



# SERIES 1 | 480 VAC PANEL MOUNT



### Features

- Ratings from 25A to 90A @ 48-530 VAC
- SCR output for heavy industrial loads
- Zero voltage or instantaneous turn-on outputs
- UL/CSA/TUV Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- AC or DC control
- Direct bond copper substrate
- EMC compliant to Level 3
- Direct power lead frame
- Epoxy free design

### PRODUCT SELECTION

Control Voltage	25 A	50 A	75 A	90 A
4-32 VDC	D4825	D4850	D4875	D4890
90-280 VAC	A4825	A4850	A4875	A4890

### ORDERING OPTIONS

**A** - **48** - **25** - **K** - **S** - **H** - **-10**

**Control Voltage**

**A:** 90-280 VAC  
**D:** 4-32 VDC

**Operating Voltage**

**48:** 48-530 VAC

**Rated Load Current**

**25:** 25 Amps  
**50:** 50 Amps  
**75:** 75 Amps  
**90:** 90 Amps

**Termination**

**Blank:** Screw  
**F:** Quick Connect (Up to 50 Amps only) (1)  
**K:** Hex standoffs (2)

**Snubber**

**Blank:** Not Included  
**S:** Included

**Thermal Pad**

**Blank:** Not Included  
**H:** Included

**Switching Type**

**Blank:** Zero Voltage Turn-On  
**-10:** Instantaneous Turn-On (3)

— Required for valid part number  
□ For options only and not required for valid part number

**Note:** Not all part number combinations are available. Contact Crydom Technical support for information on the availability of a specific part number.

## OUTPUT SPECIFICATIONS <sup>(4)</sup>

Description	25 A	50 A	75 A	90 A
Operating Voltage (47-440Hz) [Vrms] <sup>(5)</sup>	48-530	48-530	48-530	48-530
Transient Overvoltage [Vpk]	800	800	800	800
Maximum Off-State Leakage Current @ Rated Voltage [mArms] <sup>(6)</sup>	1	1	1	1
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500
Maximum Load Current [Arms] <sup>(2)(7)</sup>	25	50	75	90
Minimum Load Current [mArms]	150	150	150	150
Maximum 1 Cycle Surge Current (50/60Hz) [Apk]	239/250	597/625	954/1000	1145/1200
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case (Rjc) [°C/W]	0.8	0.45	0.3	0.27
Maximum 1/2 Cycle I <sup>2</sup> t for Fusing (50/60Hz) [A <sup>2</sup> sec]	285/259	1770/1621	4555/4150	6560/5976
Minimum Power Factor (at Maximum Load)	0.5	0.5	0.5	0.5

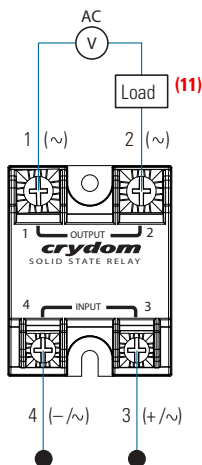
## INPUT SPECIFICATIONS <sup>(4)</sup>

Description	D48xx	A48xx
Control Voltage Range	4-32 VDC	90-280 Vrms
Maximum Reverse Voltage	-32 VDC	-
Minimum Turn-On Voltage	4.0 VDC <sup>(8)</sup>	90 Vrms
Must Turn-Off Voltage	1.0 VDC	10 Vrms
Minimum Input Current [mA]	7	5
Maximum Input Current [mA]	12	10
Nominal Input Impedance [Ohms]	Current Regulated	
Maximum Turn-On Time [msec]	1/2 Cycle <sup>(9)</sup>	20
Maximum Turn-Off Time [msec]	1/2 Cycle	30

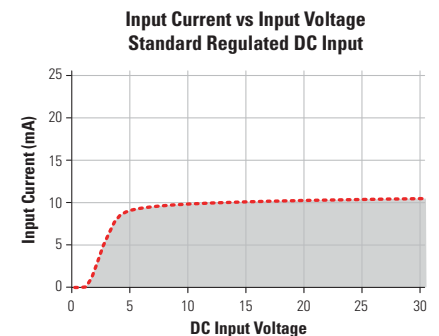
## GENERAL SPECIFICATIONS <sup>(4)</sup>

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz)	4000 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10 <sup>9</sup> Ohm
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range	-40 to 80 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.6 oz (74.9g)
Housing Material	UL 94 V-0
Baseplate Material	Aluminum
Input Terminal Screw Torque Range (in-lb/Nm)	13-15 / 1.5-1.7
Load Terminal Screw Torque Range (in-lb/Nm)	18-20 / 2.0-2.2
SSR Mounting Screw Torque Range (in-lb/Nm)	18-20 / 2.0-2.2
Input/Load Terminal Screw Torque Range (in-lb/Nm) <sup>(2)</sup>	w/"K" option 8-10 / 0.9-1.13
Input/Output Terminal Screw Thread Size	#6-32 UNC / #8-32 UNC
Humidity per IEC60068-2-78	93% non-condensing
LED Input Status Indicator	w/"G" option (green)
MTBF (Mean Time Between Failures) at 40°C ambient temperature <sup>(10)</sup>	11,641,553 hours (1,328 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature <sup>(10)</sup>	7,210,376 hours (823 years)

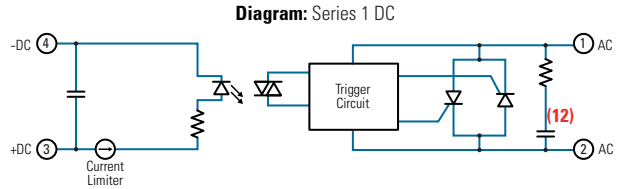
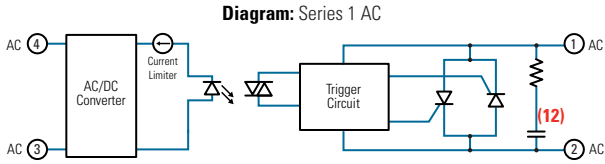
## WIRING DIAGRAM



Recommended Wire Sizes		
Terminals	Wire Size (Solid / Stranded)	Wire Pull-Out Strength (lb)[N]
Input	24 AWG (0.2 mm <sup>2</sup> ) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm <sup>2</sup> ) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm <sup>2</sup> ) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm <sup>2</sup> ) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm <sup>2</sup> ) / 8.4 [maximum]	90 [400]



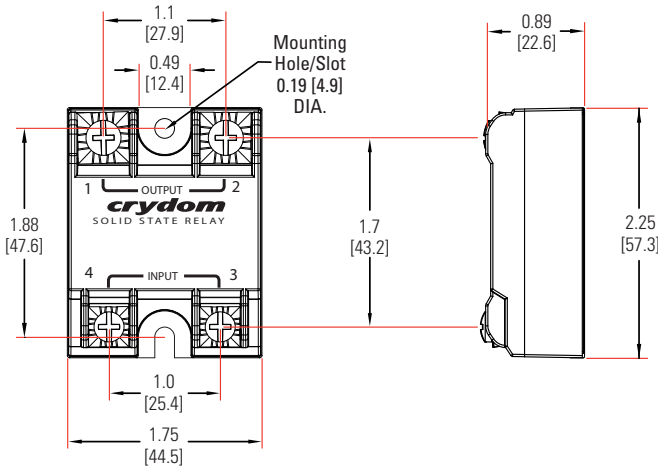
# EQUIVALENT CIRCUIT BLOCK DIAGRAMS



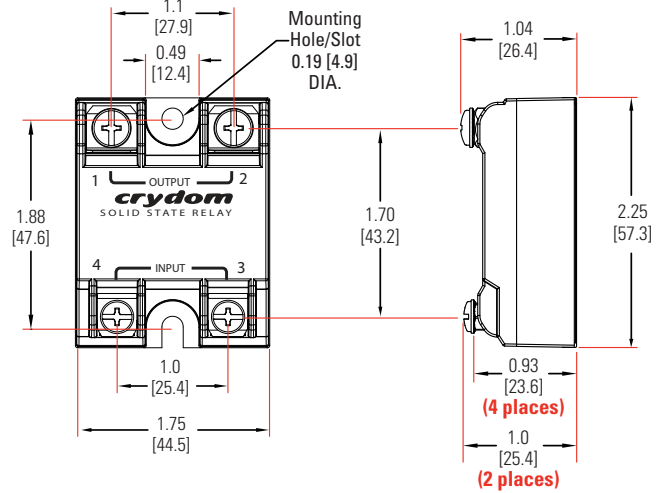
# MECHANICAL SPECIFICATIONS (4)

Tolerances:  $\pm 0.02$  in / 0.5 mm  
 All dimensions are in: inches [millimeters]

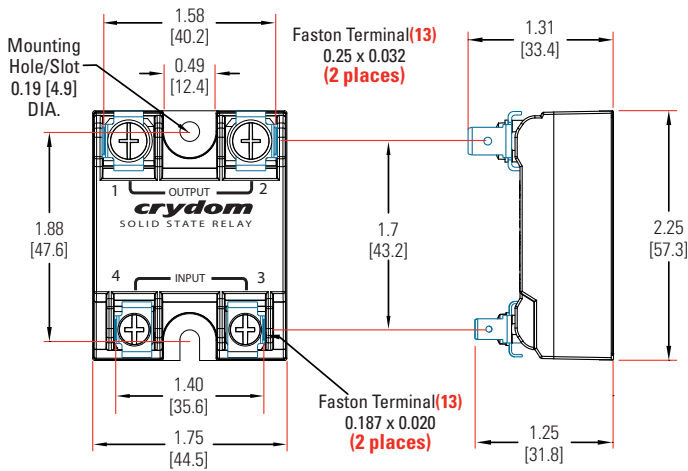
## Screw Termination



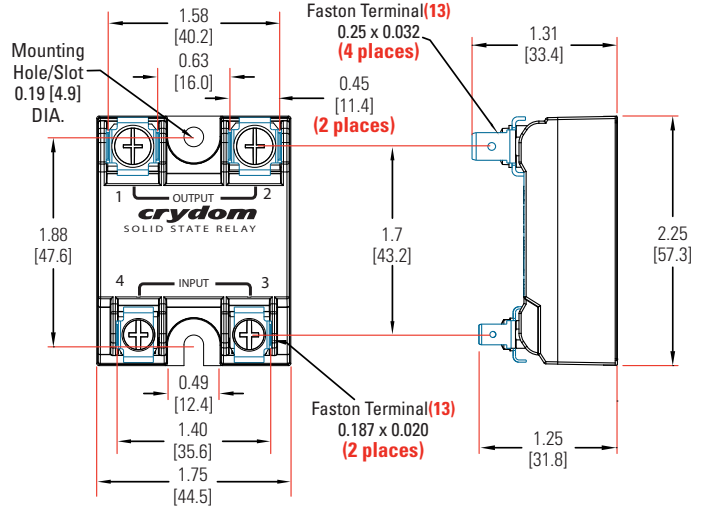
## Hex Standoff Termination ("K" Option) (2)



## Quick Connect Termination ("F" Option) - Up to 25 Amp (1)

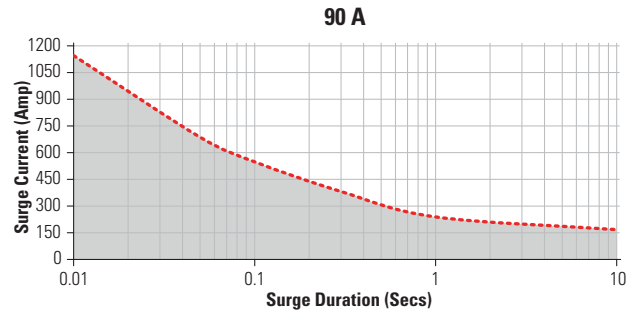
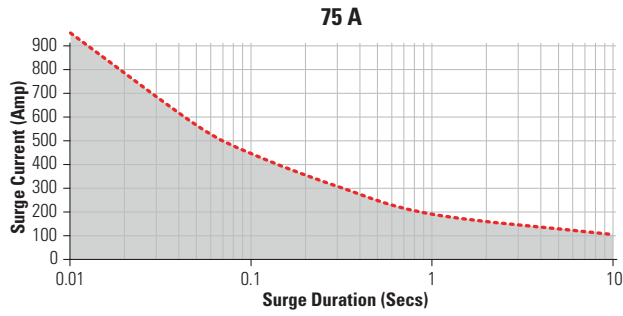
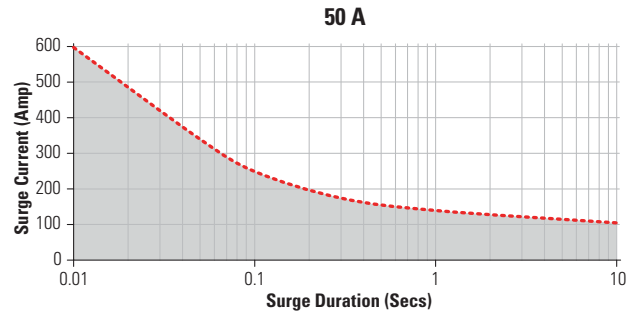
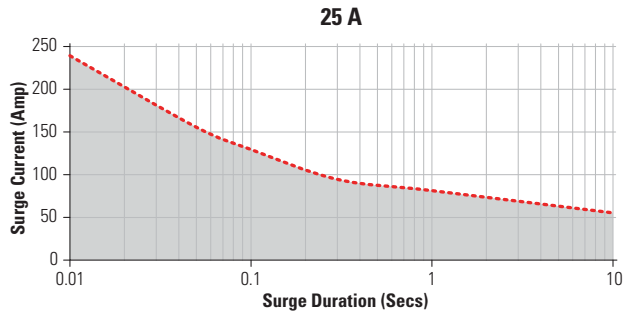


## Quick Connect Termination ("F" Option) - Up to 50 Amp (1)





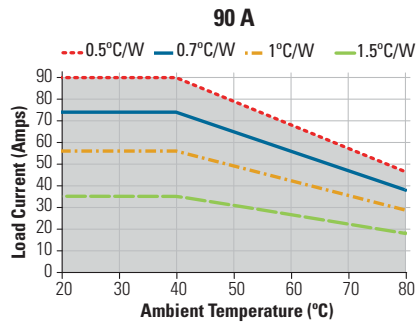
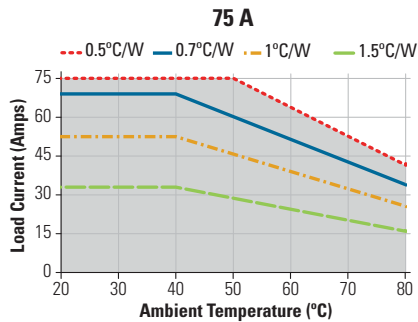
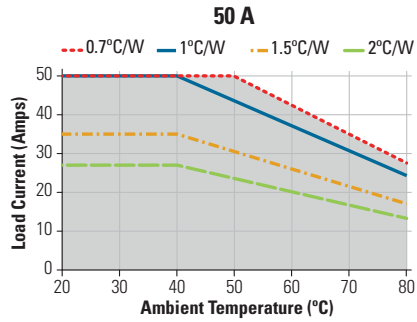
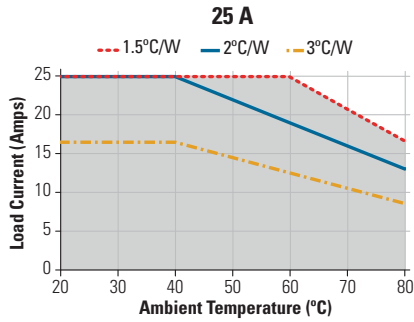
# SURGE CURRENT INFORMATION



Non repetitive peak surge current at Tj initial 40°C.



# THERMAL DERATE INFORMATION



## AGENCY APPROVALS AND CERTIFICATIONS

EN60950 : Meets the requirements of sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:  
 Designed in accordance with the requirements of IEC 62314  
 IEC 61000-4-2 : Electrostatic Discharge – Level 3  
 IEC 61000-4-4 : Electrically Fast Transients – Level 3  
 IEC 61000-4-5 : Electrical Surges – Level 3  
 IEC 60068-2-6 : Vibration 0.33mm and 0.75 mm Amplitude over 10-55 Hz  
 IEC 60068-2-27 : Shock Resistance 15g/11ms

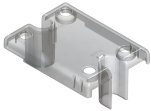


## ACCESSORIES

### New Accessories! Protective Cover & Hardware Kits

#### Protective Cover

Part number: KS101



Clear plastic cover compatible with all new S1 designs. Safety covers provide added protection from electric shock when installing or checking equipment.

#### Hardware Kit

Part number: HK4



Bag with 2 square brass accessories and 2 screw 8-32 x 5/8 for output. Used to mount TMR1 lug terminals.

Recommended Accessories					
Cover	Hardware Kit	Heat Sink		Lug Terminal	Thermal Pad
		Part No.	Thermal Resistance [°C/W]		
KS101	HK1	HS501DR	5.0	TRM1	HSP-1
		HS301 / HS301DR	3.0		
	HK4	HS251	2.5	TRM6	HSP-2
		HS202 / HS202DR	2.0		
		HS201 / HS201DR	2.0		
		HS172	1.7		
		HS151 / HS151DR	1.5		
		HS122 / HS122DR	1.2		
		HS103 / HS103DR	1.0		
		HS101	1.0		
		HS073	0.7		
		HS072	0.7		
		HS053	0.5		
		HS033	0.36		
HS023	0.25				

## GENERAL NOTES

- (1) Single pair (up to 25 A) Double pair\* (50 A model only). **\*Caution:** User must connect to both pairs.
- (2) Option "K" is designed and tested for use with printed circuit boards or ring/fork terminals having a thickness between 0.031 and 0.093 inches (0.79 to 2.36 mm), and loads rated up to 50 Amps. For higher load currents, the "K" standoff temperature must not exceed 105°C. For additional application assistance please contact Crydom Technical Support.
- (3) Instantaneous turn-on not recommended for capacitive loads. Use zero turn-on only.
- (4) All parameters at 25°C unless otherwise specified.
- (5) For "S" option, operating voltage frequency is 47-63Hz.
- (6) For parts with option "S" maximum leakage current is 10mA.
- (7) Heat sinking required, see derating curves.
- (8) Increase minimum voltage by 1V for operations from -20 to -40°C.
- (9) Turn-on time for instantaneous turn-on versions is 0.02 msec (DC control Models).
- (10) All parameters at 50% power rating and 100% duty cycle (contact Crydom tech support for detailed report).
- (11) Load can be wired to either SSR output terminal 1 or 2.
- (12) Elective Internal Snubber, "S" option.
- (13) Mechanical dimensions vary from G3 models.

For additional information or specific questions, contact Crydom Technical Support.



## WARNINGS



### RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching.
- Follow proper mounting instructions including torque values.
- Do not allow liquids or foreign objects to enter this product.

**Failure to follow these instructions can result in serious injury, or equipment damage.**



### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before installing or working with this equipment.
- Verify all connections and replace all covers before turning on power.

**Failure to follow these instructions will result in death or serious injury.**

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Mailing Address: Sensata Technologies, Inc., 529 Pleasant Street, Attleboro, MA 02703, USA.

## CONTACT US

### Americas

+1 (877) 502 5500 – Option 2  
[sales.crydom@sensata.com](mailto:sales.crydom@sensata.com)

### Europe, Middle East & Africa

+44 (1202) 416170  
[ssr-info.eu@sensata.com](mailto:ssr-info.eu@sensata.com)

### Asia Pacific

[sales.isasia@list.sensata.com](mailto:sales.isasia@list.sensata.com)  
China +86 (21) 2306 1500  
Japan +81 (45) 277 7117  
Korea +82 (31) 601 2004  
India +91 (80) 67920890  
Rest of Asia +886 (2) 27602006  
ext 2808