POWERPLUS 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 [1]

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 [Adc] [2][3]	60
Minimum Load Current [mA] [4]	2.5
Maximum Surge Current (10 msec) [Adc]	95
Maximum On-State Voltage Drop @ Rated Current [Vdc]	0.8
Maximum On-State Resistance [RDS-ON] [Ohm]	0.013
Thermal Resistance Junction to Case (Rjc) [°C/W]	0.25
Minimum Heat Sink for Rated Current @ 40°C [°C/W]	0.7
Maximum Pulse Width Modulation Frequency [Hz] [5]	500

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Input [1]

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

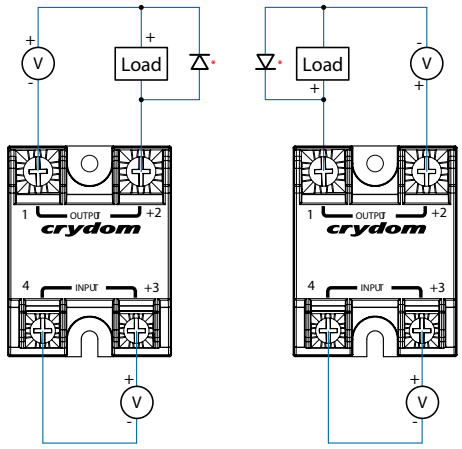
General [1]

Description	Parameters
Dielectric Strength, Input/Output/Base (50/60 Hz)	3750 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohms
Maximum Capacitance, Input/Output	8 pF
Ambient Operating Temperature Range [7]	-40 to 100 °C
Ambient Storage Temperature Range	-40 to 125 °C
Weight (typical)	2.88 oz (81.53 g)
Housing Material	UL94 V-0
Hardware Finish	Nickel Plating
Baseplate Material	Aluminum
Input Terminal Screw Torque Range (lb-in/Nm)	13-15 /1.5-1.7
Load Terminal Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
SSR Mounting Screw Torque Range (lb-in/Nm)	18-20 / 2-2.2
Input/Load Terminal Screw Torque Range (lb-in/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	Green
MTBF (Mean Time Between Failures) at 40°C ambient temperature [8]	21,395,130 hours (2,441 years)
MTBF (Mean Time Between Failures) at 60°C ambient temperature [8]	11,545,504 hours (1,317 years)

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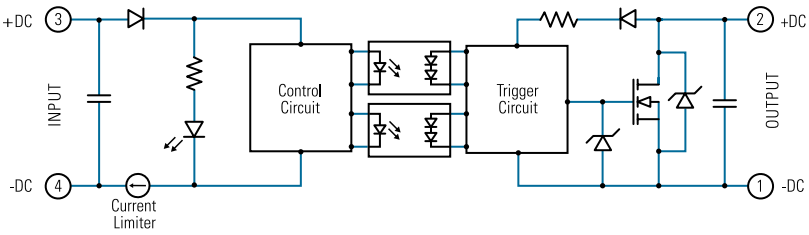
WIRING DIAGRAM

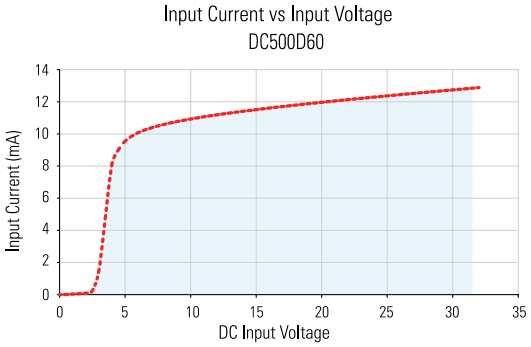
* Inductive loads must be diode suppressed.

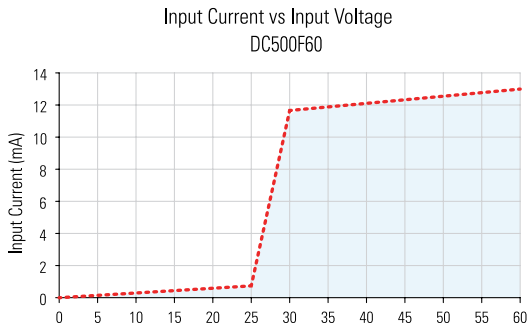


Recommended Wire Sizes		
Terminals	**Wire Size (Solid / Stranded)**	**Wire Pull-Out Strength (lb)[N]**
Input	24 AWG (0.2 mm²) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm²) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm²) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm²) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm²) / 8.4 [maximum]	90 [400]

EQUIVALENT CIRCUIT BLOCK DIAGRAMS





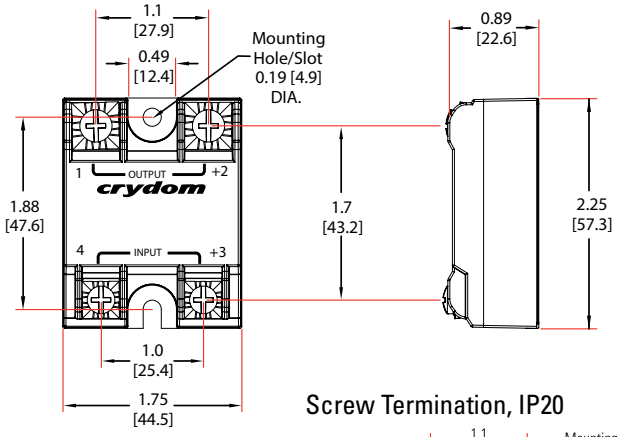


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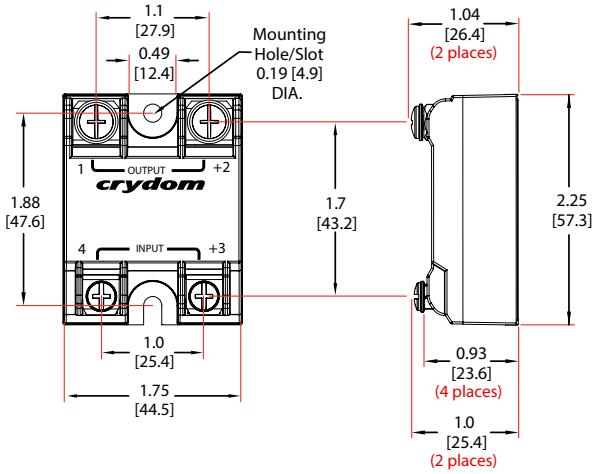
MECHANICAL SPECIFICATIONS (1)

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

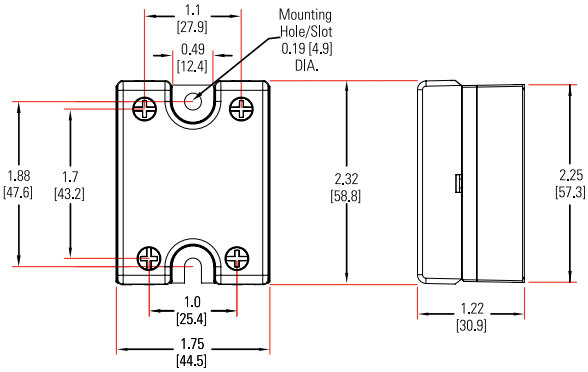
Screw Termination



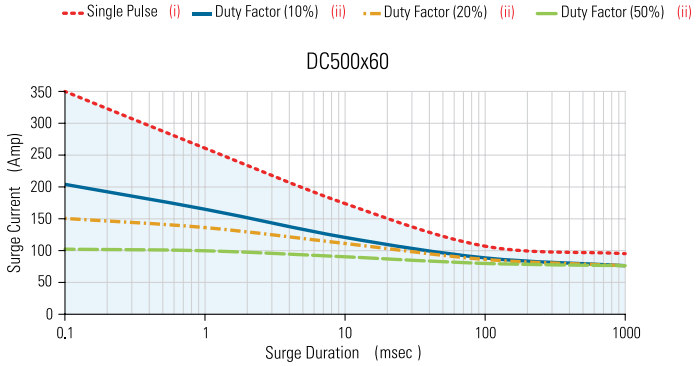
Hex Standoff Termination ("K" Option) (2)

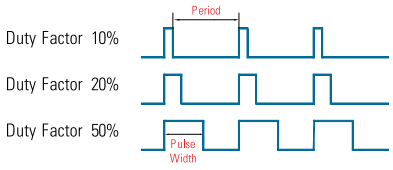


Screw Termination, IP20



SURGE CURRENT INFORMATION



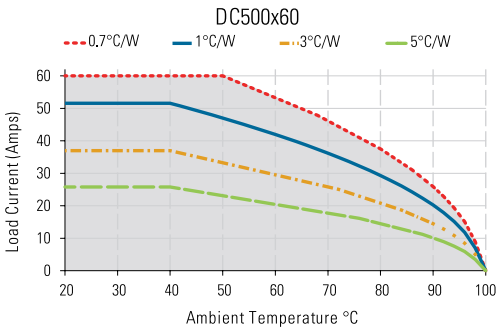


For Pulse Width Modulation applications select the curve according duty factor and pulse duration as following.

$$\text{Duty Factor} = \frac{\text{Pulse Width}}{\text{Period}} \times 100\ (\%)$$

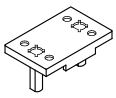
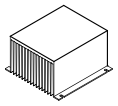
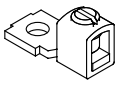
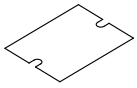
(i) for Single Surge Pulse Tc=25°C ;Tj 175°C
(ii) for Repetitive Surge Pulse Tc=25°C ;Tj 130°C

THERMAL DERATE INFORMATION



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ACCESSORIES

Recommended Accessories					
					
Cover	**Hardware Kit**	**Heat Sink Part No.**	**Thermal Resistance [°C/W]**	**Lug Terminal**	**Thermal Pad**
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.

DC	500	D	60	K	C	H

Series

DC

Operating Voltage

500: 1-500 VDC

Control Voltage

D: 4-32 VDC
F: 30-60 VDC

Rated Load Current

60: 60 Amps

Termination

Blank: Screws & clamps
K: Installed standoffs with [2] screws for PC Board mounting (IP00 only)

Cover

Blank: Not Included (IP00)
C: Included (IP20)

Thermal Pad

Blank: Not Included
H: Included

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

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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.

For additional information or specific questions, contact Technical Support

AGENCY APPROVALS & CERTIFICATIONS

EN60950-1: Meets the requirements of sections1.5: 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

c US E116950 CE UKCA RoHS 50

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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