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Sensata Technologies

HA AND HD SERIES | 60

PANEL MOUNT



Features

- Ratings from 25A to 125A @ 48-660 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	25A	50A	90A	125A
4-32 VDC	HD6025	HD6050	HD6090	HD60125
90-280 Vrms	HA6025	HA6050	HA6090	HA60125
18-36 Vrms	HA6025E	HA6050E	HA6090E	HA60125E

ORDERING OPTIONS

H – A – 60 – 25 – E – K – P – G – H – -10

Serires

H

Control Voltage

A: 90-280 VAC
D: 4-32 VDC
AxxxxE: 18-36 VAC

Operating Voltage

60: 48-660 VAC

Rated Load Current

25: 25 Amps
50: 50 Amps
90: 90 Amps
125: 125 Amps

Termination

Blank: Screw
F: Quick Connect (Up to 50 Amps only) (1)
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

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.

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OUTPUT SPECIFICATIONS (5)

Descrption	25A	50A	90A	125A
Operating Voltage (47-440Hz) [Vrms]	48-660	48-660	48-660	48-660
Transient Overvoltage [Vpk]	1200	1200	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mArms]	1.0	1.0	1.0	1.0
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/µsec]	500	500	500	500
Maximum Load Current [Arms] (2)(6)	25	50	90	125
Minimum Load Current [mArms]	150	150	150	150
Maximum 1 Cycle Surge Current (50/60Hz) [Apk]	235/250	597/625	1145/1200	1670/1750
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	0.27	0.22
Maximum 1/2 Cycle I^2t for Fusing (50/60Hz) [A^2 sec]	285/259	1770/1629	6560/5976	13950/12709
Minimum Power Factor (at Maximum Load) (3)	0.5	0.5	0.5	0.5

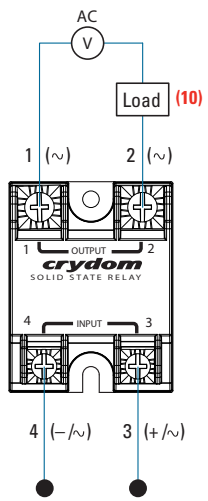
INPUT SPECIFICATIONS (5)

Description	HD60xx	HA60xx	HA60xxE
Control Voltage Range	4-32 VDC	90-280 Vrms	18-36 Vrms
Minimum Turn-On Voltage	4.0 VDC (7)	90 Vrms	18 Vrms
Must Turn-Off Voltage	1.0 VDC	10 Vrms	4.0 Vrms
Maximum Reverse Voltage	-32 VDC	-	-
Minimum Input Current	7.0 mA	5 mA	16 mA
Maximum Input Current	12 mA	10 mA	20 mA
Nominal Input Impedance		Current Regulated	
Maximum Turn-On Time [msec]	1/2 Cycle (8)	20	20
Maximum Turn-Off Time [msec]	1/2 Cycle	30	30

GENERAL SPECIFICATIONS (5)

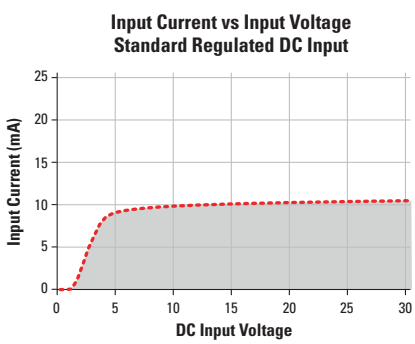
Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz)	4000 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohm
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range	-40 to 80 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.6 oz (74.9 g)
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 (9)	11,641,553 hours (1,328 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature (9)	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	110 [490]
	2 x 8 AWG (8.4 mm^2) / 8.4 [maximum]	90 [400]



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EQUIVALENT CIRCUIT BLOCK DIAGRAMS

Diagram: HD60xx

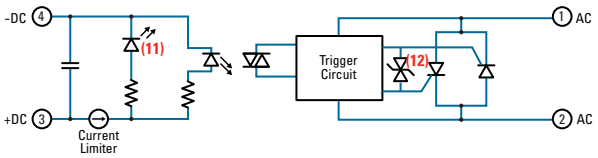
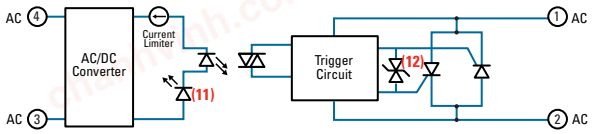


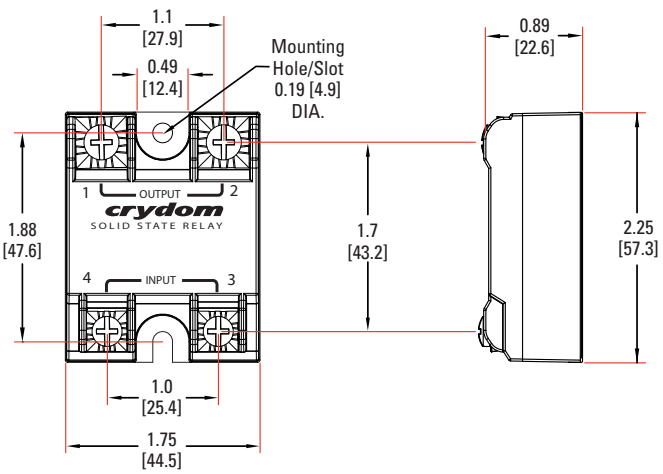
Diagram: HAxxxx



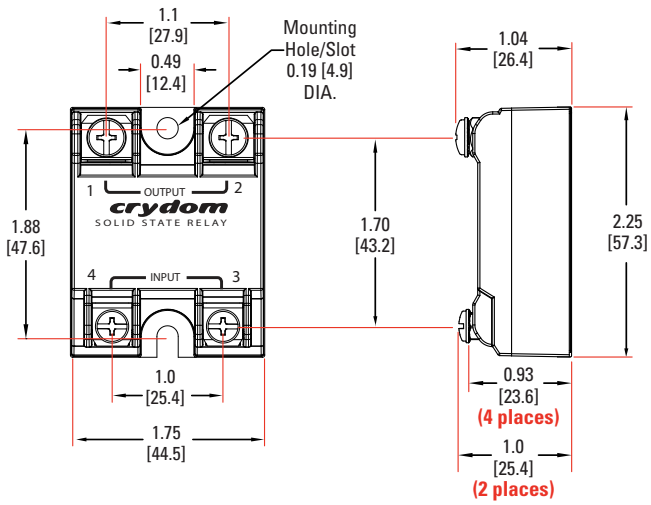
MECHANICAL SPECIFICATIONS (5)

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

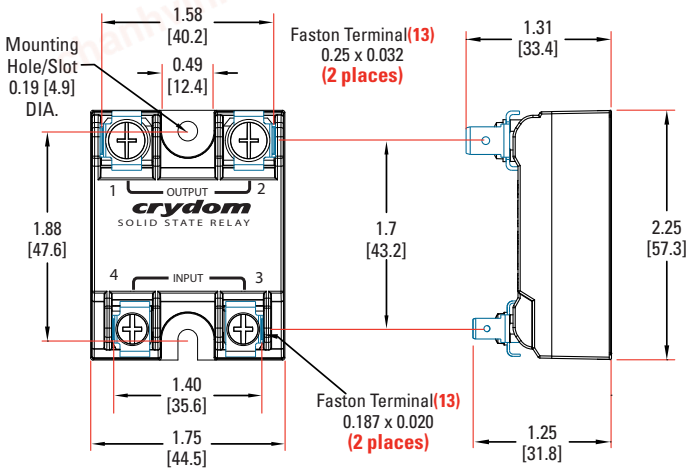
Screw Termination



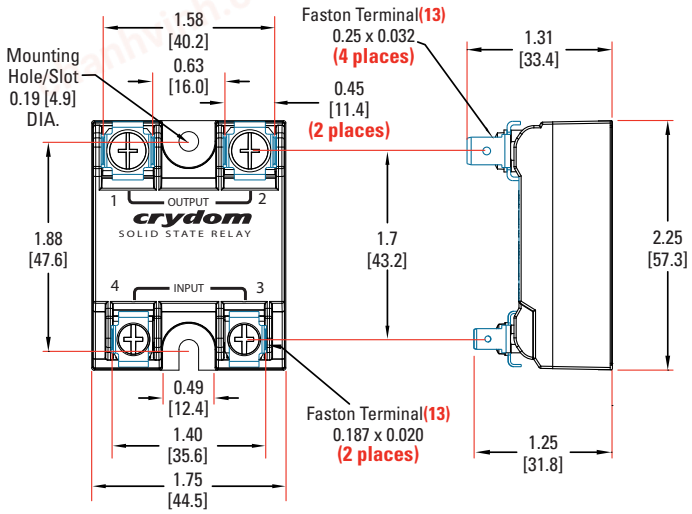
Hex Standoff Termination ("K" Option) (2)



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

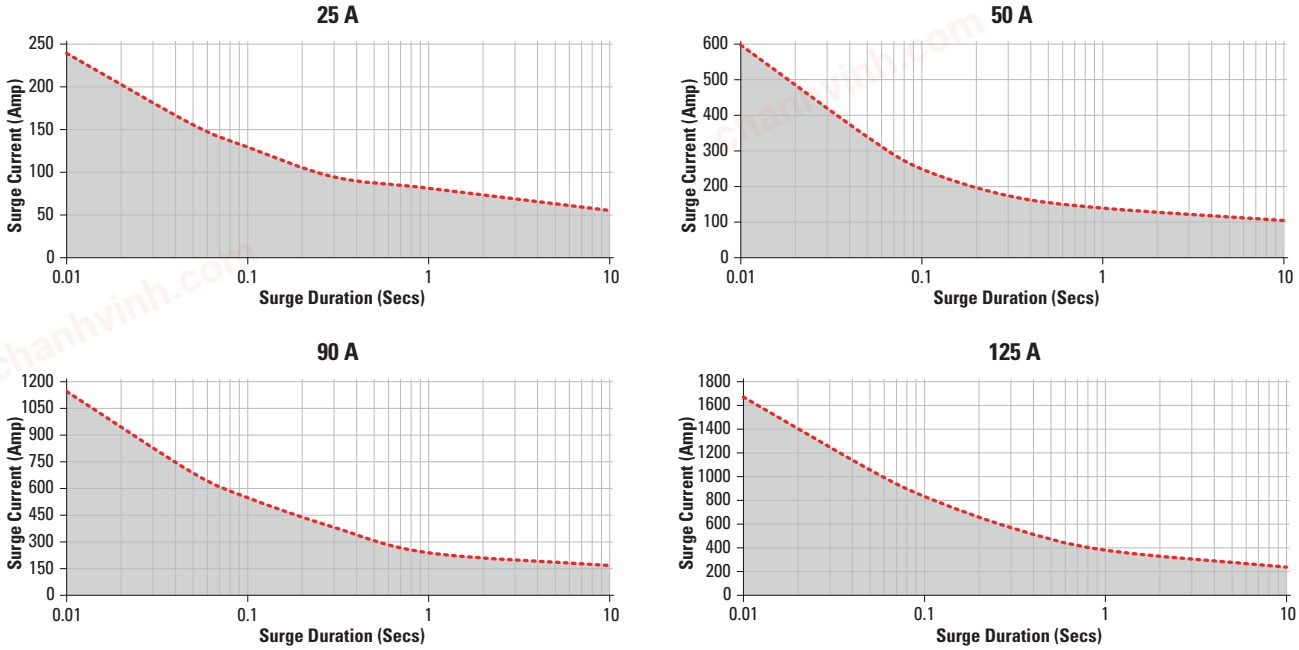


Quick Connect Termination ("F" Option) - Up to 50 Amp (1)



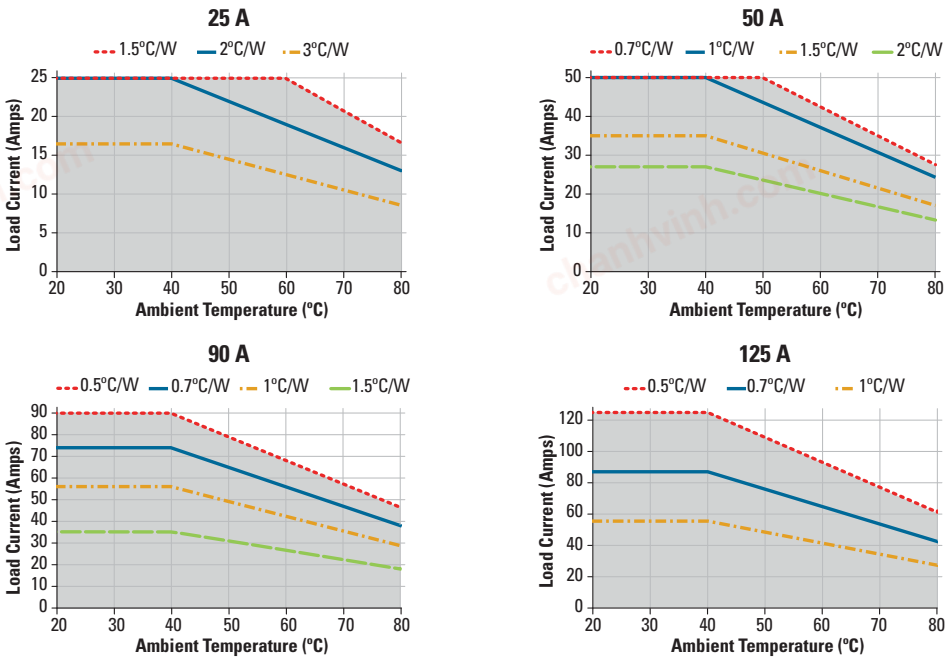
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SURGE CURRENT INFORMATION



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. power factor 0.7 or higher, not suituable for capacitive loads.
(4) Instantaneous turn-on version is not recomended for capacitive loads. Use zero turn-on only.
(5) All parameters at 25°C unless otherwise specified.
For additional information or specific questions, contact Crydom Technical Support.
(6) Heat sinking required, see derating curves.
(7) Increase minimum voltage by 1V for operations from -20 to -40°C.
(8) Turn-on time for Instantaneous turn-on versions is 0.02 msec (DC Control Models).
(9) AI parameters at 50% power rating and 100% duty cycle (contact Crydom tech support for detailed report).
(10) Load can be wired to either SSR output terminal 1 or 2.
(11) Elective Input Status LED, "G" option.
(12) Elective Overvoltage Protection, "P" option.
(13) Mechanical dimensions vary from G3 models.

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AGENCY APPROVALS AND CERTIFICATIONS

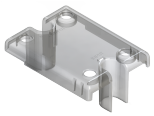
Designed in accordance with the requirements of IEC 62314
IEC 61000-4-2 : Electrostatic Discharge – Level 3
IEC 61000-4-4 : Electrically Fast Transients – Level 3
IEC 61000-4-5 : Electrical Surges – Level 3
IEC 600068-2-6: Vibration 0.33mm and 0.75mm Amplitude over 10-55 Hz
IEC 600068-2-27: Shock Resistance 15g/11ms

c UL us E116950 LR 81689 CE RoHS TÜV (exept 110A & 125A models)

ACCESORIES

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

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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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