



## POWER PLUS DC SERIES | 500 VDC

PANEL MOUNT SOLID STATE RELAYS



### Features

- Ratings from 60 A @ 500 VDC
- Mosfet Output
- LED Status Indicator
- UL Approved, CE Compliant to EN60950-1
- Improved SEMS screw and washer
- Redesigned housing with anti-rotation barriers
- DC control
- EMC Compliant to Level 3
- Epoxy Free Design



### PRODUCT SELECTION

Control Voltage	60 A
4-32 VDC	DC500D60
30-60 VDC	DC500F60



### SPECIFICATIONS

#### Output Voltage <sup>(1)</sup>

Description	60 A
Recommended Operating Voltage [Vdc]	1-500
Absolute Maximum Rating [Vdc]	500
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.1
Maximum Load Current [A <sub>dc</sub> ] <sup>(2)(3)</sup>	60
Minimum Load Current [mA] <sup>(4)</sup>	2.5
Maximum Surge Current (10msec) [A <sub>dc</sub> ]	95
Maximum On-State Voltage Drop @ Rated Current [Vdc]	0.8
Maximum On-State Resistance [RDS-ON] [Ohms]	0.013
Thermal Resistance Junction to Case (R <sub>jc</sub> ) [°C/W]	0.25
Minimum Heat Sink for Rated Current @ 40°C [°C/W]	0.7
Maximum Pulse Width Modulation Frequency [Hz] <sup>(5)</sup>	500

## Input Specifications <sup>(1)</sup>

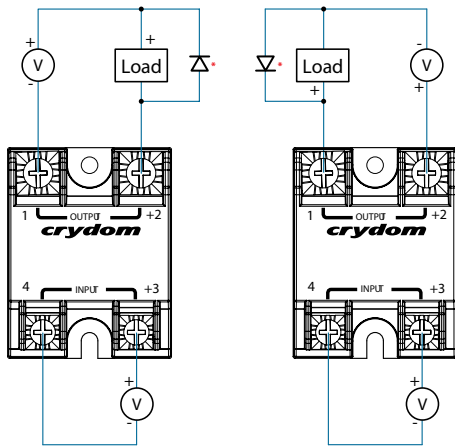
Description	Option D	Option F
<b>Control Voltage Range</b>	4-32 VDC	30-60 VDC
<b>Maximum Reverse Voltage</b>	-32 VDC	-60 VDC
<b>Minimum Turn-On Voltage <sup>(6)</sup></b>	4 VDC	30 VDC
<b>Must Turn-Off Voltage</b>	1 VDC	20 VDC
<b>Minimum Input Current (for on-state)</b>	11 mA	12 mA
<b>Maximum Input Current</b>	14 mA	17 mA
<b>Nominal Input Impedance</b>	Current Regulated	Current Regulated
<b>Maximum Turn-On Time [μsec]</b>	100	100
<b>Maximum Turn-Off Time [μsec]</b>	100	100

## General Specifications <sup>(1)</sup>

Description	Parameters
<b>Dielectric Strength, Input/Output/Base (50/60Hz)</b>	3750 Vrms
<b>Minimum Insulation Resistance (@ 500 VDC)</b>	10 <sup>9</sup> Ohms
<b>Maximum Capacitance, Input/Output</b>	8 pF
<b>Ambient Operating Temperature Range <sup>(7)</sup></b>	-40 to 100 °C
<b>Ambient Storage Temperature Range</b>	-40 to 125 °C
<b>Weight (typical)</b>	2.88 oz (81.53 g)
<b>Housing Material</b>	UL94 V-0
<b>Hardware Finish</b>	Nickel Plating
<b>Baseplate Material</b>	Aluminum
<b>Input Terminal Screw Torque Range (lb-in/Nm)</b>	13-15 / 1.5-1.7
<b>Load Terminal Screw Torque Range (lb-in/Nm)</b>	18-20 / 2-2.2
<b>SSR Mounting Screw Torque Range (lb-in/Nm)</b>	18-20 / 2-2.2
<b>Input/Load Terminal Screw Torque Range (in-lb/Nm) <sup>(2)</sup></b>	w/"K" option 8-10 / 0.9-1.13
<b>Input/Output Terminal Screw Thread Size</b>	#6-32 UNC / #8-32 UNC
<b>Humidity per IEC60068-2-78</b>	93% non-condensing
<b>LED Input Status Indicator</b>	Green
<b>MTBF (Mean Time Between Failures) at 40°C ambient temperature <sup>(8)</sup></b>	21,395,130 hours (2,441 years)
<b>MTBF (Mean Time Between Failures) at 60°C ambient temperature <sup>(8)</sup></b>	11,545,504 hours (1,317 years)

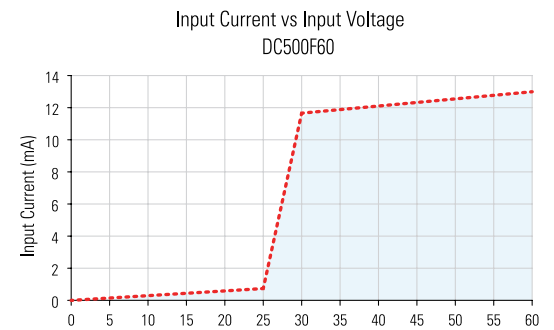
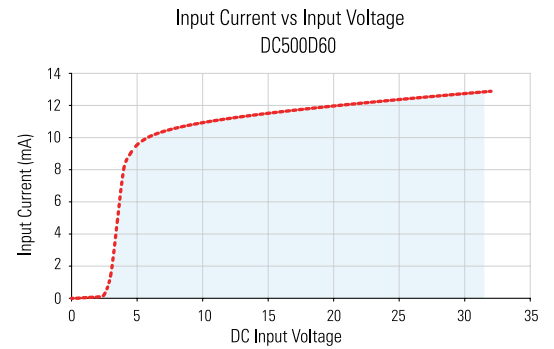
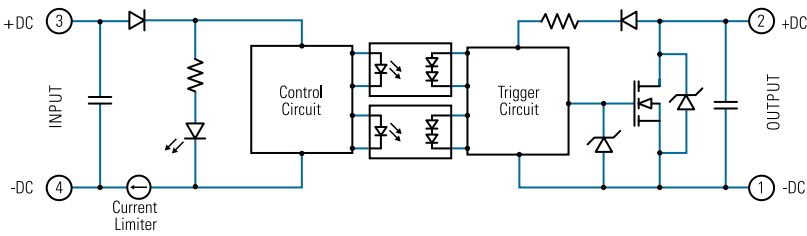
# WIRING DIAGRAM

\* Inductive loads must be diode suppressed.



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]

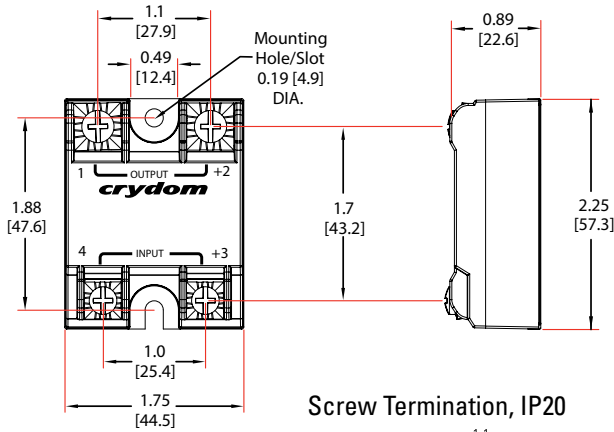
# EQUIVALENT CIRCUIT BLOCK DIAGRAMS



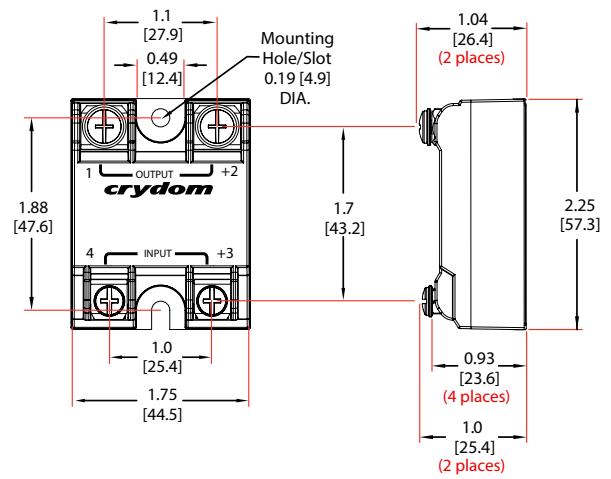
# MECHANICAL SPECIFICATIONS (1)

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

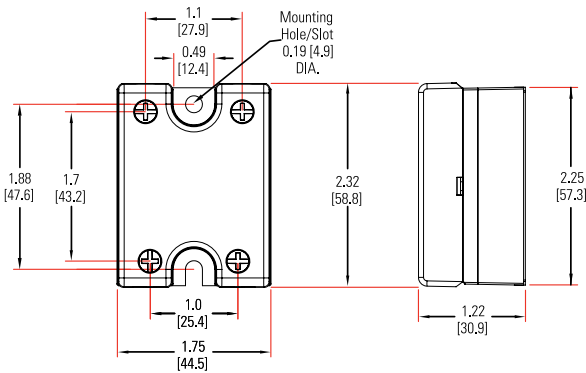
## Screw Termination



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



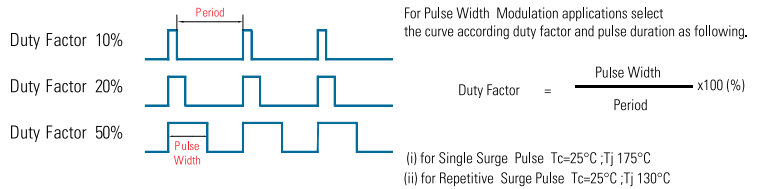
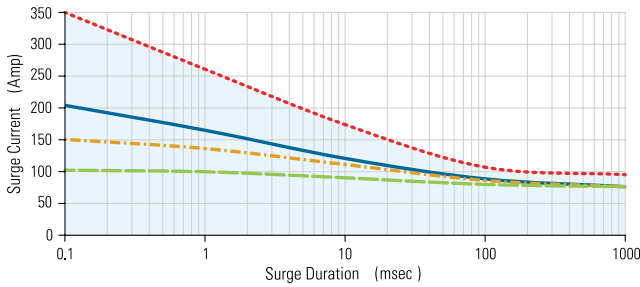
## Screw Termination, IP20



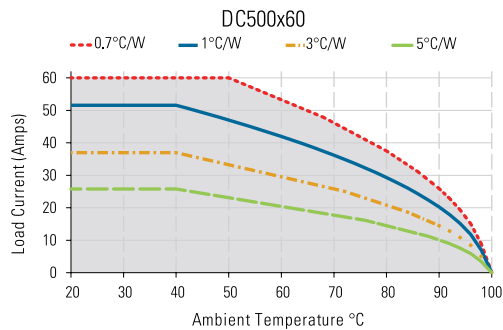
# SURGE CURRENT INFORMATION

--- Single Pulse (i) — Duty Factor (10%) (ii) - - - Duty Factor (20%) (ii) — Duty Factor (50%) (ii)

DC500x60

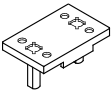

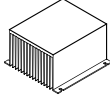
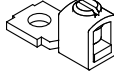
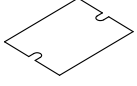


# THERMAL DERATE INFORMATION





Recommended Accessories

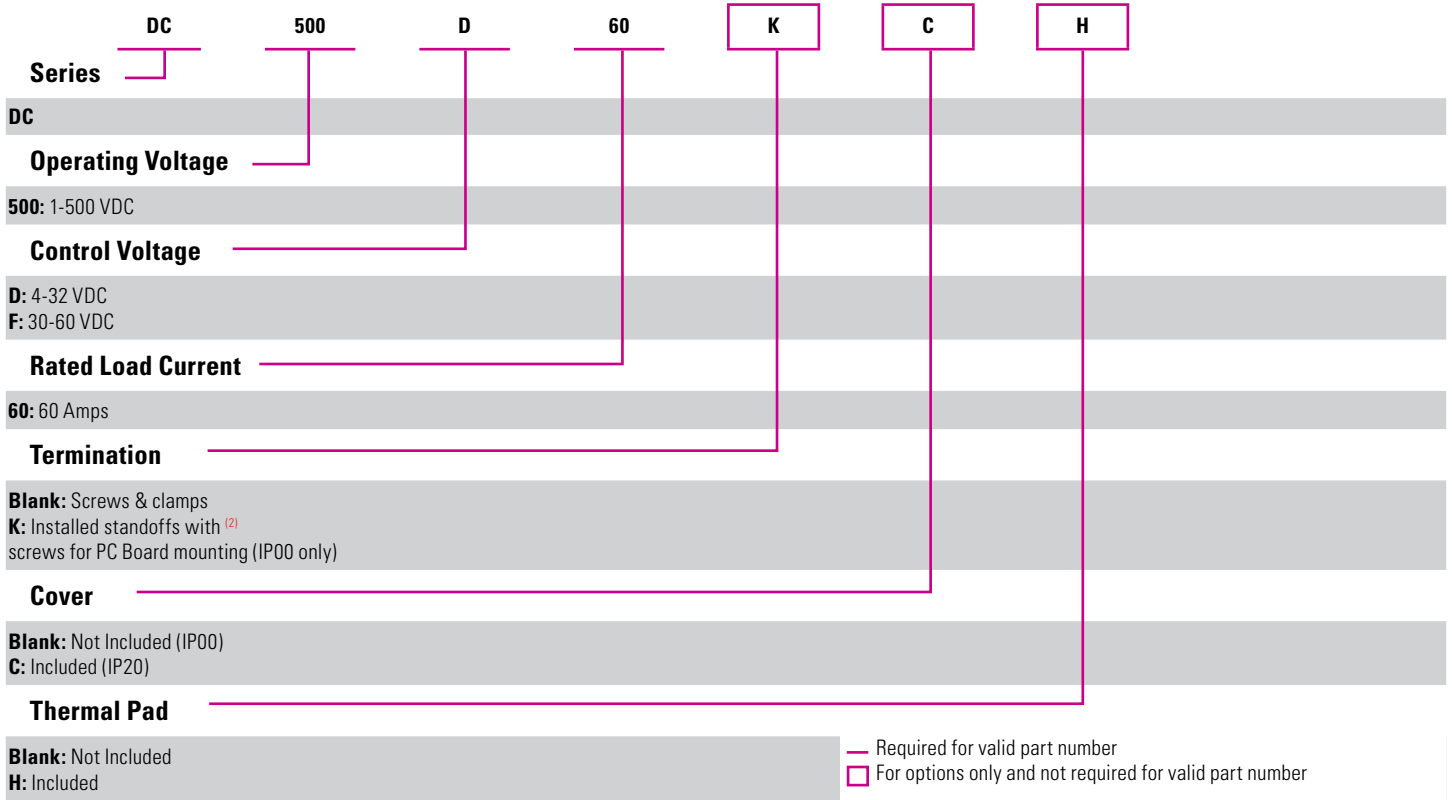
 <b>Cover</b>	 <b>Hardware Kit</b>			 <b>Lug Terminal</b>	 <b>Thermal Pad</b>
		<b>Heat Sink Part No.</b>	<b>Thermal Resistance [°C/W]</b>		
KS101	HK1 HK4	HS501DR HS301 / HS301DR HS251 HS201 / HS201DR HS202 / HS202DR HS172 HS151 / HS151DR HS122 / HS122DR HS103 / HS103DR HS101 HS073 HS072 HS053 HS033 HS023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



# ORDERING OPTIONS

Example : DC500D60CH

Not all part number combinations are available.  
Contact Technical Support for information on the availability of a specific part number.





## GENERAL NOTES

- (1) All parameters at Tc=25°C unless otherwise specified.
- (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) Heat sinking required, see derating curves.
- (4) Low current loads and high ambient temperature can affect turn-on time.
- (5) 8 VDC Minimum control voltage. Resistive loads only. Consider switching losses; at maximum frequency reduce to 75% output current.
- (6) Increase minimum voltage by 1V for operations from -20 to -40°C.
- (7) Decrease maximum control voltage 1.35V/°C above 80°C ambient temperature.
- (8) All parameters at 50% power rating and 100% duty cycle (contact tech support for detailed report).

For additional information or specific questions, contact Technical Support



## AGENCY APPROVALS & CERTIFICATIONS

EN60950-1: Meets the requirements of sections 1.5: 1.7: 2.9: 2.10.5.3: 4.2: 4.5: 4.7:  
 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



## 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  
[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