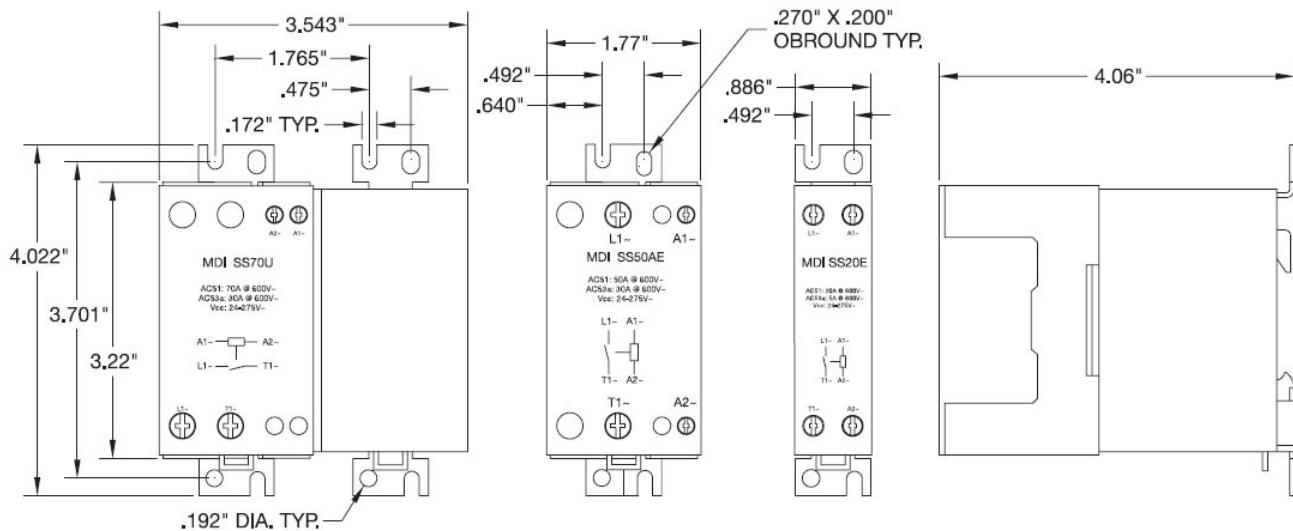
SPECIFICATIONS:

- 2 Input Ranges (4-32 VDC and 24-275 VAC/24-48 VDC)
- Operational Ratings (20-70 AMPS AC rms @ 600 VAC)
- Non-repetitive Voltage: Up To 1200V_p
- Operating Temperature: -30° to +80°C
- Junction Temperature: +125°C on 20, 30 & 70 AMP
- Junction Temperature: +120°C on 50 AMP

Solid State Relays are advantageous in industrial heating applications requiring high cycle rates. These relays have integral heat sinks and are ready to mount on chassis or DIN-rail. Standard housing dimensions enable straight-forward replacement of alternative products and allow for two standard terminal configurations. Cage clamp terminals are used to ensure secure load connection. An LED indicates the status of the control input. Superior heat-transfer efficiency, combined with a robust power management system, makes this a highly reliable electrical relay capable of meeting even the most stringent functional requirements.

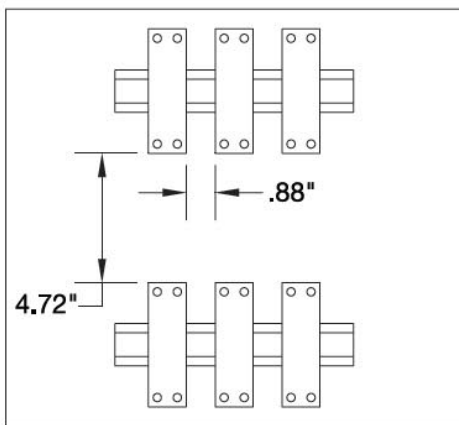
PART #	CURRENT VOLTAGE	RATED CURRENT	PRICE EACH
SS20A_*	24-275 VAC 24-48 VDC	20 AMP	CALL FOR PRICING
SS20D_*	4-32 VDC	20 AMP	
SS30A_*	24-275 VAC 24-48 VDC	30 AMP	
SS30D_*	4-32 VDC	30 AMP	
SS50A_*	24-275 VAC 24-48 VDC	50 AMP	
SS50D_*	4-32 VDC	50 AMP	
SS70A_*	24-275 VAC 24-48 VDC	70 AMP	
SS70D_*	4-32 VDC	70 AMP	

*Insert "E" For Terminals on left side, Insert "U" For Terminals on Bottom



Panel, Terminal Information & Derating Charts

Panel mounting



Terminal Layout

