



HA AND HD SERIES 48T PANEL MOUNT



Features

- Ratings from 12A to 125A @ 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
- Direct power lead frame
- Epoxy free design



PRODUCT SELECTION

Control Voltage	12A	25A	50A	75A	90A	110A	125A
3-32 VDC	HD4812T	HD4825T	HD4850T	HD4875T	HD4890T	HD48110T	HD48125T
90-280 Vrms	HA4812T	HA4825T	HA4850T	HA4875T	HA4890T	HA48110T	HA48125T
18-36 Vrms	HA4812ET	HA4825ET	HA4850ET	HA4875ET	HA4890ET	HA48110ET	HA48125ET



ORDERING OPTIONS

	H	A	48	25	E	K	P	G	H	T	-10
Series											
H											
Control Voltage											
A: 90-280 VAC											
D: 3-32 VDC											
AxxxxE: 18-36 VAC											
Operating Voltage											
48: 48-530 VAC											
Rated Load Current											
12: 12 Amps											
25: 25 Amps											
50: 50 Amps											
75: 75 Amps											
90: 90 Amps											
110: 110 Amps											
125: 125 Amps											
Termination											
Blank: Screw (1)											
F: Quick Connect (Up to 50 Amps only)											
K: Hex standoffs (2)											
Overvoltage Protection											
Blank: Not Included											
P: Included (3)											
Input Status LED											
Blank: Not Included											
G: Included											
Thermal Pad											
Blank: Not Included											
H: Included											
Trigger Circuit											
T: Phototransistor											
Switching Type											
Blank: Zero Voltage Turn-On											
-10: Instantaneous Turn-On (4)											

— 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 (5)

Description	12A	25A	50A	75A	90A	110A	125A
Operating Voltage (47-63Hz) [Vrms]	48-530	48-530	48-530	48-530	48-530	48-530	48-530
Transient Overvoltage [Vpk]	1200	1200	1200	1200	1200	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA _{rms}]	10	10	10	10	10	10	10
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500
Maximum Load Current [A _{rms}] (2)(6)	12	25	50	75	90	110	125
Minimum Load Current [mA _{rms}]	40	40	40	40	40	150	150
Maximum 1 Cycle Surge Current (50/60Hz) [A _{pk}]	134/140	239/250	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum On-State Voltage Drop @ Rated Current [Vrms] (7)	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case [R _{jc}] [°C/W]	1.03	0.8	0.45	0.3	0.27	0.25	0.22
Maximum 1/2 Cycle I ² t for Fusing (50/60Hz) [A ² sec]	66/60	285/259	1770/1629	4555/4150	6560/5976	10249/9338	13950/12709
Minimum Power Factor (at Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5

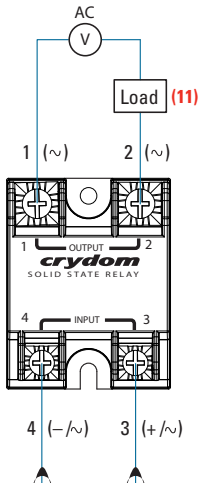
INPUT SPECIFICATIONS (5)

Description	HD48xxT	HA48xxT	HA48xxET
Control Voltage Range	3-32 VDC (8)	90-280 Vrms	18-36 Vrms
Minimum Turn-On Voltage	3.0 VDC	90 Vrms	18 Vrms
Must Turn-Off Voltage	1.0 VDC	10 Vrms	4.0 Vrms
Minimum Input Current	2 mA	2 mA	2 mA
Maximum Input Current	2.5 mA	4.9 mA	4 mA
Nominal Input Impedance	Current Regulated	60K Ohm	9K Ohm
Maximum Turn-On Time [msec]	1/2 Cycle (9)	10	20
Maximum Turn-Off Time [msec]	1/2 Cycle	40	30

GENERAL SPECIFICATIONS (5)

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz)	4000 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10 ⁹ 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 (74.9 g)
Housing Material	UL94 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] (2)	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 (10)	11,641,553 hours (1,328 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature (10)	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 ²) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm ²) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm ²) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm ²) / 5.3 [maximum]	110 [490]
	2 x 8 AWG (8.4 mm ²) / 8.4 [maximum]	90 [400]

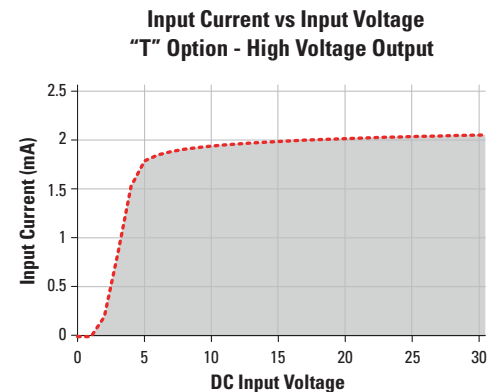




Diagram: HA48xxxxT

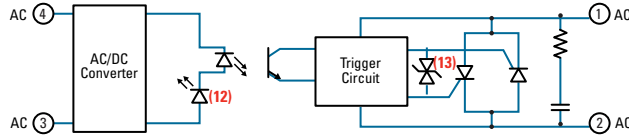
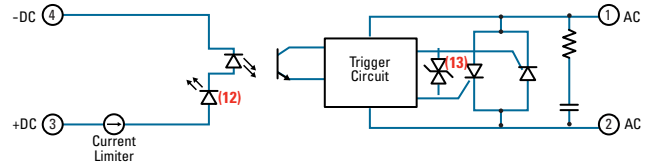


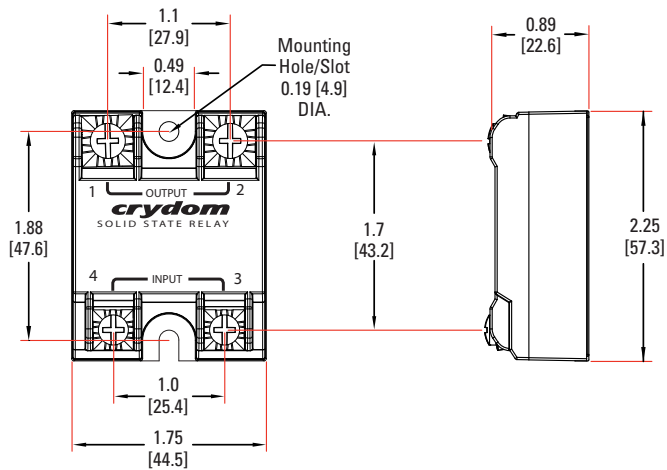
Diagram: HD48xxxxT



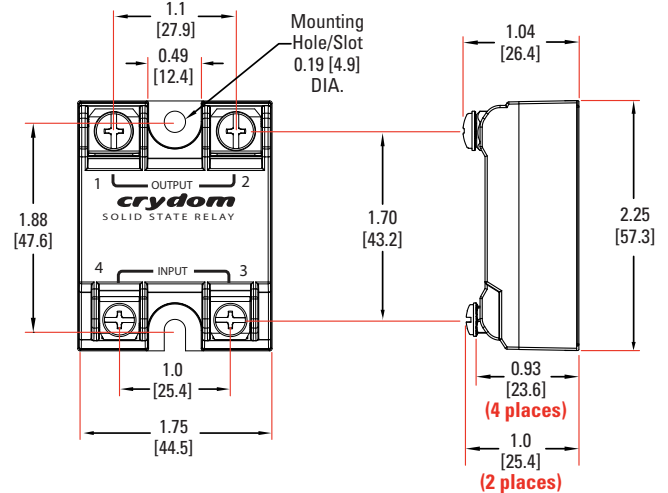
MECHANICAL SPECIFICATIONS (5)

Tolerances: ± 0.02 in / 0.5 mm
All dimensions are in: inches [millimeters]

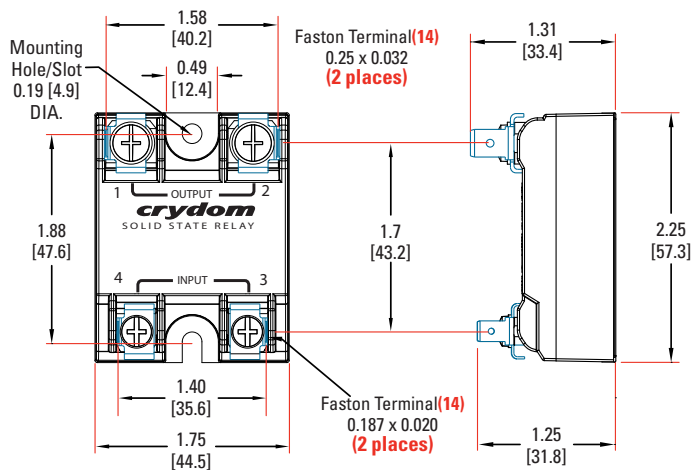
Screw Termination



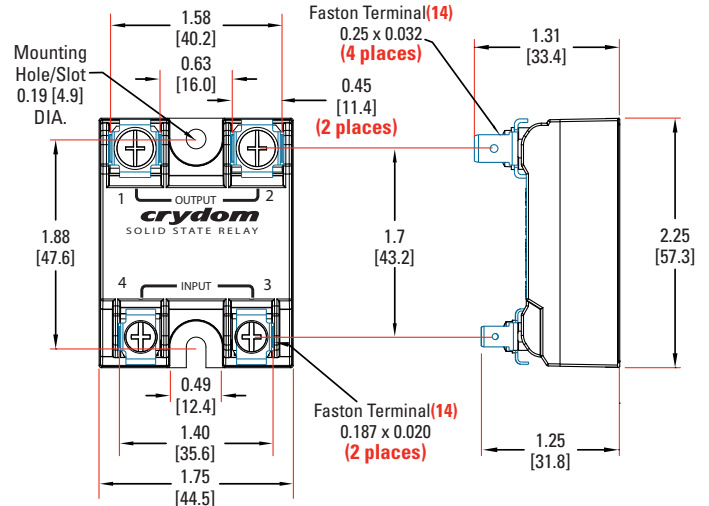
Hex Standoff Termination ("K" Option) (2)



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

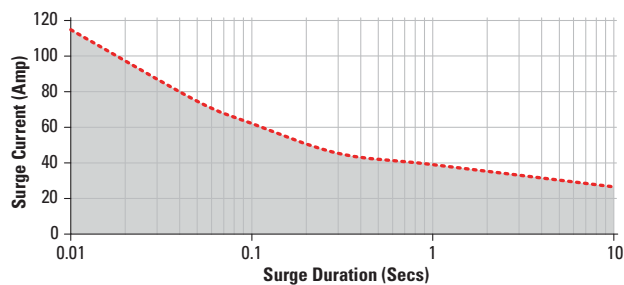


Quick Connect Termination ("F" Option) - Up to 50 Amp (1)

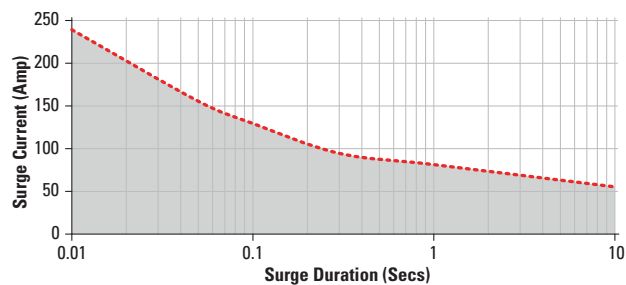




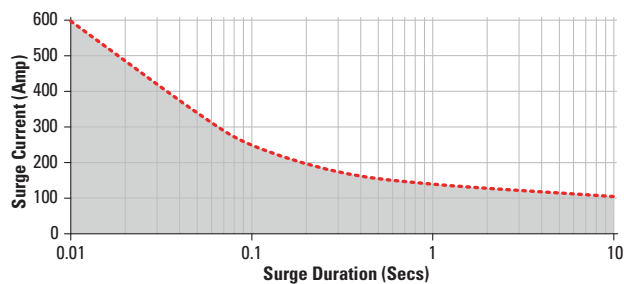
12 A



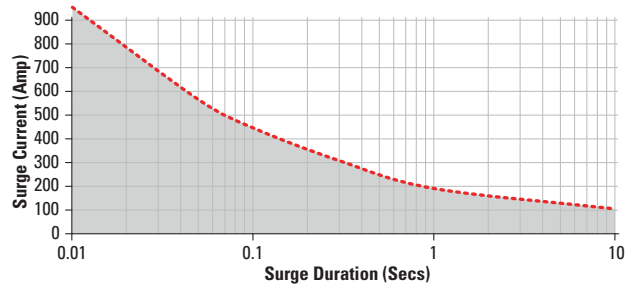
25 A



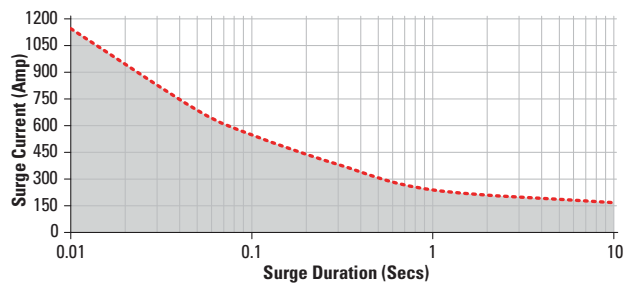
50 A



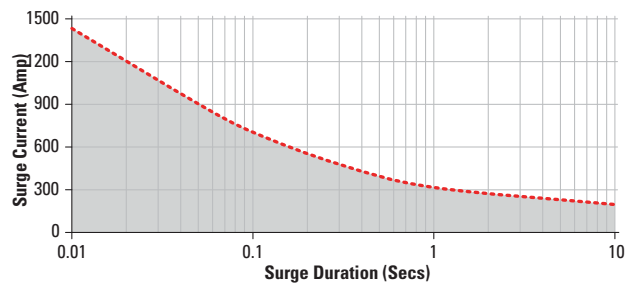
75 A



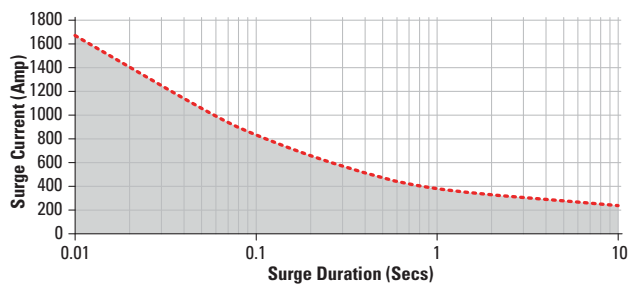
90 A



110 A



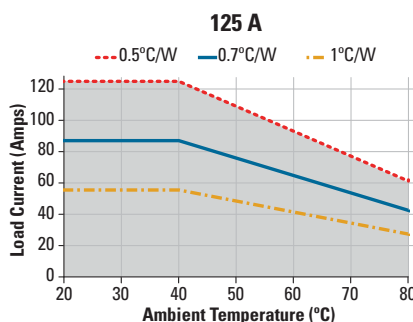
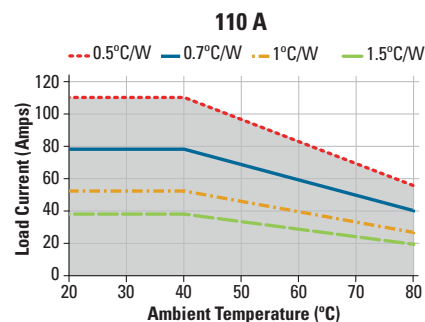
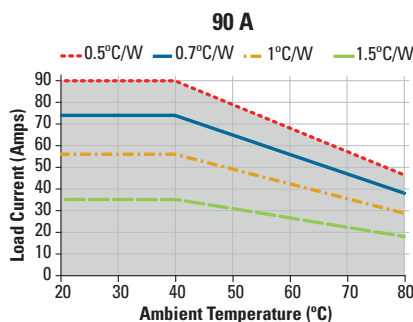
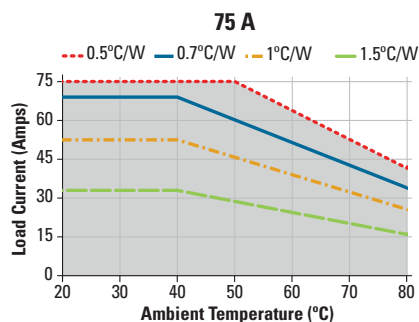
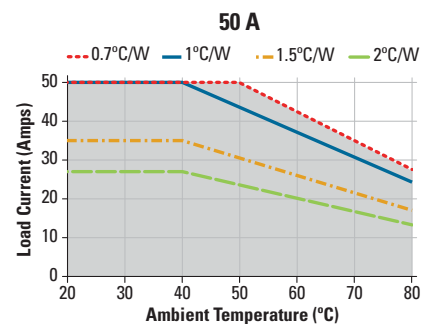
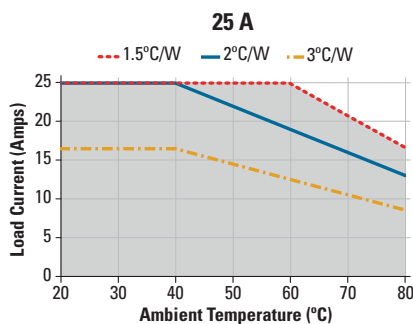
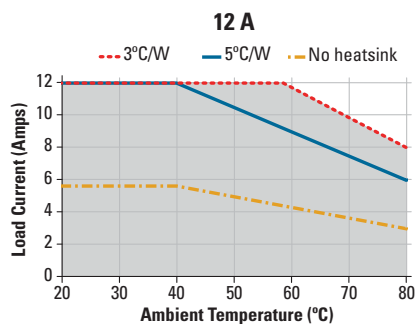
125 A



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



THERMAL DERATE INFORMATION



GENERAL NOTES

- (1) Single pair (up to 25A) Double pair* (up to 50A). ***Caution:** User must connect 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) Output will self trigger between 900-1200Vpk, Min., not suitable for capacitive loads.
- (4) Instantaneous turn-on version is not recommended for capacitive loads. Use zero turn-on only.
- (5) All parameters at 25°C unless otherwise specified.
- (6) Heat sinking required, see derating curves.
- (7) For 40mA minimum current, the voltage drop increases over maximum rated.
- (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 Input Status LED, "G" option.
- (13) Elective Overvoltage Protection, "P" option.
- (14) Mechanical dimensions vary from G3 models.

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



AGENCY APPROVALS AND CERTIFICATIONS

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 0.75mm Amplitude over 10-55 Hz
 IEC 60068-2-27: Shock Resistance 15g/11ms

UL® E116949
 E116950 (110 and 125A models)

SP® LR81689 (except 12, 110 and 125A models)



(except 110A & 125A models)



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			 Lug Terminal	 Thermal Pad
		Heat Sink Part No.	Thermal Resistance [°C/W]		
KS101	HK1 HK4	HS501DR	5.0	TRM1 TRM6	HSP-1 HSP-2
		HS301 / HS301DR	3.0		
		HS251	2.5		
		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		



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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