



## H1 SERIES | H16WD

### PANEL MOUNT SOLID STATE RELAYS



#### Features

- Ratings from 25A to 90A @ 48-690 VAC
- 1600 Volts Blocking
- SCR output for heavy industrial loads
- Zero Voltage or instantaneous turn-on outputs
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- 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	H16WD4825	H16WD4850	H16WD4875	H16WD4890

#### SPECIFICATIONS

##### Output<sup>(4)</sup>

Description	25 A	50 A	75 A	90 A
Operating Voltage (47-440Hz) [Vrms]	48-690	48-690	48-690	48-690
Transient Overvoltage [Vpk]	1600	1600	1600	1600
Rated Load Current [Arms] (5)(2)	25	50	75	90
Rated Load Current {UL508 Motor Controller} [Arms] (5)	10	20	30	45
Minimum Load Current [mA rms]	150	150	150	150
Maximum Off-State Leakage Current @ Rated Voltage [mA rms]	1.0	1.0	1.0	1.0
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500
Maximum 1 Cycle Surge Current (50/60 Hz) [A pk]	239/250	597/625	954/1000	1145/1200
Maximum I <sup>2</sup> t for Fusing (50/60 Hz) [A <sup>2</sup> sec]	285/259	1779/1621	4555/4150	6560/5976
Thermal Resistance Junction to Case (Rjc) [°C/W]	0.8	0.45	0.3	0.27
Maximum On-State Voltage Drop @ Rated Current [V rms]	1.3	1.3	1.2	1.2
HP rating UL 508/IEC60947[HP (KW)]: 240 VAC	1.5 (1.1)	3 (2.2)	5 (3.7)	7.5 (5.6)
HP rating UL 508/IEC60947[HP (KW)]: 380 VAC	2 (1.5)	5 (3.7)	7.5 (5.6)	15 (11.2)
HP rating UL 508/IEC60947[HP (KW)]: 480 VAC	3 (2.2)	5 (3.7)	10 (7.4)	20 (14.9)
HP rating UL 508/IEC60947[HP (KW)]: 600 VAC	3 (2.2)	10 (7.4)	15 (11.2)	25 (18.6)
Minimum Power Factor (at Maximum Load)	0.5	0.5	0.5	0.5

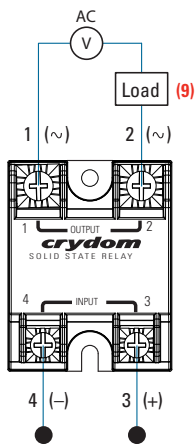
##### Input<sup>(4)</sup>

Description	DC Control
Control Voltage Range	4-32 VDC
Minimum Turn-On Voltage (6)	4.0 VDC
Must Turn-Off Voltage	1.0 VDC
Maximum Reverse Voltage	-32 VDC
Minimum Input Current @ Minimum Voltage (for on-state)	7mA
Maximum Input Current @ Maximum Voltage	12mA
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [msec] (7)	1/2 Cycle
Maximum Turn-Off Time [msec]	1/2 Cycle

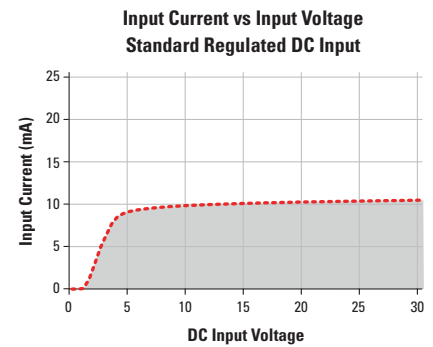
## General <sup>(4)</sup>

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60 Hz)	4000 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10 <sup>9</sup> Ohm
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range	-30 to 80 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.6 oz (74.9 g)
Housing Material	UL 94 V-0
SSR Mounting Torque Range [lb-in/Nm]	18-20 (2-2.2)
Baseplate Material	Aluminum
Input Terminal Screw Torque Range [lb-in/Nm]	13-15 / 1.5-1.7
Output Terminal Screw Torque Range [lb-in/Nm]	18-20 (2-2.2)
SSR Mounting Screw Torque Range [lb-in/Nm]	18-20 / 2.0-2.2
Input/Load Terminal Screw Torque Range [lb-in/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>(8)</sup>	11,641,553 hours (1,328 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature <sup>(8)</sup>	7,210,376 hours (823 years)

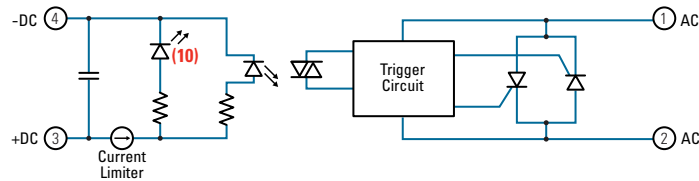
## WIRING DIAGRAM



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 [maximum]	110 [490]
	2 x 8 AWG (8.4 mm <sup>2</sup> ) / 8.4 [maximum]	90 [400]



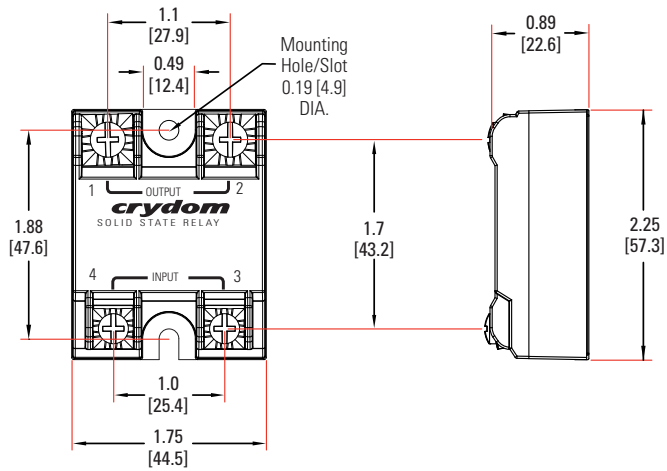
## EQUIVALENT CIRCUIT BLOCK DIAGRAM



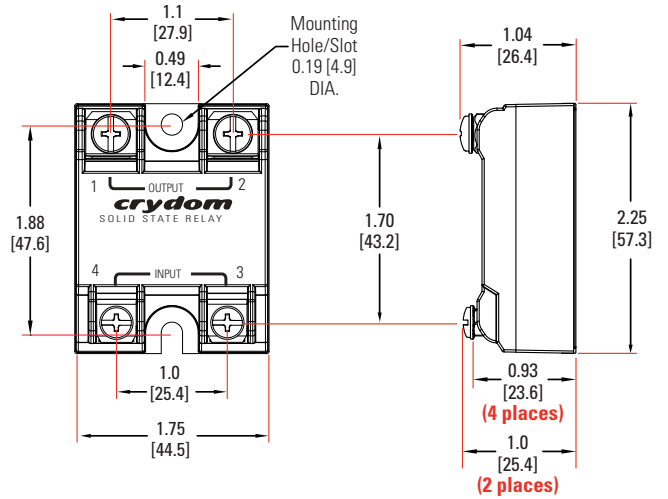
# MECHANICAL SPECIFICATIONS (4)

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

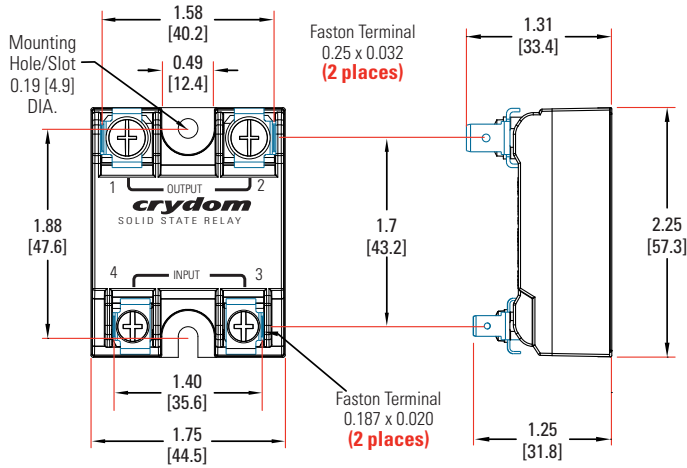
## Screw Termination



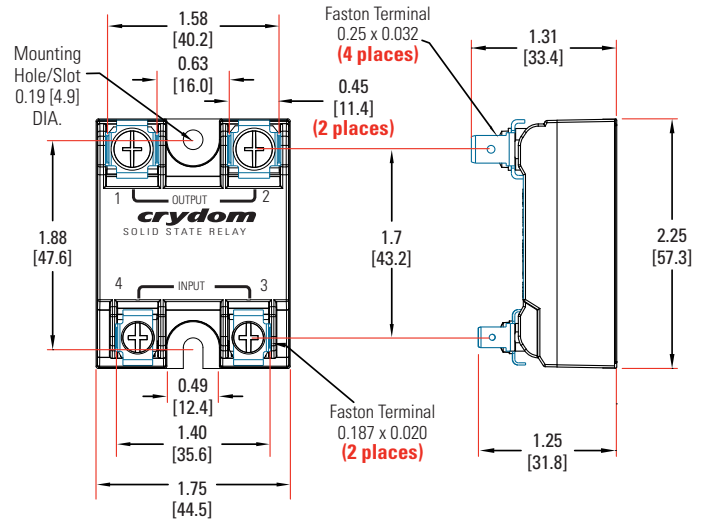
## Hex Standoff Termination ("K" Option) (2)



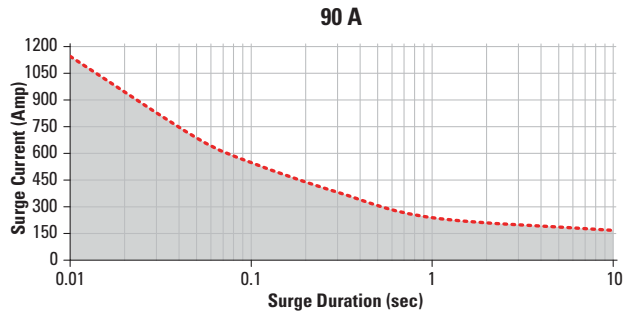
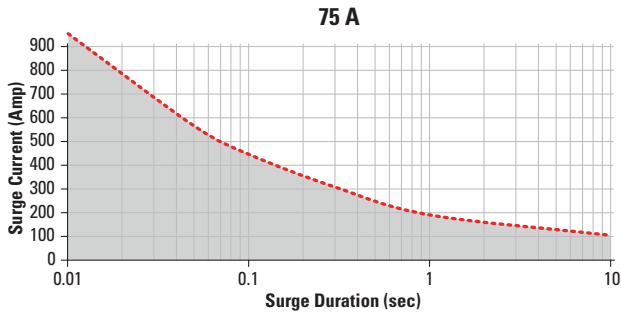
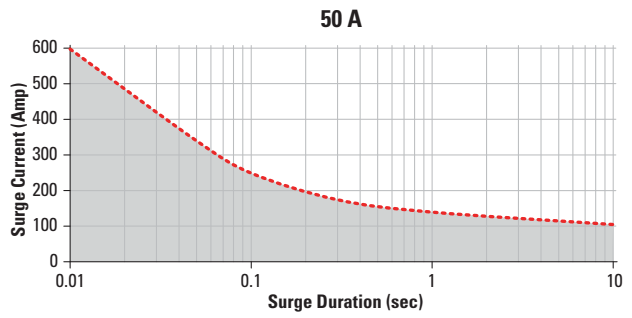
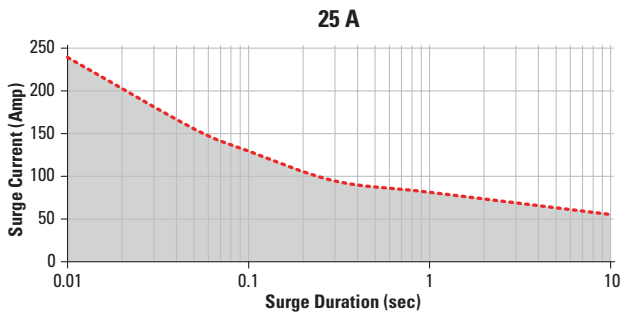
## Quick Connect Termination ("F" Option) - Up to 25 Amp (1)



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

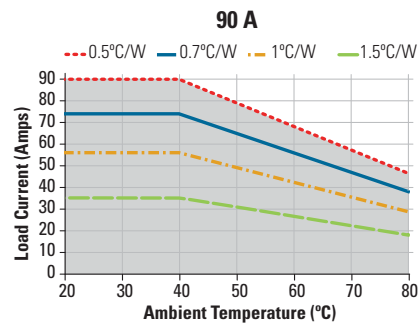
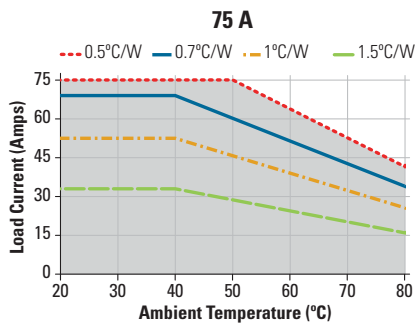
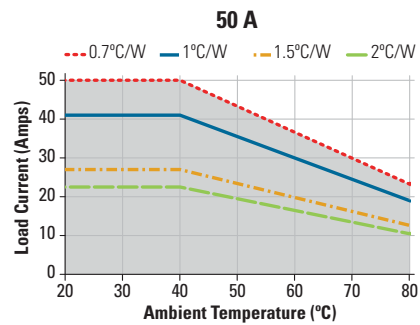
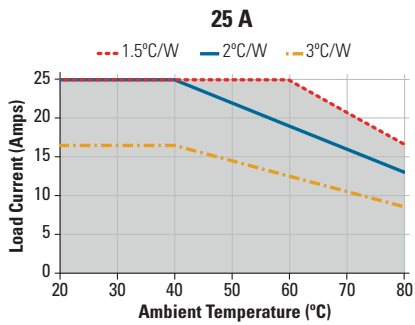


## SURGE CURRENT INFORMATION



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

## THERMAL DERATE INFORMATION

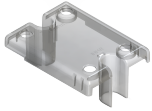


# ACCESORIES

## 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
		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				

# ORDERING OPTIONS

Example: H16WD6025KGH-10

Series	<b>H1</b>	<b>6WD</b>	<b>60</b>	<b>25</b>	<b>K</b>	<b>G</b>	<b>H</b>	<b>-10</b>
<b>H1</b>								
Transient Overvoltage								
<b>6WD: 1600 Vpk</b>								
Operating Voltage								
<b>60: 48-690 VAC</b>								
Rated Load Current								
<b>25: 25 Amps</b>	<b>75: 75 Amps</b>							
<b>50: 50 Amps</b>	<b>90: 90 Amps</b>							
Termination								
<b>Blank: Screw</b>								
<b>F: Quick Connect (Up to 50 Amps only) (1)</b>								
<b>K: Hex standoffs (2)</b>								
Input Status LED								
<b>Blank: Not Included</b>								
<b>G: Included</b>								
Thermal Pad								
<b>Blank: Not Included</b>								
<b>H: Included</b>								
Switching Mode								
<b>Blank: Zero Voltage Turn-On</b>								
<b>-10: Instantaneous Turn-On (3)</b>								

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

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

## GENERAL NOTES

- (1) Single pair (up to 25A) Double pair\* (50A 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 Technical Support.
- (3) Instantaneous turn-on version is not recommended for capacitive loads. Use zero turn-on only.
- (4) All parameters at 25°C unless otherwise specified.
- (5) Heat sinking required, see derating curves.
- (6) Increase minimum voltage by 1 V for operations from -20 to -30°C.
- (7) Turn-on time for Instantaneous turn-on versions is 0.02 msec.
- (8) All parameters at 50% power rating and 100% duty cycle
- (9) Load can be wired to either SSR output terminal 1 or 2.
- (10) Elective Input Status LED, "G" option.

## AGENCY APPROVALS

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 0.33 mm and 0.75 mm Amplitude over 10-55 Hz  
IEC 600068-2-27: Shock Resistance 15g/11 msec



## 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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